Oral Presentation 1

Polytetrafluoroethylene Mesh, Concurrent Hysterectomy, and Smoking Are Risk Factors for Mesh/Suture Erosions Following Sacrocolpopexy

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Objectives: To investigate risk factors for mesh and/or suture erosions within 2 years following sacrocolpopexy in women enrolled in a randomized surgical trial.

Materials and Methods: This is an ancillary analysis of the CARE trial, an IRB-approved multicenter randomized surgical trial of sacrocolpopexy with and without concomitant Burch colposuspension in stress continent women. Surgeons were allowed to select graft and suture material for the sacrocolpopexy, allowing study of a large range of materials. Concomitant hysterectomy was allowed, based on clinical indications. All participants were followed carefully with standardized physical examination that included assessment of surgical materials complications over the 2 years after the index surgery. Mesh and/or suture erosions were identified by adverse event reports, which were submitted to the Data Coordinating Center. DSMB intervention early during the study precluded subsequent use of polytetrafluoroethylene (PFTE) based on excess erosion rates. For this analysis, two surgical reviewers read each adverse event report to ensure that it was correctly identified as a surgical material complication. Suture erosion was defined as erosion with visualized suture that resolved after removing the suture without further intervention.

Results: Of 322 randomized women 301 completed 2-year follow-up. Synthetic mesh was the most common material used for the sacrocolpopexy (83%) with common use of Mersilene (43%) and polypropylene (39%) and minimal use of PFTE (Gore-tex) (6%). PFTE suture was used most often for anchoring the mesh to the vagina (54%). Twenty subjects (7%) experienced an erosion of mesh and/or suture. The risk of mesh complications was significantly higher in women who had a synthetic PFTE mesh than in those without PFTE mesh (4/18, (22%) vs. 16/281, (5.6%): OR 4.7 (95% CI 1.4,16.0)). Concurrent hysterectomy was performed in 88/301 women and increased the risk of erosion (14% vs. 4% (OR 4.0 (CI 1.6,10.3)). Women who currently smoked were also at increased risk for erosion (5/21 (24%) vs. 15/280 (5%)(OR 5.5 (CI 1.8,17.1)). Two of three patients with suture erosions healed after simple removal of suture. The third patient likely had a suture erosion, but we have not confirmed healing after suture removal. Of the remaining events, 17 were mesh erosions; 4 were managed without surgery, of which 1 was lost to follow-up and the other 3 had no resolution. Thirteen patients with mesh erosion underwent at least one surgery for mesh removal. Two patients had resolution, 6 had persistent erosions, and 5 were lost to follow-up. One subject had two partial resection procedures and one had three; both had subsequent chronic sinus tracts.

Conclusion: For women undergoing abdominal sacrocolpopexy, PFTE mesh should be avoided. Concurrent hysterectomy and smoking are modifiable risks for mesh/suture erosion.

Key Words: mesh erosion, sacrocolpopexy suture erosion, polytetrafluoroethylene mesh, concurrent hysterectomy, smoking

Disclosure - Nothing to disclose.

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National Network Name: Pelvic Floor Disorders Network.

Oral Presentation 2

Impact of Sacral Colpopexy on In Vivo Vaginal Biomechanical Properties

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Objectives: To determine whether sacral colpopexy has an impact on in vivo biomechanical properties of the vagina. Prior studies at our institution have demonstrated that increasing anatomic and symptomatic severity of pelvic organ prolapse is associated with decreasing in vivo vaginal stiffness index measurements. These findings led us to hypothesize that surgical correction of pelvic organ prolapse would cause an increase to in vivo vaginal stiffness index measurements.

Materials and Methods: Thirty-five participants scheduled to undergo sacral colpopexy were enrolled in this prospective clinical trial. In vivo biomechanical testing of the left vaginal sidewall was performed both preoperatively and 6 weeks postoperatively. A DermaLab USB elasticity probe using a 1.5mm offset lower measurement gate was used to measure elasticity (E), viscoelasticity (VE), vaginal stiffness index (VSI), extensibility time (et), and retraction time (rt). Participants also completed the Pelvic Organ Prolapse Distress Inventory (POPDI-6) and underwent Pelvic Organ Prolapse Quantification (POP-Q) at baseline and 6 weeks postoperatively. The study was powered to detect a 33% difference to in vivo vaginal stiffness index between pre- and postoperative measurements.

Results: Thirty-two participants completed all pre- and postoperative in vivo vaginal biomechanical measurements. At 6 weeks follow-up, 97% of participants demonstrated a surgical cure for their pelvic organ prolapse as well as a decrease in prolapse-related symptoms (POPDI-6 score 39.8 vs. 9.0, $P < 0.00001$). Following sacral colpopexy, participants demonstrated an increase in elasticity (2.26 vs. 3.43, $P < 0.00001$), viscoelasticity (1.55 vs. 4.08, $P < 0.000001$), vaginal stiffness index (108.65 vs. 164.50, $P < 0.01$), and extensibility time (1.73 vs. 3.79, $P < 0.001$), as well as a decrease in retraction time (2122.09 vs. 386.03, $P < 0.001$). Concurrent hysterectomy was associated with a greater increase in vaginal stiffness index and elasticity compared to prior hysterectomy.

Conclusion: These findings suggest that sacral colpopexy affects in vivo biomechanical properties of the vagina in the predicted direction given that anatomic- and symptom-related severity of pelvic organ prolapse decreased. These data corroborate prior study results and strengthens the construct validity of using in vivo vaginal biomechanical testing in the evaluation of pelvic organ prolapse. Further studies are necessary to determine whether type of graft material or postoperative estrogen administration affect test results.

Key Words: pelvic organ prolapse, sacral colpopexy, vaginal biomechanical evaluation

Disclosure - Nothing to disclose.

Oral Presentation 3

Obesity and Outcomes After Sacrocolpopexy

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Objectives: To compare outcomes and complications after sacrocolpopexy (SC) performed with and without Burch colposuspension between obese and healthy weight women.

Materials and Methods: Baseline and up to 2-year postoperative data were analyzed in 322 women in the Colpopexy And Urinary Reduction Efforts (CARE) study, a randomized trial of SC with or without Burch colposuspension in stress continent women with Stages II-IV prolapse. Participants completed a medical history, Pelvic Organ Prolapse Quantification (POP-Q), cough stress test and quality-of-life (QOL) questionnaires (Pelvic Floor Distress Inventory, Pelvic Floor Impact Questionnaire, and SF-36 Mental and Physical Component Summary Scores (MCS and PCS)) at baseline and postoperative visits. Baseline body mass index (BMI) was used to define weight groups: obese (≥30 kg/m2), overweight (25–29.9 kg/m2), healthy weight (18.5–24.9 kg/m2), and underweight (<18.5 kg/m2). Baseline measures, 2-year surgical outcomes, operative variables, and complication rates were compared between obese and healthy weight women using Mantel Haenszel and Wilcoxon tests. Analyses of postoperative variables were adjusted for age and randomization assignment (Burch or no Burch) (all), prior urinary incontinence (UI) or prolapse surgery (UI outcomes), and baseline POP-Q Stage (prolapse outcomes).

Results: Participants included 74 (23.0%) obese, 122 (37.9%) overweight, and 125 (38.8%) healthy weight women, and 1 (0.3%) underweight woman. Compared to healthy weight women, the obese women were younger (59.0 ± 9.9 vs. 62.1 ± 10.3 years, $P = 0.04$), more likely to report diabetes (10.8% vs. 1.6%, $P = 0.004$), and more likely to have Stage II (rather than Stages III or IV) prolapse (25.7% vs. 11.2%, $P = 0.01$). At baseline, the obese group had more colorectal symptoms and related functional impact (Colorectal-anal Distress Inventory and Colorectal-anal Impact Questionnaire scores (median (interquartile range)): 67.6 (21.4, 144.4) vs. 40.5 (14.3, 92.9), $P = 0.01$; and 9.4 (0, 81.9) vs. 0 (0, 18.4), $P < 0.001$, respectively) and poorer general physical QOL (SF-36 PCS = 41.4 (36.0, 49.4) vs. 50.7 (42.3, 54.9), $P < 0.0001$). Two-years after surgery, rates of stress UI and POP-Q stage did not differ between the obese and healthy weight women. Rates of symptom resolution and satisfaction with the surgery also did not differ between the groups. In obese compared to healthy weight women, operative time was longer (189 ± 52 vs. 169 ± 8 min, $P = 0.02$). Blood loss, hospital length of stay, and other immediate postoperative complications, including wound problems, did not differ between the groups. The numbers of serious adverse events (SAE) classified as plausibly related to the index surgery did not differ in obese (13 (10.4%)) compared to healthy weight women (10 (13.5%)).

Conclusion: Most outcomes after SC are similar in obese and healthy weight women, including prolapse and UI measures, resolution of symptoms, and satisfaction. Operative time is slightly longer in obese women.

Key Words: abdominal sacrocolpopexy, obesity, postoperative complications, surgical outcomes

Disclosure - Nothing to disclose.

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Oral Presentation 4

Sexual Activity and Dyspareunia in Women Undergoing Abdominal Versus Vaginal Surgery for Apical Prolapse

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Objectives: To compare sexual activity and dyspareunia in women undergoing abdominal versus vaginal surgery for apical prolapse.

Materials and Methods: Retrospective repeated measure cohort study comparing 72 women undergoing apical prolapse repair by the vaginal route (sacrospinous ligament fixation) and 87 women undergoing abdominal sacrocolpopexy between October 2000 and October 2005. Women in the abdominal surgery group who underwent a simultaneous vaginal procedure and women in the vaginal surgery group who underwent a simultaneous abdominal procedure were excluded. Sexual activity or inactivity was defined based on the response to a standardized question: "Are you sexually active?" Women answering yes to this question at their preoperative visit were included in this analysis. Dyspareunia was defined based on the response to a standardized question: "Do you have pain with sexual intercourse?" Women were evaluated preoperatively, every 6 months postoperatively for the first year, and then annually. Life-table analysis was used to determine the risk for sexual inactivity or dyspareunia. The log-rank test was used to compare survival curves.

Results: There were no significant differences in the mean age (56 ± 11 vs. 57.3 ± 13), parity, weight, race, prior prolapse surgery and preoperative stage of prolapse of the two groups. The rate of coincident hysterectomy was 43% and 38% in the abdominal and vaginal surgery groups, respectively. In the abdominal group, 45% women underwent co-incident abdominal paravaginal repair, while a coincident anterior and/or posterior repair was performed in all women in the vaginal surgery group. The median length of follow-up was 36 months (range 7–48) and 31 months (range 12–41) for the vaginal and abdominal surgery groups, respectively. The rate of dyspareunia in the vaginal surgery group was 7% before surgery, 43% at 6 months, 34% at 1 year, 30% at 2 years, and 32% at 3 years after surgery. The rate of dyspareunia in the abdominal surgery group was 8.3% before surgery, 5% at 6 months, 7% at 1 year, 9% at 2 years and 11% at 3 years after surgery. Life-table analysis of the postoperative interval evaluations demonstrated that the cumulative probability of sexual inactivity in the vaginal surgery group was 0.2 at 6 months (95% CI 0.1–0.3), 0.3 at 1 year (95% CI 0.1–0.35), 0.45 at 2 years (95% CI 0.1–0.7), and 0.47 at 3 years (95% CI 0.2–0.7). The cumulative probability of sexual inactivity in the abdominal surgery group was 0.2 at 6 months (95% CI 0.1–0.3), 0.23 at 1 year (95% CI 0.1–0.3), 0.22 at 2 years (95% CI 0.1–0.5), and 0.25 at 3 years (95% CI 0.1–0.5). The relative risk for sexual inactivity for the vaginal surgery group was 2.5 (95% CI, 95% CI 1.3, 3.4) as compared to the abdominal surgery group. The relative risk for dyspareunia for the vaginal surgery group was 3.8 (95% CI 2, 4.5) as compared to the abdominal surgery group.

Conclusion: Vaginal surgery for apical prolapse may significantly increase the risk for sexual inactivity and dyspareunia as compared to abdominal surgery. Prospective studies comparing sexual function in women undergoing vaginal and abdominal apical repair of prolapse are required.

Key Words: sexual function, vaginal surgery, dyspareunia, sacrocolpopexy, abdominal surgery, sacrospinous fixation

Disclosure - Nothing to disclose.

Oral Presentation 5

A Comparison of Laparoscopic and Abdominal Sacral Colpopexy: Objective Outcomes and Perioperative Differences

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Objectives: The objective of this study was to compare clinical outcomes and perioperative characteristics of patients undergoing laparoscopic sacral colpopexy (LSC) to abdominal sacral colpopexy (ASC).

Materials and Methods: A retrospective cohort of patients undergoing LSC from April 2004 through May 2007 at a community teaching hospital by two faculty urogynecologists was compared to controls undergoing ASC during the same time period. Hospital and office charts were evaluated for pre- and postoperative POP-Q data, as well as pertinent perioperative information. Surgical cure of the apex was defined as point C more negative than half the TVL and no reoperation at the apex.

Results: A total of 45 patients were identified that underwent LSC during the study period, with 44 patients with at least one postoperative follow-up exam. Forty-one patients who underwent ASC and had adequate follow-up during the same time period were selected as controls. Age, parity, BMI, prior prolapse or incontinence surgery, and comorbidities were similar between the two groups. Mean and median follow-up was 6.9 and 5.9 months in the LSC group and 10.1 and 7.5 months for the ASC group. All patients had stage 1 to 4 apical prolapse, and mean preoperative POP-Q point C was similar in both groups (LSC = −0.99, ASC = −1.10). With the same number of concomitant procedure performed (LSC: mean = 3.8, median = 4 vs. ASC: mean = 3.7, median = 4) for each group, total operative time in minutes was slightly longer for the LSC group (mean = 184.4, median =164, range 110–380) as compared to the ASC group (mean = 164.6, median = 158, range = 111–264), although this was not statistically different. Mean pre- and postoperative hematocrit (HCT) and change in HCT were no different between the two groups. Hospital stay in hours was significantly less for LSC (mean = 33.8, median = 38) as compared to ASC (mean = 64.0, median = 54.8, $P < 0.05$). Significant perioperative occurrences requiring reoperation with 2 weeks occurred in both groups: 2 patients in the LSC group due to hernias at port sites, and one patient in the ASC group due to a small bowel obstruction. No significant intraoperative events occurred in the ASC group, while 3 patients in the LSC group had cystotomies. Two of these were recognized and repaired laparoscopically, while the third underwent minilaparotomy. No patients in the LSC group required laparotomy for completion of the prolapse procedure. There were no surgical failures at the apex in either group. Postoperative C values were the similar in both groups for patients with exams at 6 months and 1 year. Postoperative prolapse in other segments occurred at similar frequencies in both groups (LSC = 17.1%, ASC = 25.0%). Single mesh erosion was noted in the ASC group and two patients in the LSC group had permanent suture erosions. All of these were asymptomatic and treated in the office without sequelae.

Conclusion: Although slightly longer to complete and with an increased risk of bladder injury, LSC has comparable anatomic and clinical outcomes to ASC with the advantage of decreased hospital stay.

Key Words: prolapse, laparoscopy, colpopexy

Disclosure - Honorarium: Pfizer, speaker; Gyrus Medical, consultant, surgical instructor; teaching and consulting honoraria: Boston Scientific, consultant, surgical instructor.

Oral Presentation 6

Outcomes of Combination Treatment of Fecal Incontinence in Women

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Objectives: To describe how women with fecal incontinence (FI) respond to combined pharmacologic therapy and pelvic floor muscle exercises and to identify factors associated with improvement.

Materials and Methods: Women with FI (n = 170) were prospectively evaluated since 2002 in the UAB Genitorectal Disorders Center. A follow-up survey was sent to all women who had nonsurgical treatment for FI (n = 89) to assess the severity of their FI with the Fecal Incontinence Severity Index (FISI), as part of the Modified Manchester Health Questionnaire (MMHQ), which also measured health-related quality of life (HR-QOL). Perceptions and satisfaction with treatment were analyzed using the Patient Satisfaction Questionnaire (PSQ). Data were also collected on the number of visits, types of treatment, physical examination findings (POP-Q assessment, Brink score, and anal sphincter contraction strength during digital rectal examination), anorectal manometry (ARM), and endoanal ultrasound (EAUS).

Results: Response rate was 62% (55/89), with one woman excluded for an ileostomy. Age ranged from 31 to 85 years (mean = 59 ± 12). The patients were predominately (85%) non-Hispanic white. Sixty percent had had a hysterectomy, 66% reported concurrent UI, and mean BMI was 29 ± 8 kg/m2. All women were taught pelvic floor muscle exercises with digital palpation and 87% of the women received medications, (70% fiber, 9% loperamide, 7% cholestyramine resin) over 6.9 ± 3.6 months (range 1 to 12) with 2.6 ± 2.1 visits (median 2, range 1–10). Nonresponders to the survey (n = 34) were not significantly different in age, race, number of visits, or baseline severity of FI ($p > .20$). Overall, scores on the FISI improved significantly from baseline to follow-up ($P < .001$), as did scores on HR-QOL ($P < .001$). On the PSQ, 66% of patients were either "completely" or "somewhat" satisfied with combination treatment, and 60% of women felt they were "better" or "much better." Women who estimated their improvement at a level of ≥60% on the PSQ (n = 25) had greater reductions in their FISI scores ($P = < .001$), fewer visits ($P = .01$), greater strength and duration of pelvic floor muscle contractions at baseline on Brink assessment ($P = .02$), and reported higher satisfaction on the PSQ ($P < .001$) compared to women who reported <60% improvement. No other significant differences were

found between women with ≥60% versus <60% improvement on several factors: age (P = .44), prior rectal surgery (P = .06), baseline FISI (P = .34), BMI (P = .36), baseline ARM parameters (average resting pressures (P = .47), anal sphincter squeeze pressures (P = .41), rectal compliance (P = .69)), and the presence of a disrupted anal sphincter (internal or external) on EAUS (n = 36) at baseline.

Conclusion: Women with FI treated with combination pharmacologic therapy and pelvic floor muscle exercises improve clinically and are generally satisfied with the treatment. Weak pelvic floor muscle strength by the Brink assessment at baseline may predict a lesser response to therapy. Further identification of women who do not respond to combination therapy may help target appropriate therapy and improve overall patient satisfaction and outcomes when treating FI.

Key Words: fecal incontinence, in-office, nonsurgical treatment, quality of life, patient-centered outcomes, symptom severity

Disclosure - Nothing to disclose.

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Oral Presentation 7

Change in Sexual Function After Urinary Incontinence Surgery Using Trans-Obturator Tape (TOT) or the Tension-Free Vaginal Tape (TVT) in Women With and Without Pelvic Organ Prolapse

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Objectives: To evaluate change in sexual function 1 year after stress urinary incontinence (SUI) surgery using the trans-obturator tape (TOT) or the tension-free vaginal tape (TVT) procedures in women with or without pelvic organ prolapse (POP). We previously found that the surgical treatment of SUI by both procedures results in improved sexual function based on overall PISQ-12 scores. The aims of this study are to evaluate changes in more specific aspects of sexual function including coital incontinence, dyspareunia, and avoidance of intercourse because of prolapse and to compare changes in sexual function in women who undergo concurrent surgery for POP to those who receive incontinence surgery alone.

Materials and Methods: In a multicenter, prospective surgical trial, women with SUI with and without POP were randomized to TOT or TVT. Subjects were eligible for the trial if they demonstrated urodynamic SUI, were at least 21 years of age, and desired surgical correction of their SUI. Exclusion criteria included detrusor overactivity or previous sling surgery. Participants completed a standardized assessment before surgery and 1 year later, including the validated Pelvic Organ Prolapse/Urinary Incontinence Sexual Questionnaire-12 (PISQ-12). Responses to individual PISQ-12 items pre- and postoperatively were compared using the McNemar test. Changes in total PISQ-12 score were compared between groups using repeated measure ANOVA.

Results: A total of 170 subjects were randomized to TOT or TVT and 162 (95%) followed for 1 year or more after surgery. Eighty-one percent were sexually active at baseline compared to 78% 1 year after surgery, p = .88. Overall, 69% had an improvement in sexual function after surgery as measured by the PISQ-12, while 24% had a decline with no difference between groups. There was a significant reduction in the proportion of subjects reporting coital incontinence (49% at baseline vs. 7% at 1-year, $P < .001$), restriction of sexual activity because of fear of incontinence (45% vs. 8%, $P < .001$), avoidance of sexual intercourse because of vaginal bulging (21% vs. 3%, $P < .001$) and negative emotional reactions during sex (21% vs. 3%, $P < .001$) 1 year after surgery. There was no change in frequency of sexual desire, orgasm, sexual excitement, sexual satisfaction, or dyspareunia after surgery. Subjects with prolapse beyond the hymen had significantly poorer sexual function at baseline than those with normal support (mean PISQ-12 score 29 + 8 vs. 35 + 6, respectively, $P < .001$). However, subjects who underwent concurrent prolapse surgery had greater improvement in PISQ-12 scores 1 year after surgery than those who received TVT or TOT alone (mean change in score +4.0 vs. +1.1, P = .01) compensating for poorer baseline function so that there was no significant difference 1 year after surgery (38 + 5 vs. 36 + 5, P = .17).

Conclusion: Specific aspects of sexual function including coital incontinence, negative emotions during sex, restriction of sexual activity and intercourse are significantly reduced 1 year after surgery for SUI with or without concomitant POP surgery. Other aspects of sexual function remain unchanged.

Key Words: sexual function, TVT, incontinence surgery, TOT, stress incontinence surgery, midurethral sling

Disclosure - Consulting fee/honorarium for preceptoring surgeon: Ethicon Women, preceptor/consultant.

Oral Presentation 8

Objective and Quality of Life Outcomes of Vaginal Prolapse Repairs Using a Synthetic Polypropylene Mesh Kit (Prolift)

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Objectives: The purpose of this study was to assess the short-term success and quality of life outcomes in patients undergoing vaginal prolapse repair using polypropylene mesh.

Materials and Methods: This was a prospective cohort of 62 patients undergoing vaginal reconstructive surgery for prolapse using synthetic polypropylene mesh (Prolift) from August 2005 to May 2007. History and physical examination including POP-Q measurements and validated quality of life (QoL) questionnaires (PFDI & PFIQ short forms, PISQ-12) were assessed at baseline, 3 months, and 12 months. Adverse events, including negative effect on sexual function, and postoperative complications, including mesh erosion, were also assessed. IRB approval was obtained for this study.

Results: Patient demographics (reported as mean) included: age 64.6 years, parity 2.9, and BMI 27.5. Forty-six (74.2%) of patients were white and 13 (21.0%) were black. Fifty-eight women (93.6%) were postmenopausal and 13 (21.0%) were on systemic hormone therapy. Seventeen patients (27.4%) had prior surgery for prolapse. Baseline POP-Q stages were: 11 (17.7%) stage 2; 47 (75.8%) stage 3; and 4 (6.45%) stage 4. Vaginal colpopexies with total mesh insertion were performed in 27 patients; anterior mesh in 30 and posterior mesh only in 5. Concomitant vaginal hysterectomy was performed in 9 patients and concomitant suburethral tension-free slings in 6 patients. Thirty-two women (51.6%) were sexually active preoperatively, and 4 women who were not previously active became sexually active postoperatively. Prolapse stage in all compartments and QoL variables

for prolapse, urinary, and bowel symptoms were significantly improved at 3 and 12 months postoperatively. Sexual function showed significant improvement at 3 months only. Mean vaginal length decreased from 9.6 (±0.96) cm to 9.2 (±1.5) cm at 3 months. Recurrent apical prolapse requiring reoperation via sacrocolpopexy was necessary in 2 patients within 1 year. Other complications included 3 (4.8%) cases of vaginal mesh erosion requiring local excision; 1 seroma with delayed bleeding; 1 case of Clostridum difficile[r] colitis; and 2 cases of myofascial pain requiring pelvic PT. There were no blood transfusions, visceral injuries, fistulae, nerve injuries, or Dindo grade 2–4 postoperative complications.

Conclusion: Prolapse stage and QoL variables were significantly improved in patients undergoing vaginal prolapse repair using a synthetic polypropylene mesh kit. Two patients required reoperation for uterine prolapse at 1 year. Vaginal mesh erosion requiring resection occurred in 4.8% of patients.

Key Words: Prolift, cystoeele, rectocele, polypropylene mesh, vault prolapse, vaginal colpopexy

Disclosure - Nothing to disclose.

Oral Presentation 9

One-year Anatomic and Quality of Life Outcomes Following the Prolift Procedure for Treatment of Post-hysterectomy Prolapse

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Objectives: To evaluate anatomic and quality of life outcomes at 1 year or greater following treatment of post-hysterectomy prolapse with a transvaginal mesh technique using the Prolift system.

Materials and Methods: A retrospective repeated measures study of women who underwent the Prolift procedure for post-hysterectomy prolapse between February 2005 and August 2006. We compared preoperative POP-Q measures, Urogenital Distress Inventory (UDI-6), and Incontinence Impact Questionnaire (IIQ-7) postoperative scores at 1 year or greater.

Results: Of 151 patients, 97 (64.2%) presented for 1 year or greater POP-Q evaluation and 84 (86.6%) patients completed pre- and postoperative UDI-6 and IIQ-7 questionnaires. Median follow-up was 19.0 months (range 12–29). Mean patient age was 65.4 (±10.9), vaginal parity 2.7 (±1.3), and BMI 28.4 (±5.4). Mean preoperative POP-Q stage was 2.6 (±0.6), point C −1.8 (±4.5) and most dependent point of prolapse +2.5 (±2.3). Prolift procedures included 46 anterior, 28 posterior, and 23 total. Concomitant procedures included: pubovaginal sling (n = 75), enterocele repair (n = 11), rectocele repair (n = 24), and perineorrhaphy (n = 16). Most procedures (89.7%) were performed under epidural anesthesia. Intraoperative complications included 4 cystotomies and 1 ureteral obstruction.

At follow-up, POP-Q values were significantly improved, as were scores for the IIQ-7, the UDI-6, and its subscales, with the greatest improvement seen in the obstructive/discomfort subscale. Anatomic success (Stage 0–1 prolapse in the treated compartment) was 88% at follow-up. Three (3.1%) patients experienced recurrent apical prolapse. An additional 18 patients presented with ≥ Stage 2 in the untreated vaginal compartment. Seven (4.6%) patients underwent repeat prolapse surgery in the follow-up period. Vaginal length was decreased compared to preoperative measurements with an average change of −0.6 cm (±1.3). There were no mesh erosions or other long-term complications.

Conclusion: We found significant anatomic and QOL improvements in this population of women with post-hysterectomy prolapse with 1 year or more follow-up. Although the system is highly effective where placed, there is a risk of de novo/unmasked prolapse in the untreated compartment and a small degree of vaginal shortening.

Key Words: prolapse, transvaginal mesh, apical prolapse, polypropylene mesh

Disclosure - honorarium: Ethicon, consultant.

Oral Presentation 10

Utility and Feasibility of a Patient Educational Initiative From a Vesicovaginal Fistula Hospital in Nigeria, Africa

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Objectives: Vesicovaginal fistula (VVF) is a condition characterized by continuous leakage of urine from the vagina, bypassing the usual continence mechanisms of the bladder and urethra. The primary etiology of VVF in the developing world is pelvic floor injury sustained during obstructed labor. Because this is a multifaceted problem, any campaign that may attempt to decrease the incidence and prevalence of VVF will require educational and prevention components. Our primary aim was to explore the utility and feasibility of a patient educational initiative. Secondarily, we sought to characterize women presenting for treatment at a VVF hospital in Jos, Nigeria.

Materials and Methods: IRB approval was obtained. An educational brochure was developed that addressed causes, treatments, and prevention methods of VVF. Attention was paid to clearly translating medical terminology into easily understood concepts. Figures were used to communicate anatomic relationships. During a 2-week period in July 2007, 50 women who were awaiting or had recently undergone VVF surgery at a Nigerian Hospital participated. After examining the 6-paneled brochure, the participants answered demographic questions and gave detailed responses to a questionnaire that addressed the brochure material.

Results: Fifty patients with a mean age of 26.1 years (range 14–50) participated. The etiology of VVF was obstructed labor in 98% of cases. The median time that the VVF was present was 2 years (1 month to 40 years). Mean time in labor prior to definitive intervention was 2.9 days (1 to 9). These women suffered from several complications including foot drop (46%), amenorrhea (20%), and fecal incontinence without evidence of rectovaginal fistula (10%). Further social effects included divorce (33%), family isolation (20.4%), and community isolation (36%).

To gauge response to the educational brochure, participants were questioned regarding prevention and treatment of VVF. Suggestions by participants regarding prevention of VVF included laboring in a hospital (80%), educating other women in their village (30%), and discouraging early marriage (8%). Perceived barriers included financial restraints (84%) and transportation difficulties (30%).

Conclusion: The use of a simple, low-cost educational brochure has the ability to educate women on the causes, treatment, and prevention of VVF. Subjects were able to understand complex medical concepts and expressed willingness to propagate this information. The value of this educational format is not limited solely to the brochure recipient; the message has the potential to be disseminated to other women at risk. The ultimate study is to see if this type of approach impacts on outcomes.

Key Words: vesicovaginal fistula, patient education, prevention, international medicine

Disclosure - Nothing to disclose.

Oral Presentation 11

Two-year Outcomes After Surgery for Stress Urinary Incontinence in Older Versus Younger Women

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Objectives: As more older women undergo surgery for stress urinary incontinence (SUI), it is imperative to know whether they are at increased risk for perioperative complications and worse outcomes compared to younger women. The objective of this subanalysis was to determine if older women differed from younger women with respect to peri- and postoperative outcomes 24 months after undergoing Burch colposuspension or pubovaginal sling for treatment of SUI.

Materials and Methods: This was a planned prospective secondary analysis of the SISTEr trial (Stress Incontinence Surgical Treatment Efficacy Trial). Demographic, clinical characteristics, and adverse events of subjects ≥65 years of age (N = 81) were compared to those <65 (N = 574) utilizing *t* test and χ^2 test of proportions. Outcomes of interest included: perioperative adverse events (AEs), length of hospital stay, time to return to normal voiding, voiding dysfunction, time to return to normal activities, surgical retreatment, as well as 24-month outcomes of stress test, change in pad weight, change in bladder diary, change in MESA stress and urge UI scores, change in symptom bother (UDI), change in quality of life (IIQ) and satisfaction. A bivariate comparison of each outcome variable by age group was performed. Multivariable analyses were performed, including age and each outcome variable that differed between age groups on bivariate analysis, adjusting for variables that differed significantly between age groups at baseline and by surgical treatment group. Interaction of age and treatment group was tested and found not to be significant.

Results: Data from 554 women included in the study were used for the analysis. A total of 520 completed 24 months of study, and data from 34 women who underwent surgical retreatment were used from their last measures before treatment. The mean age (±SD) was 69.7(±3.7) in the older group and 49.4(±8.2) in the younger group. There were no differences between the 2 groups with respect to length of stay (mean 2.0 (±2.75) days vs. 1.9 (±0.95) days, $p = 0.54$), readmissions (n) within 6 weeks (23 vs. 1, $P = 0.34$), total number of patients with serious adverse events (66 (11%) vs. 8 (10%), $P = 0.85$) and number of AEs (320 (56%) vs. 42 (52%), $P = 0.55$). Older women were more likely to undergo surgical retreatment than younger women (10 (13.7%) vs. 24 (5.0%), $P = 0.01$). Multivariable analyses for selected outcomes by age revealed that the younger women were more likely to have a negative stress test at follow-up (OR 3.8, $P < .001$) and greater improvement in stress UI (8 point greater decrease, $P = 0.007$) and urge UI (7 point greater decrease, $P = 0.008$) symptoms compared to older women. There were no differences in the other 24-month outcomes between the two age groups, including satisfaction with treatment.

Conclusion: Older women in the SISTEr trial were more likely to exhibit a positive stress test after surgery and to undergo surgical retreatment compared to younger women. Symptom improvement was slightly diminished in older women compared to younger women. However, there was no difference in perioperative complications or overall satisfaction with treatment.

Key Words: older women, stress incontinence surgery, outcomes

Disclosure - Nothing to disclose.

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Oral Presentation 12

Sacrospinous Ligament Fixation: Anatomic Estimates of Vaginal Length and Axis in Female Cadavers

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Objectives: To determine the vaginal length and degree of posterior and lateral deflection of the vaginal axis after sacrospinous ligament fixation (SSLF).

Materials and Methods: After IRB exemption was obtained, dissection of the sacrospinous ligament and ischial spine was performed in 15 embalmed cadavers. The length of the sacrospinous ligament and its width at the points of origin, midsegment, and insertion were recorded. The distances from the hymen to the ischial spine (H-IS) and from the hymen to the midpoint of the sacrospinous ligament (H-MSSL) were recorded. The diagonal conjugate (DC), interspinous diameter, and transverse diameter of the pelvic inlet were measured.

A suture was placed in the anterior vagina, at the hymen, and tensioned toward the MSSL, parallel to the plane of the DC. A second suture was placed in the MSSL and tensioned upwards to intersect the first suture at a 90-degree angle. The distance from the hymen to the point of intersection (distance A) was measured: The angle of downward deflection was then calculated by taking the inverse cosine of the distance A divided by the distance H-MSSL.

To calculate the angle of lateral deflection, the suture placed in the anterior vagina, at the hymen, was tensioned toward the sacral promontory, again parallel to the plane of the DC. The suture placed at the MSSL was then tensioned to intersect this suture at a 90-degree angle. The distance "B" from the hymen to the point of perpendicular intersection was recorded. The angle of lateral deflection was then calculated by taking the inverse cosine of distance B divided by distance A.

Student *t* tests were used to compare the differences between measurements obtained on the left and right sides. *P* values < 0.05 were considered significant.

Results: The mean age of cadavers was 80 ± 3 years. Fourteen of 15 cadavers (93%) were white and 1 of 15 (7%) was black. The mean BMI was 24.2 ± 1.1 kg/m2. The vaginal length, as estimated by H-MSSL, was significantly longer on the left than on the right (10.9 ± 0.3 vs. 10.3 ± 0.2 cm, $P = 0.01$). There were no differences in the length of the SSL, and the width at the midsegment and point of origin were similar on both sides. Additionally, the angles of downward deflection (32.5 ± 1.9 vs. 28.2 ± 1.7 degrees, $P = 0.07$) and lateral deflection (22.1 ± 1.9 vs. 21.6 ± 1.9 degrees, $P = 0.85$) of the vaginal axis were not significantly different.

Conclusion: Suspending the vaginal apex to the sacrospinous ligament during SSLF should not significantly compromise vaginal length. The vaginal axis does not appear to deviate substantially in either a posterior or lateral direction despite a unilateral suspension.

These findings support clinical evidence that sexual dysfunction resulting from SSLF is not related to changes in vaginal length or axis.

Key Words: vaginal length, sacrospinous, vaginal axis, ligament

Disclosure - Nothing to disclose.

Oral Presentation 13

Abdominal Hysterectomy With or Without "Angle Stitch": Correlation With Subsequent Vaginal Vault Prolapse

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Objectives: Although many gynecologists will routinely perform a cardinal-uterosacral ligament "angle stitch" at the lateral margins of the vaginal cuff at the completion of a total abdominal hysterectomy, others argue that these stitches constitute a reconstructive or suspensory procedure, and that it is unnecessary in patients without overt prolapse. The objective of this study was to compare the ability of the vaginal cuff with or without angle stitches to resist downward traction to predict whether this surgical step may have utility in the prevention of subsequent vaginal vault prolapse.

Materials and Methods: After receiving IRB exemption, total abdominal hysterectomies were performed in 6 unembalmed female cadavers. The cardinal and uterosacral ligaments were identified but not initially incorporated into the vaginal cuff. A 9/16-inch metal washer was placed above the cuff and attached to a 1/8-inch diameter bolt threaded through the cuff and into the vagina. The bolt was attached to a surgical filament oriented parallel to the table surface and threaded over a fixed pulley at the table's end. Weights of 1, 2, 3, and 4 kg were sequentially added, and the distance moved by the vaginal cuff with each weight was recorded. Two sets of measurements were taken for each weight applied. The cardinal and uterosacral ligaments were then incorporated into the cuff bilaterally with a Richardson-style angle stitch. Again, weights of 1–4 kg were added successively and the distance traversed by the vaginal apex recorded. Comparisons between the two procedures and the mean distances pulled for each weight were made using repeated measures ANOVA.

Results: The mean age of the cadavers at time of death was 83 years. Average BMI was 19.7 kg/m2. The average distances traversed by the vaginal apex without angle stitches using 1, 2, 3, and 4 kg of traction (± SD) were 13.5 (±1.1), 17.9 (±1.3), 21.7 (±2.1), and 26.0 (±1.4) mm, respectively. After placement of the angle stitches, distances moved by the vaginal apex were 12.1 (±0.4), 16.0 (±1.0), 19.3 (±1.2), and 23.1 (±2.0) mm, respectively. Overall, these distances of apical descent were significantly less in the specimens with the angle stitch ($p = 0.042$). Of note, in the cadaver with the greatest degree of apical descent, the addition of angle stitches decreased the distance moved (with the 4 kg weight) by 1 cm.

Conclusion: Averaging the results of several cadavers and using each body as its own control, there was a significant difference in the ability of a vaginal cuff with angle stitches to resist downward traction of up to 4 kg compared to a vaginal cuff closed without angle sutures. Interestingly, this distance, in the majority of women, may not be clinically relevant. However, in some patients (perhaps in those where the uterosacral ligaments do not insert on the proximal vagina), the addition of bilateral angle stitches markedly improved the cuff's resistance to descent and may contribute to better apical vault support over time. Therefore, our study substantiates current recommendations supporting incorporation of the cardinal-uterosacral complex to the vaginal cuff at the time of total hysterectomy.

Key Words: anatomy, cardinal uterosacral ligament, apical support, Richardson

Disclosure - Nothing to disclose.

Oral Presentation 14

Total Laparoscopic Hysterectomy Versus Laparoscopic-assisted Vaginal Hysterectomy in Endometrial Cancer: Surgical and Survival Outcomes

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Objectives: There are few studies in the literature comparing the use of total laparoscopic hysterectomy (TLH) versus laparoscopic-assisted hysterectomy (LAVH) in the treatment of women with endometrial cancer (EC). The purpose of this study was to compare the surgical and survival outcomes of early-stage endometrial cancer (EC) patients who underwent TLH or LAVH with or without lymphadenectomy (LAD).

Materials and Methods: A multi-institution, retrospective analysis of EC patients treated by TLH or LAVH from 1998 to 2006 was performed. Cases were identified from a tumor registry database and/or gynecologic oncology fellows' case lists. Data collected included age, comorbidities, body mass index (BMI), stage, histologic subtype and tumor grade, estimated blood loss (EBL), conversion to laparotomy, perioperative complications, number of lymph nodes removed per patient, adjuvant therapy, and disease-free and overall survival. Lymphadenectomy was performed if frozen section demonstrated >50% invasion, if lymph vascular space invasion was present, or if tumor grade was ≥2. Statistics were performed using student t test, χ^2 and Kaplan-Meier survival analysis.

Results: TLH and LAVH were performed in 80 and 30 patients, respectively. There were no differences in age (mean ages: 61), BMI (mean: 32.2) or number of comorbidities between the cohorts (mean: ≥2/patient). Over 30% of patients in both cohorts were obese (BMI >30), and 11% were morbidly obese (BMI >40). Endometrioid adenocarcinoma was diagnosed in 94% and 100% of TLH and LAVH patients, respectively (NS). Pelvic LAD alone or pelvic/para-aortic LAD were performed in 63% of TLH patients and 50% of LAVH patients (NS). Mean lymph node count in these cases was 12 (range, 4–32).
Mean operating time was significantly higher for LAVH patients than for TLH patients (213 and 189 minutes, respectively, $p = 0.036$). EBL was also greater in LAVH patients (mean: 529 mls) versus TLH patients (mean: 169 cc, $P = 0.05$). Mean length of hospital stay was 2 days for both cohorts (range, 1–5) and the incidence of major perioperative complications (LAVH: 6.6%; TLH: 7.5%) was not different between the cohorts. Delayed complications occurred in 2 TLH patients (2.6%); both presented as vaginal cuff dehiscences 9 and 20 months after surgery, respectively. One dehiscence pt had received vaginal/pelvic radiation. After a median follow-up time of 51.5 months (range, 12–105), there was no difference in recurrence (LAVH: 0; TLH: 3 or survival rates between the LAVH and TLH patients (median OS LAVH: 50 months; TLH: 52 months). To date, all patients with endometrioid histology are alive and disease-free.

Conclusion: We present one of the largest series on surgical and long-term survival outcomes for EC patients treated by laparoscopic hysterectomy. Early stage EC can be treated effectively with either TLH or LAVH. TLH patients experienced shorter operating times and less blood loss, and TLH may be a more feasible surgical approach in obese patients than LAVH. Randomized, larger trials are needed to confirm these findings.

Key Words: total laparoscopic hysterectomy, laparoscopic-assisted hysterectomy, endometrial cancer

Disclosure - Nothing to disclose.

Oral Presentation 15

Outcomes of Hysterectomies Performed by Supervised Residents Versus Those Performed by Attendings Alone

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Objectives: To compare the surgical outcomes of hysterectomies performed by residents under supervision (teaching cases) versus those performed by attendings alone (non-teaching cases). To study a learning curve based on experience in performing hysterectomy.

Materials and Methods: This is a retrospective cohort study of hysterectomies performed at a community hospital between 2004 and 2006.

Results: We reviewed 159 non-teaching and 265 teaching cases. The demographics and comorbidities were similar. Non-teaching cases were more likely to be laparoscopic hysterectomies (21.4% vs. 13.6% $P = 0.042$) and more frequently involved whites (74.2% vs. 62.2% $P = 0{,}014$).

There was no statistically significant difference in any of the major/minor surgical outcomes, except mean OR time in minutes (94.8 (±47.0) vs. 107.4 (±42.4) $P = 0.005$), seromas (2.5% vs. 0% $P = 0.02$), and others (5% vs. 0.8% $P = 0.007$) in non-teaching versus teaching cases respectively. Other complications were hip sprain, lost laparotomy sponge, readmission for gastroenteritis, a chest wall abscess, syncope, and peritonitis. The mean OR time difference of 13 minutes was not clinically significant.

For non-teaching cases there was a moderate inverse linear relationship between the first attending surgeon's years of experience and OR time ($r = -.314$; $P<.001$). For teaching cases, there was a moderate inverse linear relationship between the fellow surgeon's years of experience and EBL ($r = -.278$; $P = .023$). There was no correlation between the resident surgeon's years of experience and EBL, OR time, and postoperative hematocrit.

Conclusion: The surgical outcomes in hysterectomies performed by supervised residents versus attendings alone are similar.

Key Words: hysterectomy, teaching cases, surgical outcomes, surgical education, safety

Disclosure - Nothing to disclose.

Oral Presentation 16

Synthetic or Biologic Mesh Improves Optimal Anterior and Posterior Prolapse: A Prospective Multicenter Surgical Trial of the Intravaginal Slingplasty Tunneller Device for Stress Incontinence and Apical Prolapse

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Objectives: To report the 1-year outcome for 1) the anterior intravaginal slingplasty (aIVS) in the treatment of urodynamic stress (or stress predominant mixed) incontinence and 2) the posterior IVS (pIVS) for apical prolapse (POPQ stage ≥ II)

Materials and Methods: Prospective multicenter (15 site) study. In 467 patients, there were 158 aIVS, 177 pIVS, and 132 both (599 mesh tapes total). Additional mesh attached to the pIVS in the anterior and/or posterior compartments was allowed at the surgeon's discretion. At 6 and 12 months (mo) cough stress test (CST), Pelvic Organ Prolapse Quantitation (POPQ), and Pelvic Floor Impact Questionnaire (PFIQ), were assessed. Statistical analyses utilized-paired *t* tests, McNemar test, and the generalized estimating equations.

Results: For aIVS, 96.95% had (-) CST at 12 mo (N = 195). Retention and urinary tract infections each occurred in 4.8%. For pIVS and prolapse, apical support (POPQ-C point) was optimal (stage 0) or satisfactory (stage I) in 95.9% (N = 194). Additional synthetic and biologic mesh was used in the anterior compartment in 38% and 32%, respectively, and in the posterior compartment, 40% and 29%, respectively. Use of this additional mesh resulted in optimal POPQ in the anterior (stage 0, Ba = −3) (55%) and posterior (stage 0, Bp = −3) (82%) compartments. When no mesh was used, optimal POPQ scores were obtained in significantly fewer anterior (32%) and posterior (60%) compartments ($P < 001$). PFIQ scores significantly improved in all subscales, even when extrusions occurred ($P < 0.0001$). 32 patients had vaginal mesh extrusion, more often in the aIVS (7.9%) than the pIVS (3.2%)($P = 0.01$). Hysterectomy or the presence of a uterus did not confer protection from extrusions. Nine patients (2%) had granulation tissue formation over the mesh site and 1 aIVS patient required complete mesh removal for persistent granulation. Two bladder perforations (0.7%) and no rectal perforations occurred.

Conclusion: At 1 year, aIVS and pIVS are safe and effective when performed with other procedures and with other mesh attached to the pIVS. However, the wide use of additional materials limits our ability to draw conclusions about the pIVS for other than apical support. Use of other biologic and synthetic mesh improved optimal support in this study. Low perforation and retention rates were seen. Extrusion is more likely in the aIVS than pIVS at 1 year as illustrated in the Kaplan-Meier survival curve. Patients showed improvements in PFIQ regardless of extrusion.

Key Words: stress incontinence, polypropylene mesh, prolapse surgery, intravaginal slingplasty tunneller, pelvic floor impact questionnaire (PFIQ), infracoccygeal sacropexy

Disclosure - Honorarium: Tyco Healthcare LP, consultant and instructor; Astellas, speaker and consultant.

Oral Presentation 17

Surgical Revision of Midurethral Slings: Early Versus Late Revision in Patients With Voiding Dysfunction

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Objectives: To report our experience and outcomes with the surgical management of voiding dysfunction after placement of midurethral slings for treatment of SUI.

Materials and Methods: Our office charts and hospital records were reviewed between February 1999 and July 2007 for diagnosis codes and procedures consistent with voiding dysfunction and midurethral sling revision. A total of 50 patients were identified who underwent revision of a midurethral mesh sling. The office charts and operative records were reviewed for preoperative demographics, type of incontinence, type of sling placed, post-sling follow-up, as well as operative details regarding the sling revision/release and subsequent clinical follow-up. Persistent symptoms and continence status were assessed subjectively via patient questioning.

Results: Among this cohort of patients, four different sling techniques were included: 24 TVT-obturator, 22 TVTs, and 2 TVT Secur slings in the "U" configuration, 1 SPARC, and 1 Urotex sling. A total of 38 patients (76%) required Foley catheters or intermittent self-catheterization on discharge from the hospital after their original sling procedure. Overall, 47 patients (94%) had some form of voiding complaint or symptom, whereas 40 patients (80%) complained of incomplete bladder emptying. The average postvoid residual volume recorded at post-sling follow-up was 360 cc (±249cc). A total of 25 (50%) patients had documented urinary tract infections prior to sling revision. There were no operative complications at the time of revision. Thirty-five (70%) slings required transection, 16 (32%) were pulled down, and 1 (3.1%) required office pull-down alone. Two slings were surgically revised twice. Post-revision, there were 9 patients (18.8%) with urinary infections, and 7 patients (14%) continued to experience voiding dysfunction. Stress incontinence recurred in 15 (30%) of revision patients with 35 (70%) remaining dry. The data were also evaluated by arranging the patients in 3 groups: early revisions (<15 days), delayed revisions (16–90 days), and late (>90 days). Recurrent SUI rates were 40%, 33.3%, and 19%, respectively. There did not appear to be a significant change in persistence of voiding symptoms among these subgroups.

Conclusion: Voiding dysfunction after midurethral sling placement is relatively uncommon and can be managed successfully with surgical revision while maintaining continence in the majority of patients. In our setting, sling revision is not associated with significant risk or morbidity. The benefit of early readjustment includes a decrease in the duration of voiding dysfunction symptoms experienced by the patient as well as a decrease in the potential morbidity secondary to recurrent urinary tract infections. However, late readjustment proves to offer a lower risk of recurrent SUI as opposed to early readjustment. Our data suggest that we should be less aggressive in loosening slings with early readjustment to achieve optimal outcomes including prompt resolution of voiding dysfunction while maintaining an acceptable SUI cure rate. Overall, sling revision or readjustment effectively decreases the incidence of urinary tract infections and symptoms of voiding dysfunction.

Key Words: voiding dysfunction, midurethral slings, revision, readjustment

Disclosure - Nothing to disclose.

Oral Presentation 18

Incidence and Risk Factors for Surgical Intervention Following Uterine Artery Embolization

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Objectives: To determine the incidence and risk factors for surgical intervention following uterine artery embolization (UAE) for treatment of uterine fibroids.

Materials and Methods: Electronic medical records of all patients who underwent uterine artery embolization for symptomatic uterine leiomyoma at a tertiary care institution from June 1996 to August 2007 were reviewed. UAE performed for postoperative bleeding or malignancy were excluded. Various factors including uterine size based on bimanual exam, uterine volume determined by MRI, the presence of significant collateral contribution to the uterus by ovarian vessels during embolization, and particle type and size were collected to identify risk factors for post-procedure surgical intervention. Logistic regression was used to identify independent risk factors for the need for any surgical intervention and for the need for hysterectomy alone after UAE.

Results: A total of 454 subjects underwent UAE during the study period. Mean (±SD) age was 44 yrs (± 4.5). Median uterine size based on bimanual exam was 15 weeks (range 6–26) and median uterine volume was 529 mL (range 35–3184). Overall, 26% (118/454) required surgical treatment after UAE, including hysterectomy in 15%, hysteroscopy in 12%, myomectomy in 3%, and dilation and curettage in 3%. Thirteen subjects (3%) had ≥2 procedures. The most common indications for surgical intervention were bleeding (77%), pain (31%), or chronic abnormal vaginal discharge (17%), with 41% patients with >1 indication. The most common indications for hysterectomy following UAE were bleeding (54%), vaginal discharge (22%), or pain (13%) with 23.1% with >1 indication. Median time to any surgical intervention was 16.7 months (range 0.5–110) and to hysterectomy was 20 months (range 1–83) after UAE. After controlling for confounding factors, subjects who were younger (adjusted OR 1.06 per year of age, 95% CI 1.01–1.12), had bleeding as an indication for UAE (adjusted OR 1.7, 95% CI 1.2–2.6), had significant collateral contribution to the uterus through the ovarian vessels (adjusted OR 4.18, 95% CI 1.54–18.9), or had UAE performed using smaller particle size (355–500 μm) (adjusted OR 1.6, 95% CI 1.3–2.1) were more likely to require a surgical intervention following UAE. Additionally, younger subjects (adjusted OR 1.07 per year of age, 95% CI 1.01–1.14) and those who had significant collateral flow to the uterus by ovarian vasculature (adjusted OR 5.05, 95% CI 1.91–22.5) were more likely to undergo hysterectomy. The most common pathology other than fibroids on hysterectomy specimens included adenomyosis (19/63), endometriosis (7/63), infarction (16/63), foreign body cell reaction (10/63), or infection (2/63). There were no associations between uterine volume on MRI, pre-UAE bimanual size, or particle type, and need for surgical intervention.

Conclusion: Patients undergoing UAE for symptomatic uterine leiomyomas are at significant risk of requiring additional surgical intervention due to failed treatment. Younger patients, those undergoing UAE for bleeding, presence of significant collateral flow to the uterus by ovarian vasculature, or embolization using a smaller particle size appear to be at higher risk.

Key Words: fibroid, uterus, uterine artery embolization, uterine fibroid embolization, leiomyoma, interventional radiology

Disclosure - Nothing to disclose.

Oral Presentation 19

Aggressive and Complex Surgery for Advanced Ovarian Cancer: An Economic Analysis

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Objectives: Evaluation of quality of care, including assessment of outcomes and costs, is becoming an object of increasing interest for the health care community. We previously demonstrated that aggressive surgery correlates with improved survival in patients with advanced ovarian cancer yet the economic implications associated with maximal surgical efforts are unknown. Objective of our study is to descriptively evaluate the in-patient costs associated with primary surgery in patients with stage IIIC ovarian cancer.

Materials and Methods: A representative sample (n = 46) from three distinctive surgical groups (SGs) (1 = simple, 2 = intermediate, 3 = complex) was randomly selected within a cohort of consecutive stage IIIC patients of ASA class 3 treated locally between 1994 and 1998. We tracked resource utilization in administrative data to estimate total direct medical costs (hospital and physician) associated with inpatient stays measured in standardized 2006 constant dollars.

Results: Physician and total direct costs significantly differed, on average, between SG (Mean total costs, group 1: $16,591; group 2: $23,977; group 3: $31,200; $P = 0.03$). Pair-wise comparisons revealed a significant cost difference of $14,609 between average inpatient costs incurred by surgical groups 3 versus 1 ($P = 0.003$). A preliminary cost-effectiveness analysis showed that SG = 1 had an overall cost per patient of $16,591 and effectiveness of 1.85 life years compared to $31,200 and 4.05 life years for SG = 3. The incremental unadjusted C/E ratio for SG = 3 compared with SG 1 is $6640 per life of year gained.

Conclusion: More complex surgery for ovarian cancer cytoreduction results in significant increases in direct medical costs. However, the increase in life years appears to come at a very reasonable marginal increase in cost per life years in this preliminary analysis. These data have implications for costs and reimbursements associated with ovarian cancer surgery. Future research including the cost and quality of life implications associated with surgical morbidity during follow-up is warranted to formally assess the cost-effectiveness of complex versus simple surgical procedures.

Key Words: ovarian cancer, cost-effectiveness, aggressive surgery, hospital costs, surgical costs, economic analysis

Disclosure - Nothing to disclose.

Oral Presentation 20

Does the Severity of Pelvic Organ Prolapse Discriminate Between Women With And Without Pelvic Floor Symptoms?

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Objectives: The purpose of this study is to determine the maximum vaginal descensus at which bothersome pelvic floor symptoms are present in order to provide a threshold for clinically significant prolapse.

Materials and Methods: Data were obtained from a cross-sectional study evaluating quality-of-life in women with and without pelvic floor dysfunction. Women over age 40 years scheduled for outpatient gynecologic and urogynecologic exams were eligible. We excluded pregnant women and those that were never sexually active. Informed consent was obtained. Subjects completed the Pelvic Floor Distress Inventory Short Form (PFDI-20). Pelvic Organ Prolapse Quantification (POPQ) exams were used to define maximum prolapse. PFDI symptom outcomes were considered positive with the presence of the symptom plus a bother greater than or equal to "somewhat". For each symptom outcome, we calculated a receiver operator characteristic curve (ROC). The disease state was the symptom and the "test" was the most dependent prolapse. We calculated the area under the curve (AUC). For ROC curves with an AUC > 0.5, likelihood ratios (LR) were generated for each discriminatory threshold value along the curve. LR (>10) were used to select a threshold of maximum prolapse that best discriminates between women with and without the symptom. A P value <0.05 was considered significant.

Results: Of 305 participants, POPQ examinations were completed on 297 (97%). The mean age was 56.3 ± 11.2, 234 (79%) were white, and mean parity was 2.7 ± 1.8. POPQ support was stage 0 in 39 (13%), stage I in 136 (46%), Stage II in 89 (30%), and Stage III in 33 (11%). The ROC curve for the symptom of vaginal bulging/protrusion had the greatest AUC, 0.89 (95% CI 0.83, 0.95). The ROC curve for the symptom of splinting to void had an AUC of 0.81 (0.63, 0.99). ROC curves for the other Pelvic Organ Prolapse Distress Inventory (POPDI) symptoms had lower discriminatory values (AUC 0.55–0.62). ROC curves for symptoms from the Urinary Distress Inventory and Colorectal-Anal Distress Inventory had fair to poor discrimination. A point of most dependent prolapse between 0 (LR 8.9) and +0.5 (LR 22.8) was the best threshold for discriminating vaginal bulging/protrusion. The best threshold for the symptom of splinting to void was between +2 (LR 6.7) and +2.5 (LR 11.9). For other POPDI symptoms, the threshold for discrimination was beyond +3.

Conclusion: Our study suggests that the anatomic severity of pelvic organ prolapse is able to discriminate between women with and without certain pelvic floor symptoms. As would be expected, the severity of prolapse is a poor predictor of urinary or bowel complaints. For the symptoms most accurately identified, various thresholds between 0 and +2.5 cm beyond the hymenal remnant could be considered the optimal discriminatory threshold. We recommend a threshold close to +0.5 cm beyond the hymenal remnant because it maximizes sensitivity. The identification of such thresholds may be helpful toward defining meaningful surgical outcomes. Our study is limited by the cross-sectional design but is strengthened by the use of validated questionnaires and a structured physical examination for all participants.

Key Words: prolapse, symptoms, vaginal, descensus, threshold, bothersome

Disclosure - Nothing to disclose.

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Oral Presentation 21

Predictors of Persistent Postoperative Detrusor Overactivity

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Objectives: To determine predictors of persistent postoperative detrusor overactivity (DO) in patients who undergo sling procedures for stress urinary incontinence.

Materials and Methods: A total of 363 patients with mixed urinary incontinence were drawn from a population of 731 patients who underwent sling procedures. Pre- and postoperative urodynamic measures were used to examine rates of persistent postoperative DO.

Patients who had persistent DO were compared to those whose DO resolved. Factors including demographics, sling type, preoperative urodynamic parameters, and symptoms of urge urinary incontinence were analyzed using χ^2 and two sample *t* tests. The impact of multiple simultaneous predictors on DO outcome was also examined.

Results: Ninety-two of 363 (25.3%) patients had postoperative resolution of their DO, whereas 271/363 (74.7%) had persistent DO. Transobturator slings (42%) had the highest rate of resolution, followed by SPARC (33%), retropubic slings (33%), Burch (31%), and bladder neck slings (13%). There was no significant difference in persistent detrusor overactivity between retropubic and transobturator slings (58% vs. 67%, $P = 0.302$). When patients with resolved versus persistent DO were compared, significant differences included age (60 vs. 66 years old, $P < .001$), parity (2.3 vs. 2.7, $P = .016$), BMI (29.0 vs. 27.5 = .041), preoperative DO volume (507 vs. 445 mL, $P = .010$), mean urethral closure pressure (38cmH_2O vs. 28 cmH_2O, $P = .002$), maximum flow rates (24 cc/sec vs. 18 cc/sec, $P = .002$) and nocturia ($P = .0038$). When all factors were considered simultaneously in a regression model, age and nocturia were significant predictors of persistent postoperative detrusor overactivity after sling procedures. For every 1 year increase in age, the risk of DO persistence increased by 3% ($P = .014$). For every additional episode of nocturia per night, the risk of persistent DO increased by 30% ($P = .030$).

Conclusion: When treating women with mixed urinary incontinence, age, nocturia, and choice of sling procedure has important implications with respect to persistence of detrusor overactivity postoperatively.

Key Words: urinary incontinence, detrusor overactivity, treatment

Disclosure - Nothing to disclose.

Oral Presentation 22

Risk Factors Associated With Failure 1 Year After Retropubic and Transobturator Midurethral Slings

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Objectives: To identify predictors of recurrent urinary incontinence (UI) 1 year after treatment with tension-free vaginal tape (TVT) and transobturator tape (TOT) procedures for urodynamic stress urinary incontinence.

Materials and Methods: A total of 162 women enrolled in a multicenter clinical trial comparing TVT to TOT who completed at least 1 year of follow-up are included in this analysis. At baseline, all subjects had urodynamic stress urinary incontinence (SUI) without detrusor overactivity on multi-channel urodynamic testing. Two definitions of treatment failure were used: "any recurrent UI"- defined as an Incontinence Severity Index score greater than 0, 1 year after surgery or re-treatment of UI; and "recurrent SUI" defined as an affirmative response to the SUI item on the PFDI-20, 1 year after surgery or retreatment. Potential clinical, demographic, and urodynamic predictors of treatment failure were evaluated using univariate methods. Logistic regression models were developed to predict the probability of treatment failure ("Any" and "Stress") using variables identified during univariate analysis and controlling for method of surgical treatment. Leak point pressure (LPP) was evaluated as both a continuous and dichotomous (< or >60 cmH_2O) variable. Whether risk factors for failure differed for TVT and TOT was also assessed.

Results: Any recurrent UI occurred in 68 subjects (42%) and recurrent SUI occurred in 26 subjects (16.5%) 1 year after surgery with no difference between treatment groups. Women who received concurrent prolapse surgery were more likely to develop any recurrent UI (adjusted OR 2.7; 95% CI 1.1–6.6). Any recurrent UI also occurred more frequently in subjects who were taking anticholinergic medications preoperatively (adjusted OR 6.7; 95% CI 1.6 - 22). Increasing age was the only identified variable that was independently associated with recurrent SUI (adjusted OR 1.66; 95% CI 1.07–2.63 per decade). Risk factors were similar for TVT and TOT for both definitions of treatment failure. Neither LPP nor baseline incontinence severity were associated with the development any recurrent UI or recurrent SUI in subjects receiving a TVT or TOT.

Conclusion: Concurrent prolapse surgery and preoperative use of anticholinergics are associated with increased risk of developing recurrent UI 1 year after TVT or TOT in women with urodynamic SUI. Increasing age is specifically associated with the recurrence of SUI symptoms. LPP and baseline incontinence severity is not predictive of treatment failure after TVT or TOT in this population.

Key Words: risk factors, transobturator tape, stress incontinence, tension-free vaginal tape

Disclosure - Nothing to disclose.

Oral Presentation 23

Selection (Referral) Bias in Women Undergoing Vaginal Hysterectomy: The Mayo Clinic Experience

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Objectives: In the interest of quality improvement, hospitals may be compared on specific outcome criteria without appreciation for how patient selection may impact these measures. Our objective was to compare differences between referral and local patients undergoing total vaginal hysterectomy at the Mayo Clinic.

Materials and Methods: A historical cohort of women who underwent total vaginal hysterectomy for benign indications from January 2004 through December 2005 was evaluated. Residency was determined by zip code and separated into local patients (residents of the local county or the surrounding 6 counties) and referral patients (outside of the 7-county region). A chart review included the initial surgical consultation, operative note, inpatient and anesthesia records, direct patient communication, and postoperative examination. Comparisons between groups were made using the χ^2 test or Fisher exact test for nominal variables and the Wilcoxon rank sum test for continuous variables.

Results: The study cohort included 736 women. Local patients (N = 375) lived a median distance of 9 miles from Mayo Clinic, whereas referral patients (N = 361) came from a median of 134 miles away (IQR 68–275 miles). Local patients were younger (mean 49.3 vs. 54.5 years, $P < 0.001$), had higher body mass index (mean 28.7 vs. 27.6, $P < 0.001$) and were more likely to have private insurance ($P < 0.001$) than referral patients. In evaluating medical comorbidities, referral patients had more cardiovascular disease ($P = 0.001$) and prior myocardial infarction ($P = 0.007$). In contrast, local patients reported more tobacco use ($P < 0.001$) and asthma ($P = 0.037$). The severity- and age-weighted Charlson index was not different between the groups ($P = 0.11$). Referral patients were more likely to undergo vaginal reconstructive surgery ($P = 0.004$), had a higher ASA score

($P = 0.011$), and had a longer hospitalization ($P < 0.001$). There were no differences between the groups in the frequency of concurrent salpingectomy, oophorectomy, or midurethral sling surgery. In addition, the occurrence of perioperative complications within 9 weeks did not differ between referral and local patients (32.8% vs. 29.4%, $P = 0.32$).

Conclusion: No differences were observed in the complication rates between local and referral groups. Our findings suggest that the advantage of an academic center in managing more complex cases would be underestimated unless risk adjustment was performed during quality assessments. This is critical to accurately account for the impact of referral bias in quality improvement comparisons.

Key Words: vaginal hysterectomy, reconstructive surgery, patient-centered outcomes, selection bias

Disclosure - Nothing to disclose.

Tips and Tricks 1

The Use of Delayed Absorbable Monofilament Suture for Securing Synthetic Mesh to the Vagina During Abdominal Sacral Colpopexy

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Objective: To introduce an operative technique designed to reduce procedure time, risk of intraoperative needle stick injury, and potential postoperative complications while ensuring a secure fixation of polypropylene mesh to the vaginal wall at the time of an abdominal sacral colpopexy.

Description: Traditionally, synthetic mesh has been fixed to the vaginal wall during a sacral colpopexy using interrupted permanent suture material (braided or monofilament). By this method, the permanent suture is placed through partial thickness of the vaginal wall to avoid the complications of a prolonged foreign body reaction with the subsequent development of granulation tissue or dyspareunia secondary to vaginal suture erosion. This method of suture placement is tedious, increases operating time and, depending on the technique employed, may place the surgeon at risk of a needle stick injury. To overcome these limitations, we developed a technique in which delayed absorbable monofilament suture is used for synthetic mesh fixation. Accordingly, sutures were placed in an interrupted or continuous running manner along the anterior and posterior vaginal wall through the mesh and a full thickness purchase of the vaginal wall. Mesh material used was lightweight macroporous polypropylene. Experience: To determine the efficacy of our method, we performed an ancillary analysis of patients currently enrolled in two ongoing prospective IRB-approved research studies. Baseline data, including patient demographics and POP-Q measurements, were recorded. At 6 to 12 months postoperatively, a pelvic exam was performed in which the presence of suture erosions, granulation tissue, and mesh exposures were recorded. A POP-Q exam was also performed. Anatomic failure was defined as anterior or posterior points greater than -1 and a C that is $>$ TVL -2. Analysis: Records of 50 consecutive patients having undergone an abdominal sacral colpopexy were reviewed. Patients were predominately white (91.7%) and postmenopausal (80.7%). Average age was 58 $\pm$ 9 years with BMI of 28 $\pm$ 5 kg/m2. Mean follow-up period for the pelvic exam and POP-Q measurement was 7 $\pm$ 3 months. There were no suture erosions, granulation tissue or mesh exposures or anatomic failures. Preoperative and postoperative POP-Q measures were as follows: Aa: pre- 0.5 $\pm$ 2, post- -2 ± 1, ($P < 0.001$); Ap: pre- -1 ± 2, post- -2 ± 1, ($P < 0.001$); C: pre- 0 $\pm$ 4, post- -8 ± 1 ($P < 0.001$).

Conclusion: Delayed absorbable monofilament suture is a safe and effective alternative to permanent suture for securing synthetic mesh to the anterior and posterior vaginal wall at the time of abdominal sacral colpopexy. The technique of transmural suture allows for rapid and secure fixation of graft material with the potential to decrease operative time, intraoperative needle exposure and postoperative suture erosion. The time frame of suture absorption coincides with graft integration, thus reducing the long-term complications of graft placement failure.

Key Words: suture, mesh, colpopexy, absorbable, monofilament, sacral

Disclosure - Nothing to disclose.

Tips and Tricks 2

Tips for Managing Urethral Erosion After Tension-Free Synthetic Slings

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Objective: Our objective is to describe practical techniques for the management of urethral erosion after synthetic suburethral slings.

Description: These tips are derived from a series of 3 cases of urethral erosion referred to our institution between May and September 2007. This project received Institutional Review Board approval. Sling types included BioArc TOT (American Medical Systems AMS), TVT retropubic tape (Gynecare), and Uretex TO (Bard Urological). Sites of the midurethral erosion were graded as proximal, midurethral or distal. Initial urethroscopy was attempted in all cases to visualize the site of erosion, and then a 20Fr Foley catheter was placed. We were unable to insert a transurethral catheter in one case due to an obstruction from the eroded sling; therefore, a Walthard urethral dilator was used for tactile localization of the site of erosion and urethral palpation during dissection. Subsequently, we made an inverted U-shaped vaginal epithelial flap that encompassed the area of erosion. This type of incision may prevent future fistula formation in contrast to a longitudinal incision. Two or more layers were mobilized by splitting the vaginal muscularis and suburethral adventitial layer. The lumen of the urethra was opened last. In the case of a colorless sling, indigo carmine was used to stain the wall of the urethra and eroded sling during urethroscopy. Complete excision of the eroded sling was carried out. Urethroplasty was performed using a 4-0 delayed absorbable suture. At this time, a double-balloon Tratner catheter, traditionally used for urethrography, was inserted into the patient's urethra. The proximal and distal balloons were inflated and an indigo carmine solution was gently injected to assess for the integrity of the repair. The remaining layers were closed with 3-0 delayed absorbable sutures in a mattress fashion to minimize tension over the repair. In one case with a concomitant urethrovaginal fistula, a Martius bulbocavernosus fat pad graft was interposed between the vaginal muscularis and vaginal epithelium. Finally, vaginal wall closure was performed with a 2-0 delayed absorbable suture. All patients were sent home on the first postoperative day with an 18Fr Foley for 14 days.

Conclusion: Urethral sling erosions require individualized approaches for revision and reconstruction. Some useful tips for the management

of urethral erosion include creation of an inverted U-shaped vaginal epithelial flap for wide tissue mobilization and exposure, use of Walthard dilators as urethral stents in cases of stenosis, staining colorless synthetic sling sites of mesh erosion with indigo carmine for identification during vaginal dissection, use of a double-balloon Tratner catheter to identify a urethrovaginal fistula and to assess for a "watertight" repair, and interposition of a bulbocavernosus fat pad graft in cases of compromised tissue.

Key Words: urethral erosion, Martius flap, tension-free synthetic sling, urethroplasty

Disclosure - Nothing to disclose.

Tips and Tricks 3

Martius Flap to Correct Mesh Erosion Following a Remeex Adjustable Sling for Recurrent Stress Incontinence

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Objective: Recurrent stress urinary incontinence (SUI) and vaginal mesh erosions following synthetic midurethral slings can be difficult to manage. Excision of the exposed mesh is often necessary and may lead to worsening of SUI symptoms. The new suburethral sling, termed a tension-free readjustable tape, Remeex (Neomedic International SL, Spain), uses minimal mesh and enables tensioning of the sling several days or even several years following the procedure. One concern that has not yet been addressed in the literature is how to manage mesh erosion with a sling that is suspended and tensioned solely by monofilament sutures without compromising continence. The Martius procedure has been well described for the repair of vesicovaginal and rectovaginal fistulas. Our objective is to report a case in which a Martius flap was used to repair vaginal mesh erosion following the placement of an adjustable sling.

Description: A 53-year-old multiparous woman had a surgical history of a vaginal hysterectomy, anterior repair with prolene mesh, and midurethral sling, which was complicated by mesh infection and partial mesh excision a few months later. At the time of presentation, the patient reported chronic discharge and mixed urinary incontinence with predominant stress incontinence symptoms. On exam, urethral hypermobility and a vaginal mesh erosion measuring 0.5cm × 0.5 cm at the level of the bladder neck were noted without evidence of infection. Urodynamic testing revealed a leak point pressure of 121cm H_2O, no evidence of detrusor overactivity, and a capacity of 500 cc with a low postvoid residual. The patient was started on vaginal estrogen and then underwent surgery for excision of the exposed mesh and placement of an adjustable sling, ReMeex. This procedure was complicated by an incidental cystotomy but resulted in a complete resolution of stress urinary incontinence and improvement of urgency symptoms without evidence of voiding dysfunction. The sling was tensioned 4 days after the procedure in the office using a cough stress test. Three months postoperatively, the patient had a recurrence of mesh erosion measuring 1cm × 0.5cm at the level of the midurethra on the same side as the prior erosion. To avoid recurrence of stress urinary incontinence, the decision was made to leave the sling in place and use a Martius flap to cover the exposed mesh. The procedure was uncomplicated, and the vaginal mucosa was released from the underlying fibrotic tissue and closed without tension. The postoperative course was complicated by a labial hematoma and mild labial pain, which resolved within a few weeks. The patient did have a recurrence of urge incontinence, which was treated with anticholinergic medication. At 6 months follow-up from the Martius flap, the patient remained continent, and both the vaginal mucosa and labia were well healed and non-tender on exam.

Conclusion: This is a successful case report of the use of a tension-free readjustable sling to treat recurrent SUI. A Martius flap may be used to treat recurrent vaginal mesh erosion.

Key Words: mesh erosion, sling, recurrent stress urinary incontinence

Disclosure - Nothing to disclose.

Tips and Tricks 4

The Transverse Defect Repair

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Objective: Background: A transverse defect (TD) is one of the three common causes of cystocele as described by A. Cullen Richardson. Loss of the anterior fornix demonstrates a TD. Following vaginal hysterectomy (VH), physiologic support of the posterior and anterior apex to the intermediary portion of the uterosacral ligament is performed as a high uterosacral vaginal vault suspension (HUS). Following a VH, the large gap left at the anterior apex by the cervical absence, the TD, and the open peritoneum, can be fully repaired and the anterior apex well supported by utilizing a transverse defect repair (TDR). It can also be used specifically to correct a transverse defect as part of an anterior colporrhaphy (AC).

Description: The crux of the TDR is bilaterally attaching the anterior and posterior lateral apices to the cardinal ligaments. The cardinal ligament is prepared by limiting the pedicle to the connective tissue, sparing the uterine vessels, and held. A 0-Prolene suture is sewn first to the anterior lateral apex, then to the cardinal ligament 2 cm proximal to its cut-edge and finally, to the posterior lateral apex. Just before placing the suture through the cardinal ligament, the ureter is palpated to assure avoidance. One centimeter from each cut-edge a 1-cm needle passage through the anterior and posterior apical skin spares the vaginal lumen. The third suture, using 0-PDS approximates the midline apex and helps close the cuff. If a posterior wedge and an anterior colporrhaphy is performed, this suture is placed through all four medial apical corners. Cystoscopy with indigo carmine performed once after the TDR and HUS sutures are tied should demonstrate projectile dye from each ureteral orifice.

Conclusion: The TDR added to the HUS appears to provide excellent support to the vaginal apex either following a VH or as part of an AC for a TD cystocele. TDR should be viewed as a complement to the HUS; NOT as an HUS replacement. It is easy to perform, requiring less deep exposure than the HUS, but one must, as meticulously as with the HUS, avoid the ureters.

Key Words: apical suspension, cystocele, site-specific defect repair, cardinal ligament suspension, transverse defect

Disclosure - Nothing to disclose.

Tips and Tricks 5

Transvaginal Repair of Incidental Cystotomy Using a Pediatric Foley Catheter: A Useful Approach When Access Is Difficult

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Objective: To describe the use of a pediatric Foley catheter to facilitate the transvaginal access and repair of incidental cystotomy.

Description: Bladder laceration is a complication that may be encountered at the time of vaginal surgery. With the recent proliferation of increasingly complex vaginal surgical procedures, cystotomy may occur in locations that are technically difficult to repair transvaginally. The use of a pediatric Foley catheter to access and facilitate repair of such an incidental cystotomy at the time of vaginal surgery will be described. The presentation will include artist rendered illustrations, with detailed step-by-step explanation of the technique.
Essential steps include: 1. identification of cystotomy site, 2. advancement of 12Fr pediatric Foley catheter through identified cystotomy and inflation of balloon within the bladder, 3. application of gentle traction to Foley so that it functions as a lever to enhance exposure and to gain surgical access of the defect; 4. purse string or interrupted approximation of defect with a 00 absorbable suture, 5. tying of purse string or interrupted sutures after deflation of balloon and removal of pediatric Foley catheter, 6. imbricating layer, 7. cystourethroscopy.

Conclusion: Use of a pediatric Foley catheter to facilitate the transvaginal repair of an incidental cystotomy is a simple and effective option for a gynecologic surgeon when faced with this intraoperative challenge. We have used this technique to transvaginally repair relatively straightforward, as well as technically exacting incidental cystotomies. In all such cases, we have encountered no difficulty and have achieved excellent outcomes.

Key Words: cystotomy, Foley, transvaginal, repair

Disclosure - Honorarium: Ethicon / Gynecare, surgical education.

Tips and Tricks 6

In-office Placement of Rectovaginal Fistula Plugs

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Objective: To demonstrate the feasibility of placing rectovaginal fistula plugs in the outpatient office setting. Our patient is a 25-year-old gravida 1 para 1 who is 8 months status post a spontaneous vaginal delivery complicated by postpartum rectovaginal fistulas. Surgisis Biodesign rectovaginal fistula plugs (Cook Medical) were utilized in this case study.

Description: Due to financial limitations and insurance constraints, our patient was unable to undergo rectovaginal fistula repair in the operating room. Placement of a rectovaginal fistula plug was arranged in the outpatient office setting. Prior to the procedure, the patient was placed on a clear diet and underwent bowel prep. She was treated with antibiotics both preoperatively and postoperatively. Upon arrival in the outpatient office, she was given Valium and Vicodin. A pudendal block was administered and she was placed in the prone position. The Surgisis Biodesign rectovaginal fistula plugs, which are derived from porcine small intestine submucosa, were rehydrated in sterile saline prior to the start of the procedure. An anal retractor was placed and a topical anesthetic applied to the mucosa. Two rectovaginal fistula tracts were identified with sterile probes. The first was 2.5 cm proximal to the hymen and measured 3 to 4 mm in size, the second was just proximal to the introitus and measured 1 to 2 mm. The fistula tracts were flushed with peroxide. A 4-mm Surgisis Biodesign rectovaginal fistula plug was guided through the most proximal tract from the rectum to the vagina. Gentle traction was applied to the plug from the vaginal side so that the plastic button on top of the plug was flush with the rectal wall. The button was then sutured in place down to the level of the rectal submucosa with four figure of eight stitches using 3-0 vicryl. The more distal fistula tract was again flushed with peroxide, and a 2-mm Surgisis Biodesign rectovaginal fistula plug was placed in a similar fashion. Proper placement of both plugs was confirmed. The excess portions of both plugs were then trimmed flush with the vaginal wall. The patient tolerated the procedure well and left the clinic in good condition. She was instructed to maintain a liquid diet for an additional 3 days and to use a stool softener. She was continued on prophylactic antibiotics. At 2-week follow-up, both buttons were noted at the anal verge and were removed. By patient history there was no evidence of plug displacement, and this was confirmed on exam. The patient is currently doing well with no subjective anal incontinence and is healing appropriately.

Conclusion: This case report describes the in-office placement of rectovaginal fistula plugs. This technique should be considered in those patients with rectovaginal fistulas who are unable to undergo treatment in a formal operating room setting.

Key Words: rectovaginal fistula, fistula plug, Surgisis Biodesign

Disclosure - Nothing to disclose.

Tips and Tricks 7

Preparation of Mesh to Optimize Attachment During Robotic-assisted Laparoscopic Sacrocolpopexy

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Objective: To expedite attachment of sacrocolpopexy mesh to the vagina during robotic-assisted laparoscopic sacrocolpopexy through preparation prior to insertion into the abdomen. We have devised a method to utilize the mesh's memory rather than forcing the surgeon to work against it intracorporeally.

Description: We use a polypropylene, wide-pore mesh that is tailored to be approximately 2.5 cm wide. Two pieces, one measuring about 9 cm long and the other measuring about 4 cm long, are sutured together using three interrupted stitches of a permanent suture to form a Y-shaped piece of mesh. Further tailoring of the size of the mesh can be done intracorporeally as necessary. The "posterior wall" portion of mesh is marked at its inferior midline with a single, interrupted stitch of permanent suture material with the needle left intact. This suture will then be used to begin the posterior attachment, which we prefer as the initial site of attachment. An interrupted stitch of any suture material is also placed at the "sacral" area of the mesh, again leaving the needle attached. This is later used to suspend the mesh from the anterior abdominal wall while it is sutured to the posterior wall of the vagina. The "anterior wall" portion of the mesh is rolled inward and sutured in place using a loosely tied knot. This portion of mesh is thus kept out of the surgeon's vision during the posterior attachment. When it is time for the anterior attachment, this portion of mesh will unroll such that it will apply itself onto the anterior wall of the vagina to facilitate suturing. The abdominal suspension stitch and this loose knot can then be easily cut under visualization with laparoscopic scissors after completion of the posterior attachments. The entire Y-shaped mesh piece including the two needles can be rolled up and inserted without difficulty into the abdomen through the assistant port.

Conclusion: This technique for mesh preparation facilitates vaginal attachment of the mesh during robotic-assisted laparoscopic sacrocolpopexy.

Key Words: robotic surgery, laparoscopic surgery, sacrocolpopexy

Disclosure - Nothing to disclose.

Oral Poster 1

Complications From Vaginally Placed Mesh in Pelvic Reconstructive Surgery

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Objectives: As the use of synthetic materials in prolapse surgery increases, so do their related complications. We present a case series of complications associated with transvaginal mesh use in referral patients.

Materials and Methods: From January 2003 to September 2007, patients with complications following vaginally placed mesh were included. Patients with a history of mesh abdominal sacrocolpopexy or synthetic suburethral slings were excluded, unless done with other vaginal reconstructive procedures utilizing mesh. Demographic, clinical, and surgical information was abstracted.

Results: Twenty-one patients met inclusion criteria. Mean age at the time of referral was 61 ± 11.5 years (95% CI; 55.4–65.9) and median BMI was 24.5 cm/m2 (range; 20.6–36.8). All patients were originally treated for prolapse. Mesh kits were used in 9 patients (43%), prolene mesh augmentation of the anterior or posterior compartment in 5 (24%), apical suspensions using IVS tunneler in 4 (19%) and it was unspecified in 3 (14%). Surgeries were performed by general obstetricians/gynecologists in 10 patients (48%), urologists in 9 (43%), and urogynecologists in 2 (9%). Eleven patients (52%) underwent more than one procedure prior to referral. The median number of previous related surgeries was 2 (range 1–6). Only 14% of patients were referred by the original treating surgeon, whereas 48% were referred by an alternate physician, and 38% were self-referred. Sixteen patients (76%) were managed surgically with complete vaginal mesh excision in 12 patients, excision of eroded mesh from bladder and urethra in 2, anterior colporrhaphy in 5, posterior colporrhaphy in 7, vault prolapse repair in 5, autologous rectus fascia sling in 4, mesh abdominal sacrocolpopexy in 3. Mean operating time was 2.8 hours ± 1.4 (95% CI; 2.0–3.6) and median estimated blood loss was 300 mL (range 75–2200). Three patients (19%) required reoperation for recurrent stress incontinence, persistent pelvic pain, and ureterovaginal fistula repair, respectively. Five patients (24%) were managed conservatively utilizing vaginal estrogen, vaginal dilators, pessary, and physical therapy. A follow-up survey among all patients showed a dyspareunia rate of 41%.

Conclusion: Synthetic mesh use in pelvic reconstructive surgery is not without serious complications. Multiple surgeries to address these complications are common and bothersome symptoms may persist. Dyspareunia and recurrent prolapse are common reasons for referral.

Key Words: dyspareunia, mesh erosion, minimally invasive, mesh kits

Disclosure - Nothing to disclose.

Oral Poster 2

Complications Requiring Reoperation Following Vaginal Mesh Kit Procedures For Prolapse

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Objectives: To characterize patients' presenting symptoms and our management of vaginal mesh-related complications requiring operative intervention.

Materials and Methods: Surgical billing records of all reconstructive pelvic surgeons (4 urogynecologists, 1 urologist) at the University of Michigan were queried for the excision of any vaginal graft material from 1997 to 2007. Operative records were reviewed, and only women who had undergone vaginal mesh placement for the correction of pelvic organ prolapse (POP) were included in our analysis. We describe the symptoms, complications, and management of 10 consecutive women treated at our institution for vaginal mesh-related complications.

Results: We identified 10 women who had undergone a removal, excision, or transection of vaginal mesh placed to treat POP. Although we queried billing records from the past 10 years, all cases were performed in the past 2 years. All 10 women were referred from outside institutions where their original vaginal mesh surgery had been performed. Seven women presented with mesh erosions and pain, 2 had vaginal pain syndromes without erosion, and 1 had an infected mesh and vaginal abscess. One woman with mesh erosion had a concurrent vesicovaginal fistula, and another had a concurrent rectovaginal fistula. Presenting symptoms included vaginal pain (80%), dyspareunia and/or partner pain with intercourse (88% [7/8 sexually active women]), vaginal bleeding and/or discharge (30%), leakage of urine from vagina (10%), stool and gas per vagina (10%). Five women had both anterior and posterior vaginal mesh, 2 had anterior mesh only, and 3 had posterior mesh only. All meshes were from the Apogee and/or Perigee system, confirmed by original operative report. The median age of patients was 52 years (range 39–71), median BMI was 26 m/kg2, and all women were white. The median time from original mesh surgery to presentation at our institution was 7 months (range 1–16). All women underwent transvaginal mesh excision. Three women had concurrent surgeries at the time of the index mesh excision, including rectovaginal fistula repair, autologous fascia pubovaginal sling placement, and colpocleisis. Repair of the vesicovaginal fistula was deferred to allow for tissue healing. Four women required subsequent procedures following the index mesh excision procedure, including: two additional mesh excision procedures, one additional mesh excision with concurrent autologous fascia pubovaginal sling for recurrent stress incontinence, and one uterosacral ligament suspension for recurrent POP. Median postoperative follow-up time was 4 months (range 2 weeks to 2 years). No woman had any mesh exposure at follow-up. Eighty eight percent (7/8) of the women who initially presented with vaginal pain had resolution of this pain postoperatively; 40% (2/5) of women who were sexually active postoperatively had persistent dyspareunia.

Conclusion: Vaginal mesh placement for POP can be associated with pain, erosion, and fistula formation. In this series, 4 in 10 women who presented with these complications required more than one operation to correct their problem.

Key Words: mesh erosion, surgical complication, vaginal mesh, Apogee, Perigee

Disclosure - Nothing to disclose.

Oral Poster 3

Early Experience With Mesh Excision for Adverse Outcomes After Transvaginal Mesh Placement Using Mesh Prolapse Kits

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Objectives: To determine the indications, types of complications, and postoperative outcomes in patients choosing to undergo removal of vaginal mesh previously placed for the treatment of pelvic organ prolapse.

Materials and Methods: The electronic medical record was reviewed for all patients who underwent surgical excision of transvaginal mesh from January 1, 2005 to October 1, 2007, at a tertiary care medical center. Patients were identified by searching the medical record using ICD-9 codes (57295 revision or removal of prosthetic vaginal graft [vaginal approach] and 57296 revision or removal of prosthetic vaginal graft [abdominal approach]). At time of last follow-up, patients reported degree of pain using a 10-point scale, level of improvement, sexual activity, and continued symptoms.

Results: Sixteen patients were identified as having undergone mesh excision during the study time period. The mean age (± SD) was 58.8 (±11.7) years, the median parity was 3 (range 1–7), and 88% had undergone previous hysterectomy. All patients except for one (94%) had undergone either anterior or total Prolift and all except for one (94%) sought surgical care from a physician other than the one who originally placed the transvaginal mesh. The indication for removal was chronic pain (31%), dyspareunia (31%), recurrent pelvic organ prolapse (50%), mesh erosion (56%), and vesicovaginal fistula (6%), with most patients (69%) citing more than one reason. The median latency to presentation for treatment was 21 (range 0–84) weeks, while the median latency to surgical intervention was 59 (range 10–105) weeks. Fifty percent underwent additional surgery to correct recurrent pelvic organ prolapse at the time of mesh excision. The surgical approach was vaginal in 81% of cases, whereas 13% used a combined vaginal and laparoscopic approach, and 6% used a combined vaginal and abdominal approach. The mean estimated blood loss was 188 mL (±146), the mean postoperative length of stay was 2.3 (±2.7) days, and there were no major intraoperative complications or blood transfusions. Thirteen patients (81%) were available for follow-up. Median follow-up time was 20 (range 3–61) weeks. Patients reported a median pain score of 0 (range 0–8), with 85% reporting improvement of their initial complication. All but 1 patient stated they would undergo mesh excision again and 92.3% stated that, knowing what they now know, they would not have transvaginal mesh placed. After mesh excision, no patient complained of significant vaginal bleeding or discharge, but 15% complained of a bulge or something falling in the vaginal area, and only 30.7% were currently sexually active.

Conclusion: Indications for removal of vaginal mesh include chronic pain, dyspareunia, recurrent prolapse, and mesh erosion. Mesh removal appears to be safe with a low complication rate and high relief of symptoms, although some symptoms can persist.

Key Words: prolapse, Prolift, mesh, mesh complication, excision

Disclosure - Nothing to disclose.

Oral Poster 4

Does Total Vaginal Mesh Cause Dyspareunia?

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Objectives: To assess the rate of de novo dyspareunia with the Prolift (Ethicon, Somerville, New Jersey) system.

Materials and Methods: All cases of Prolift performed between August 2005 and August of 2007 were evaluated. Patients were contacted by phone to assess sexual activity and obtain informed consent. Those that were sexually active were mailed a validated, condition-specific sexual function questionnaire (PISQ-12), and a 7-item dyspareunia-specific nonvalidated questionnaire with a self-addressed, stamped return envelope enclosed. The rate of de novo dyspareunia was calculated. Type (insertional, deep penetration, etc) and degree (mild, moderate, severe) of dyspareunia were assessed. Demographics, failure rate, and willingness to have the surgery again were also assessed and summarized using descriptive statistics.

Results: One hundred twenty-eight Prolift cases were performed during the study period. Sixty-eight (53%) were not sexually active. Of the remaining 60 sexually active patients, 11 had not yet resumed intercourse but have enrolled in the study and will be evaluated over the next several months. Forty-nine were currently sexually active and were mailed questionnaires. Thirty-three patients responded (67.3%). Seven (21.2%) of the 33 sexually active patients who responded had dyspareunia preoperatively. Eight (24%) developed de novo dyspareunia. Of the 7 that had dyspareunia before surgery, 1 (14.3%) reported worsened pain after surgery, 2 (28.6%) reported no change in pain after surgery, and 4 (57.1%) reported improvement in pain after surgery. Four (57%) of the 7 patients described their pain as mild, the other 3 (43%) reported moderate pain. Of the eight patients with de novo dyspareunia, 2 (25%) described the pain as mild, 3 (37.5%) as moderate, and 3 (37.5%) as severe. Three (37.5%) described pain with insertion only, 0 (0%) with deep penetration only, 2 (25%) described pain throughout the act of intercourse, and 3 (37.5%) described pain with insertion and deep penetration only. Overall PISQ-12 score for sexually active patients postoperatively was 34. All patients who were not sexually active after surgery (N = 68) were contacted to evaluate their reasons for inactivity. None was due to pain (no partner (40.6%), impotence (23.4%), age/lack desire (36%)), and all were sexually inactive before surgery. Average age, parity, BMI, preoperative prolapse stage and use of hormone therapy was similar for all groups. Average follow-up time was 6 months, and failure rate was 5.5% (7/128). Twenty-eight of the 33 patients evaluated (85%) believed the Prolift procedure improved their quality of life and would have the surgery done again.

Conclusion: The Prolift procedure may be associated with a high (24%) de novo dyspareunia rate. Most patients described mild or moderate pain, particularly with insertion. Despite this, 85% of sexually active patients were overall satisfied with their results and would have the surgery done again.

Key Words: dyspareunia, Prolift, total vaginal mesh

Disclosure - Nothing to disclose.

Oral Poster 5

Loss of Uterosacral Ligament Smooth Muscle Cells in Women With Uterine Prolapse Is Due to Apoptosis

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Objectives: The purpose of this study was to compare the smooth muscle content and apoptosis of the uterosacral ligament in women with and without uterine prolapse.

Materials and Methods: Complete cross-section of uterosacral ligaments were sampled 1 cm from the cervix in women with (n = 6)

or without (n = 6) uterine prolapse undergoing hysterectomy. Smooth muscle cells of the uterosacral ligament were identified by immunohistochemistry with antibodies to smooth muscle actin and caldesmon. Digital image analysis was used to determine the fractional area of nonvascular smooth muscle in the histologic cross-sections. Apoptosis was assessed by terminal nick-end-labeling method. The apoptotic index was determined by counting a total of at least 300 smooth muscle nuclei subdivided in 10 fields chosen randomly. Continuous data were compared using Student *t* test, if the distribution of samples was normal, or the Mann-Whitney U test, if the sample distribution was asymmetrical.

Results: There was no significant difference in menopausal status or hormone replacement therapy between the two groups. The stage of uterine prolapse was significantly higher in the group of women with uterine prolapse compared to the group without prolapse {median, range, *P* [3 (2–3) vs. 0 (0)], 0.002}. The fractional area of nonvascular smooth muscle in the uterosacral ligament of women with uterine prolapse was significantly decreased compared to women without prolapse (0.26 ± 0.12 vs. 0.39 ± 0.06, $P = 0.026$). In the uterosacral ligament of women with uterine prolapse the apoptotic index was significantly higher compared to women without prolapse (0.18 ± 0.06 vs. 0.08 ± 0.04, $P = 0.02$).

Conclusion: The fraction of smooth muscle in the uterosacral ligaments is significantly decreased in women with uterine prolapse compared to normal subjects. Significantly higher apoptotic index in the USL of women with uterine prolapse may account for the decreased smooth muscle content. Increased smooth muscle apoptosis in the uterosacral ligaments may play a role in the development of uterine prolapse.

Key Words: prolapse, apoptosis, uterosacral ligament, smooth muscle cell

Disclosure - Nothing to disclose.

Oral Poster 6

Comparison of Perioperative Variables for the Placement of Minimally Invasive Slings When Performed by Different Specialties

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Objectives: To assess whether there are differences in perioperative variables for the placement of minimally invasive suburethral slings when performed by general gynecologists, urogynecologists, and urologists.

Materials and Methods: This retrospective chart review was granted exempt status by the institutional review board. Using CPT diagnosis codes and operating room (OR) records, we identified all patients who underwent placement of a minimally invasive sling as sole procedure at our institution in 2006. Not included were sling placements performed concomitantly with any other procedure. Hospital records were reviewed on all subjects. Demographics, diagnosis, approach to sling placement, OR time, and operative complications were extracted. Variables were compared by specialty and by the number of cases performed per provider that year (< 5 cases, 6–20 cases and >20 cases) using χ^2, ANOVA, and Kruskal-Wallis testing. A value of $P < .05$ was considered significant.

Results: We identified 108 subjects, who met inclusion criteria, with a mean age of 52.5 years [range 29–83], and a mean BMI of 28.8 [16.6–47.0]. Eight subjects (7.4%) had undergone a prior incontinence procedure. There were no significant differences in demographics and comorbidities among subjects when grouped by surgical specialty. Of all cases, 58 (53.7%) were performed by urogynecologists, 33 (30.6%) by general gynecologists and 17 (15.7%) by urologists.

The mean operative time for surgeons performing >20 cases/year was lower than that of surgeons performing 6 to 20 cases/year and <5 cases/year (36 min. vs. 47min. and 53 min., respectively, $P < 0.002$). The estimated blood loss (EBL) was lowest for surgeons performing the most cases/year. Contrary, an EBL of >200 cc was most common for surgeons performing < 5 cases/year (18.2% vs. 9.8% and 0% for <20 and >20 cases/year, respectively, $P = 0.018$). There was no difference in the rate of recognized bladder perforation or immediate postoperative urinary retention between the specialties.

Conclusion: Although different specialties favored different approaches to the placement of minimally invasive slings, there were few significant differences for most other operative parameters. The operative time was lowest for urogynecologists. In general, operative time and EBL were inversely related to the number of slings placed by provider.

Limiting this evaluation to minimally invasive slings done as the sole procedure has the advantage of limiting confounding variables that might be introduced by the addition of concomitant surgery. However, it also prohibits us from drawing any conclusion on the impact additional procedures might have. Furthermore, perioperative observations do not provide information on success rate and long-term outcomes. These are the focus of a separate, prospective study.

Key Words: complications, suburethral sling, perioperative outcome, specialties

Disclosure - Nothing to disclose.

Oral Poster 7

Does Pessary Use Improve Sexual Function?

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Objectives: To compare sexual function changes in patients who continue to use pessaries to those who discontinue use.

Materials and Methods: This is a secondary analysis of a prospective cohort study. Women successfully fitted with pessaries for treatment of prolapse and/or urinary incontinence from September 2004 through January 2006 were eligible to participate. Patients enrolled in the study completed the 12-item validated and reliable Intimate Relationship Scale (IRS) before pessary placement and again at 6- to 12-month follow-up. History, physical exam and demographic information were gathered. Total IRS scores were compared in those who continued pessary use versus those who did not; lower IRS scores indicate poorer sexual function. Fisher exact and Student *t* test used where appropriate. Significance set at $P < 0.05$

Results: Eighty women enrolled in the study and 64 (80%) had complete follow-up data. Of these 64 women, 38 (60%) reported that they were sexually active. Mean age of sexually active women was 47.2 years (± 8.8), mean parity was 2.4 (± 1.0), the majority had Stage II prolapse (22/37 = 60%), and a minority had prior incontinence or prolapse surgery (2/37 = 5%). Fifty-five percent (21/38) of sexually active women continued pessary use at 6 to 12 months, and 45% (17/38) discontinued use. No sexually active woman

became inactive after pessary placement. Pessary discontinuation and continuation groups did not differ in age, body mass index, menopausal status, ethnicity, parity, prior prolapse or incontinence operations, or prolapse stage. (all $P < 0.05$).

IRS total scores were not different between groups at baseline (34.9 ± 5.6 continued vs. 35.9 ± 4.8 discontinued, $P = 0.60$) and IRS scores improved in both groups at 6- to 12-month follow-up compared to baseline (34.9 ± 5.6 to 45.3 ± 10.6 continued group and 35.9 ± 4.8 to 37.4 ± 3.5 discontinued group). Women who continued pessary use had greater improvement in IRS scores than women who discontinued use (10.5 point change in scores from baseline in continued vs. 0.4 point change in the discontinued group, $P = .04$). Women who continued pessary use reported more or much more desire for intercourse than women who discontinued use (50% vs. 0%, $P = 0.03$), but no increase in frequency of sexual activity or satisfaction with sexual activity (all $P > 0.05$).

Conclusion: Pessary use does not impair sexual activity among sexually active women and improves sexual function as measured by the IRS in women who continue to use their pessary.

Key Words: sexual function, pessary, IRS

Disclosure - Nothing to disclose.

Oral Poster 8

Incidence and Patient Characteristics of Vaginal Cuff Dehiscence After Robotic Hysterectomy

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Objectives: To determine the incidence of vaginal cuff dehiscence after robotic hysterectomy and compare it to other modes of hysterectomy and to review the characteristics of patients who developed vaginal cuff dehiscence.

Materials and Methods: This is a retrospective review of all vaginal cuff dehiscence cases requiring surgical closure of the vaginal cuff after robotic, abdominal, vaginal, and conventional total laparoscopic hysterectomy from January 1, 2000 to August 31, 2007. Extracted data from patient records included time of onset, trigger event, presenting symptoms, bowel evisceration, type of surgical repair, and follow-up.

Results: Twelve patients with mean age 46.5 (SD 12.1) years who had vaginal cuff dehiscence were identified among 2213 hysterectomies. The overall incidence of vaginal cuff dehiscence after all modes of hysterectomies was 0.54%. All patients with vaginal dehiscence received preoperative prophylactic antibiotics at the time of hysterectomy. Of 275 patients who underwent robotic hysterectomy, 6 (2.2%) had vaginal cuff dehiscence, compared to only 2 (0.15%) of 1461 patients who had vaginal hysterectomy (RR 15.9; 95% CI: 3.2–78.4, $P < 0.01$), and 1 (0.57%) of 175 patients who had total laparoscopic hysterectomy (RR 3.8; 95% CI 0.5–31.4, $P = 0.25$) and 3 (0.99%) of 302 patients following total abdominal hysterectomy (RR 2.16; 95% CI 0.5–8.7, $P = 0.32$). Among the 12 patients with vaginal cuff dehiscence, 6 (50%) patients were smokers, 3 (25%) patients had a history of gynecologic malignancy, and 5 (42%) patients were overweight (BMI> 25). Sexual intercourse was the triggering event in 7 (58%) patients, and 4 (42%) patients had spontaneous dehiscence. Seven (58%) patients presented with vaginal bleeding, 5 (42%) patients with serosanguinous vaginal drainage, and 4 (33%) patients with pelvic pain. The median time between the hysterectomy to vaginal dehiscence was 7 weeks. Four patients (33%) had bowel evisceration into the vagina. Eleven (92%) cases were repaired vaginally and 1 (8%) case was repaired with a combined vaginal and laparoscopic approach. There were no cases of recurrent vaginal dehiscence. Mean follow-up period was 2.2 months.

Conclusion: Robotic hysterectomy is associated with a higher incidence of vaginal cuff dehiscence, especially when compared to vaginal hysterectomy. Vaginal cuff dehiscence, although not a frequent complication of hysterectomy, should be considered in patients presenting with vaginal bleeding, serosanguinous vaginal drainage, or acute pelvic pain.

Key Words: hysterectomy, robotic, dehiscence

Disclosure - Nothing to disclose.

Oral Poster 9

Malignant Bowel Obstruction in Advanced Ovarian Cancer: Surgical Versus Nonsurgical Management

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Objectives: Ovarian cancer (OC) patients with malignant bowel obstruction (MBO) present a clinical dilemma in the management of palliation. This study evaluated all patients diagnosed with MBO in an attempt to identify factors that predicted management, outcomes, and overall survival (OS).

Materials and Methods: Previously cytoreduced OC patients admitted to our institution from 1994 to 2004 with a diagnosis of MBO based on inability to tolerate oral intake, clinical presentation, and radiologic findings, were identified. Histories were abstracted for age, symptoms, ASA status, albumin, number of prior admissions for obstruction, diet on dismissal, length of stay, and OS. A successful outcome was defined as the ability to tolerate a general diet on dismissal. Predictors of a successful outcome were identified. Additionally, preoperative characteristics were compared between the surgically and nonsurgically treated patients. Successful surgery was defined as removal of obstruction through resection, bypass or diversion, excluding open gastrostomy only, and factors associated with successful surgical intervention were evaluated. Major complications were defined as: enteric leak/fistula, short bowel syndrome requiring parenteral nutrition, sepsis, or death.

Results: Seventy-seven patients met criteria for MBO. The mean age was 57.1 years and mean albumin 3.0 g/dL ± 0.8. Sixty-four (85%) patients had ASA status of 2–3, whereas 11 (15%) had ASA status of 4. On admission, 55 (85%) patients could tolerate NPO/clears only. However, 59% of patients were discharged on a general diet. Forty-five (58%) patients were surgically managed compared to 32 nonsurgical patients. Successful surgery (defined as removal of obstruction) was achieved in 37/45 (82%), with a major complication rate of 27%. Complications were significantly higher in the surgical patients undergoing resection/bypass versus gastrostomy alone (12/37 vs. 0/8). Surgical management was the only factor predictive of resuming general diet on dismissal ($P < 0.0001$), while age, albumin, ASA status, diet on admission, and number of prior admissions were not predictive of outcome. Fewer prior admissions ($P = 0.024$) and ASA status of 2–3 ($P = 0.005$) were associated with the decision to perform surgery in univariate analysis. The 3-month OS for the surgically treated group was 71.1% compared to 6.5% in the nonsurgical group. The 3- and 6-month OS for successful versus unsuccessful surgery were 81.1% and 47.5% versus 25% and 0%, respectively.

Conclusion: Surgical management of MBO is more likely to be associated with successful resumption of a general diet and improved OS, but is associated with significant operative morbidity and mortality. Patients with poor performance status are less likely to undergo surgical palliation and, therefore, comfort measures should be initiated to maximize quality of life. Clear communication with patients and their families of the overall poor prognosis and inherent risks associated with treating MBO will enable more appropriate tailored therapy.

Key Words: surgery, malignant bowel obstruction, ovarian cancer

Disclosure - Nothing to disclose.

Oral Poster 10

Endometrioma in Abdominal Wall Incisions

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Objectives: To investigate the outcome of patients with incisional endometrioma and to correlate the role of predisposing factors such as previous surgery, incision type, exteriorizing of uterus at cesarean section, wound irrigation, and the presence of intra-abdominal endometriosis.

Materials and Methods: A retrospective chart review of patients from the Regional Medical Center at Memphis with incisional endometriomas identified through review of billing records of a 10-year period was performed. Prior surgery, incision type, uterine exteriorization at cesarean section, wound irrigation, mass size at diagnosis and surgery, location fascial involvement, and need for fascial or rectus muscle resection or mesh placement was noted.

Results: Fifteen patients were identified but 3 charts were unobtainable, leaving 12 patients for analysis. All had cesarean section through a transverse incision as their last surgery. Only 6 cesarean operative reports were available for review. Five noted uterine exteriorization and 3 noted incision irrigation; the remainder did not comment on either procedure. Mean patient age was 29.2 ± 5.6 years (range 25–41). The median number of prior surgeries was 2 (range 1–5), time to symptoms from last surgery was 25.9 ± 32.6 months (range 1–86), and time from symptoms to surgery 44.2 ± 33.0 months (range 10–108). The majority 9/12 (75%) were located on the left of the incision with one case each located umbilical, midline, or right of incision. The mean preoperative mass size was 3.5 ± 1.8 cm (range 7–10). The mean mass size noted at surgery was 3.7 ± 1.5 cm (range 1–8). There was no statistical difference between the size noted preoperatively or at surgery ($P = 0.54$). The endometrioma was located above the fascia in 8 patients, required fascial resection only in 3 patients, and fascial and rectus muscle resection in 2. Mesh placement was required in 2 patients. Mass size did not correlate with need for mesh placement ($P = 0.21$). Endometrioma was confirmed by pathology in all cases. No patient had a prior history of endometriosis. No patient had known recurrence after endometrioma resection.

Conclusion: The majority of incisional endometriomas have been noted to occur after cesarean section. In this series, all cases occurred after cesarean section, although this may have been biased by the studied patient population. Unfortunately, the quality of operative notes from the prior cesarean section did not allow the effect of uterus exteriorization or wound irrigation to be evaluated to determine if either practice alters the incidence of incisional endometrioma. Symptoms occurred from months to years after the precipitating surgery. Of interest, the vast majority of endometriomas occurred on the left of a transverse incision with only one case right of midline. Whether this is coincidental or related to some unknown procedural process during cesarean section remains undetermined. Although it has generally been believed that the endometrioma size found at surgery is frequently smaller than believed on preoperative exam, this was not confirmed in our study. Likewise, endometrioma size did not correlate with the need for mesh placement. Incisional endometriomas are not uncommon but predisposing factors with the exception of prior cesarean section still remain unknown.

Key Words: endometrioma, incision, abdominal wall

Disclosure - Nothing to disclose.

Oral Poster 11

Mental Imagery Prior to Cystoscopy: Does It Make a Difference? A Randomized Controlled Trial

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Objectives: To determine whether mental imagery sessions before cystoscopy improved surgical performance of residents novice to cystoscopy. We compared performance ratings between residents who practiced mental imagery prior to cystoscopy to those who did not.

Materials and Methods: We conducted a randomized controlled trial. Residents who had performed ≤3 cystoscopies were eligible to participate. A random numbers table was used to generate the allocation sequence using block randomization. Randomization was concealed. Residents were assigned to either mental imagery (imagery group) or instructed to read a cystoscopy chapter in a specific textbook (control group). Mental imagery sessions were standardized and were administered by Ob-Gyn faculty. Physicians' expert in cystoscopy evaluated cystoscopic performance using a validated assessment form that included six individual items (range 1–5) and a cumulative score (range 6–30). In addition, evaluators recorded operative time for cystoscopy, impression of overall competency (yes or no), and preparedness for procedure (1–5 rating). Evaluators were blinded to randomization. Residents were asked to rate helpfulness of their preoperative preparation assignment (0 = not at all helpful, 10 = extremely helpful). Two-factor ANOVA was used as a regression method to compare assessment form scores while controlling for institutions as a confounding variable.

Power Analysis: Assuming 80% power and $\alpha = 0.05$, to find 25% to 30% difference between groups approximately 60 subjects were required.

Results: Sixty-eight residents were enrolled from six academic centers. Four residents had performed ≥4 cystoscopies and were not included in the final analysis, leaving 33 residents in the control and 31 in the imagery group. Mental imagery and control groups did not differ in amount of previous cystoscopic experience, age, residency or gender (all $P > 0.5$). Using regression methods, significant association

was found in score results and institutions ($P \leq 0.001$). After controlling for institution, the imagery group had significantly better total scores as well as scores on individual questions including "Flow of the operation", "Knowledge of Procedure" and "Knowledge of Instrument" ($P < 0.001$). There was no difference between groups in time for procedure and overall ability to perform the procedure independently. The imagery group scored higher than controls in preparedness ($P = 0.02$) and residents found imagery preparation more helpful (score 7.3 vs. 4.2, $P < 0.001$).

Conclusion: Mental imagery preparation improved overall cystoscopic performance, including flow of the operation and overall preparedness for the procedure, compared to controls. Additionally, residents considered mental imagery more helpful in preoperative preparation than reading a standard text describing the procedure.

Key Words: mental imagery, educational research, cystoscopy

Disclosure - Nothing to disclose.

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Oral Poster 12

A Comprehensive Review of Suburethral Sling Procedure Complications

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Objectives: To review the existing literature regarding complications of anti-incontinence sling procedures.

Materials and Methods: Pubmed listings using keywords related to slings and associated complications with no date or language restrictions through May 2007 and the MAUDE (Manufacturer and User Facility Device Experience) database were searched for specific device- and procedure-related complications. Where no information was available, published abstracts were cited.

Results: Published reports of complications for all types of anti-incontinence sling procedures were analyzed and reported. Sling-related complications were multiple but can be summarized from studies on 13,737 cumulative patients as involving: voiding dysfunction (8 studies, 881 patients, 16.3% average overall incidence (OI); detrusor overactivity (20 studies, 1950 patients, 15.4% OI) and urinary retention (14 studies, 943 patients, 14.2% OI); erosion/extrusion (19 studies, 2197 patients, 6.03% OI); impact on quality of life - dyspareunia (2 studies, 175 patients, 4.3% OI); infections - most often UTI but severe infections such as abscess are reported (19 studies, 1487 patients, 5.5% OI); hematoma - most often pelvic or vaginal (4 studies, 3691 patients, 2% OI); pain (6 studies, 597 patients, 7.3% OI); abdominal and pelvic organ injury - bladder, urethra, vagina, intestines (10 studies, 1816 patients, 3.3% OI); systemic complications - DVT, sepsis (case reports); and death (case reports). Cure rates for all slings - subjective (16 studies, 1541 patients, 95% OI, range 63–99%), objective (15 studies, 1203 patients, 82% OI, range 51–97%) and failure (8 studies, 599 patients, 11.5% OI, range 4- 37%).

Conclusion: It is likely that sling-related complications are underreported in the published medical literature and in the MAUDE database. This review reports on the incidence of known complications for all types of slings. Some complications are common to all sling techniques; however, with the development of minimally invasive slings, device-related complications are reported and compared.

Key Words: erosion, detrusor overactivity, sling, complications, injury, pain

Disclosure - Nothing to disclose.

Oral Poster 13

Urinary Retention Is Uncommon After Colpocleisis With Concomitant Midurethral Sling

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Objectives: The optimal method for treating stress urinary incontinence at the time of colpocleisis is not known. Women undergoing colpocleisis with concomitant fascial sling have unacceptably high rates of postoperative urinary retention requiring surgical takedown. Our objective was to determine whether the use of midurethral slings in the setting of colpocleisis is associated with similarly high rates of postoperative urinary retention.

Materials and Methods: In this IRB-approved study, we reviewed data from consecutive women who had colpocleisis for treatment of symptomatic prolapse with a concomitant midurethral synthetic sling between January 2005 and January 2007 in a tertiary care center. Prior to surgery and 3 months postsurgery, all patients completed the short form of the validated Pelvic Floor Distress Inventory (PFDI) and underwent prolapse quantification (POPQ) and standardized cystometrogram. Surgery included a midurethral sling (retropubic or transobturator approach with polypropylene mesh, Gynecare) following a modified Le Fort colpocleisis. Urinary retention was defined as measured postvoid urine residual (PVR) greater than 100 ml at any time after surgery. For analysis, we used the prolapse (POPDI) and urinary (UDI) subscales of the PFDI. We used Wilcoxon ranked test and McNemar test for repeated parametric and categorical variables, respectively.

Results: Thirty-three women with a mean age of 79 years (range 65–90) were included in the analysis. No follow-up data was available for 1 patient. The median follow-up was 9 months (range 3–23). Prior to surgery, the median POP-Q stage was 3 (range 2–4). Nearly all (91%) had some incontinence symptoms, and 80% reported symptoms of stress urinary incontinence (SUI). Preoperative urodynamic diagnoses included: urodynamic stress incontinence (USI) 50% (N = 16); both USI and detrusor overactivity incontinence (DOI) 43% (N = 14); DOI 4% (N = 1); no USI or DOI 4% (N = 1). As expected in women with advanced prolapse, 30% (N = 10) had urinary retention (PVR > 100 ml) prior to surgery. Postoperatively, prolapse symptoms resolved in 97% patients. Following surgery, 13% reported SUI, and approximately one third (34%) reported urge incontinence. Both POPDI and UDI scores changed significantly after surgery (40 ± 22 vs. 0 ± 11, $P < .012$ and 42 ± 23 vs. 0 ± 12 $P < .02$, respectively). Standardized postoperative cystometrogram diagnoses included: 6% USI and 18% DOI. Urinary retention resolved in 9 of 10 women with preoperative urinary retention. No patient had a persistently elevated PVR or symptoms of voiding dysfunction requiring surgical revision of sling.

Conclusion: Concomitant midurethral sling at the time of colpocleisis results in low rates of stress incontinence without significant postoperative urinary retention and may play a role in the clinical care of elderly women undergoing colpocleisis for advanced prolapse.

Key Words: TVT, midurethral sling, urinary retention, colpocleisis, urinary stress incontinence

Disclosure - Nothing to disclose.

Oral Poster 14

The Internal Innervation and Morphology of Female Human Levator Ani Muscle

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Objectives: To characterize the microinnervation and morphology of the human female levator ani muscle complex.

Materials and Methods: Twenty levator ani muscle complexes were harvested from 10 fresh frozen pelves 45 to 55 years old specimens with intact reproductive organs. Detailed microdissection was performed. Specimens were then processed by maceration, decalcification, modified Sihler staining, destaining, clearing, trimming, photography, montage, and tracing. Specimens underwent digital microphotography and digital reconstruction. The images were superimposed to construct a composite of all the images. The nerve and muscle fibers were traced to create a representative drawing demonstrating their relationship to coccyx, vagina, anus, and the pubic bone.

Results: The final result for each reconstructed specimen was 2.5 gigabytes, revealing great details. Six processed levator ani muscles endured the staining process and underwent digital microphotography. Each specimen underwent reconstruction of 500 to 800 microphotographs to produce a complete image. The nerves and the muscle fibers were traced separately on each image and stored for analysis. S3 and S4 nerves formed the levator ani nerve (LAN), which entered the medial aspect of the iliococcygeal muscle at variable sites cephalad to the level of the ischial spine. LAN traveled perpendicular to major muscular bundles while progressively branching into finer nerves that eventually entered single muscle fascicles. LAN did not innervate anal sphincter complex, but it did reach puboanalis fibers. LAN continued its course through the iliococcygeous muscle to innervate the puboperineal and puboanalis muscles. No distinct pubovaginal fibers were identified. The puboanalis and puboperineal fiber orientation was perpendicular to that of anal sphincter complex fibers. None of the visible pudendal branches entered our specimens. The iliococcygeal fibers coalesced at a 45-degree angle to the ATFP to form the cephalad two-thirds of this tendinous structure. The remaining iliococcygeal fibers traveled underneath the caudad/anterior portion of ATFP to form ATLA. There was no distinct separation between pubovisceral fibers and iliococcygeal fibers. The area classically called the pubococcygeous muscle, once detached from its insertion points, had the same innervation as the iliococcygeous muscle.

Conclusion: The utilized staining technique enabled us to visualize the levator ani nerve in relation to the muscle fibers as never seen before. Although the levator ani subdivisions can be categorized by their insertion-origin points, the entire muscle is innervated by the branches of the levator ani nerve.

Key Words: levator ani muscle, puboperineal, puboanal, iliococcygeous, innervation, morphology

Disclosure - Nothing to disclose.

Oral Poster 15

Do Incontinence Symptom Index Scores Correlate With Measures of Pelvic Floor Function in Women With and Without Stress Urinary Incontinence?

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Objectives: To establish whether or not Incontinence Symptom Index (ISI) scores of severity and bother correlate with anatomic and physiologic parameters associated with stress urinary incontinence (SUI)

Materials and Methods: Women participating in a case-control study investigating stress incontinence mechanisms were asked to complete the ISI, a novel 10-item questionnaire developed at the University of Michigan, containing domains for urinary incontinence symptom severity and bother. Women with daily SUI were recruited from university-based gynecology and urology clinics (n = 97), and asymptomatic continent women were recruited from community advertisements and matched for age, race, parity, and prior hysterectomy (n = 98). Symptom severity scores range from 0 to 32, and bother scores range from 0 to 8. Higher scores reflect greater symptom severity or bother. Severity scores among controls ranged from 0 to 6, and the median score (50th percentile) of cases was 16. Based on this distribution, scores were categorized as absent/mild (0 to 6), moderate (7–16) and severe (17–32). Bother scores, pelvic organ prolapse quantification (POP-Q), Q-tip testing, and urodynamic data were analyzed with respect to the groupings. Nonparametric statistics were used with an alpha of .05 as the threshold for significance.

Results: The absent/mild, moderate, and severe symptom severity groups were associated with increasing mean bother scores (0.1, 3.6, and 4.5, $p < 0.001$). The groups differed significantly with respect to means of point Aa (−1, −0.5, −0.4 cm, $p = 0.004$), genital hiatus at rest (2.8, 3.3, 3.2 cm, $p = 0.006$), genital hiatus with straining (3.4, 4.1, 3.9 cm, $P < 0.001$), Q-tip angle at rest (−6.1, −2.4, 1.7 degrees, $P < 0.001$) and Q-tip angle with pelvic floor contraction (−20.3, −13.9 and −8.9 degrees, $p = 0.001$). The three groups also differed with respect to means of maximum urethral closure pressure (69.1, 44.1, 35.3 cmH_20, $p = 0.001$), cough leak point pressure (202.0, 163.0, and 134.3 cmH_20, $p = 0.001$), and Valsalva leak point pressure (162.3, 123.5, 101.9 cmH_20, $p = 0.001$).

Conclusion: The ISI discriminates between women with mild, moderate, and severe symptoms. This novel questionnaire is potentially valuable in clinical settings because the groupings are associated not only with the degree of bother, but also the anatomic and physiologic abnormalities associated with SUI.

Key Words: stress urinary incontinence, symptom severity, degree of bother

Disclosure - Nothing to disclose.

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Oral Poster 16

The Risk of Pelvic Organ Prolapse Is Increased by Vaginal Birth But Not by Cesarean Delivery

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Objectives: To describe the effect of vaginal delivery and cesarean section on the prevalence of pelvic organ prolapse.

Materials and Methods: This was a cross-sectional study. Women over 40 years of age were recruited from outpatient clinics. After informed consent, we obtained general biographic data, including obstetrical history. All patients were examined, and pelvic organ prolapse was measured and described according to the pelvic organ prolapse quantification (POPQ) system. Logistic regression was used to estimate the association between childbirth history and pelvic organ prolapse, controlling for confounders. Ordinal regression was used to examine the association between childbirth history and increasing prolapse stage.

Results: This study included 305 women. This analysis focuses on the 297 (97.4%) with complete POPQ data. The mean age of the population was 56.2 ± 11.2 years and 240 (80.0%) were white. Stage 0 support was present in 39 (13%), Stage I in 136 (46%), Stage II in 89 (30%) and stage III in 33 (11%). Mean parity increased across prolapse stage (from 1.4 ± 1.2 for Stage 0 to 3.1 ± 1.9 for Stage III, $P < 0.001$). Increasing age was also associated with increasing stage of prolapse ($P < 0.001$), whereas BMI, race, and birth weight were not. Women with a history of at least one vaginal birth were significantly more likely to have Stage II to IV prolapse, compared to those without any vaginal births (107/220, 48.6% vs. 14/76, 18.4%; $P < 0.001$) Comparing women with stage II to IV support to women with stage 0 to I support and controlling for age, the odds of prolapse were increased 1.35 (95% CI 1.13, 1.62) for each vaginal birth but were not significantly increased for each cesarean birth (OR 0.90, 95% CI 0.57, 1.43). Controlling for parity, the odds of having pelvic organ prolapse stage II or greater was significantly increased for women with all their deliveries by vaginal birth (OR 2.76, 95% CI 1.36, 5.61), as compared to having all cesarean deliveries.

Conclusion: Each vaginal delivery is associated with a 30% increase in the odds of pelvic organ prolapse. In contrast, cesarean births were not found to have a significant effect.

Key Words: prolapse, childbirth, pelvic floor dysfunction, vaginal delivery

Disclosure - Nothing to disclose.

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Non-Oral Poster 17

Relationship Between Optimism and Patient-centered Outcomes Before and After Sacrocolpopexy for Pelvic Organ Prolapse

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Objectives: In women undergoing sacrocolpopexy for advanced pelvic organ prolapse 1) to explore the relationship between optimism, prolapse severity, and pelvic symptoms prior to surgery; and 2) to examine the extent to which optimism predicts postsurgical functional status, symptom experience, satisfaction with treatment, and perception of treatment success.

Materials and Methods: Data from the Colpopexy and Urinary Reduction Efforts (CARE) study, a randomized trial in which stress continent women underwent abdominal sacrocolpopexy to repair Stage II to IV pelvic organ prolapse (POP), are used. Participants completed an assessment of dispositional optimism, and validated symptom and quality of life measures. Relationships among optimism and demographics, clinical status, and psychosocial outcomes were assessed.

Results: Of 322 CARE participants, 305 (94.7%) completed follow-up interviews. At baseline, women with greater dispositional optimism reported significantly better physical and mental functioning ($P < 0.001$), less symptom distress ($P < 0.003$), and less impact of pelvic symptoms on daily activities ($P < 0.004$). After 1 year, the impact of dispositional optimism was not significant, as women across the board reported improved health status, fewer symptoms, and less impact on daily activities. Satisfaction with treatment and perception of treatment success were not affected by optimism.

Conclusion: Dispositional optimism is related to patients' reported pelvic symptom severity before surgery but does not predict satisfaction with treatment or perception of treatment success. Abdominal sacrocolpopexy resulted in substantial improvements in psychosocial and functional outcomes in patients across levels of optimism.

Key Words: pelvic organ prolapse, dispositional optimism, patient-centered outcomes

Disclosure - Nothing to disclose.

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Non-Oral Poster 18

To What Extent Does Prolapse Stage or Type Affect Stress Incontinence and Voiding Function?

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Objectives: Anterior vaginal wall prolapse has long been assumed to alter lower urinary tract function. We conducted an analysis to determine the strength of the relationship between prolapse stage and type (i.e. anterior, posterior, apical or multicompartment) with stress incontinence and voiding function.

Materials and Methods: This was a secondary analysis of a case cohort recruited to examine the association between levator ani defects and primary pelvic organ prolapse. One hundred fifty-one women with prolapse at least 1 cm below the hymen underwent a pelvic organ prolapse quantification (POP-Q), standing cough stress test, and postvoid residual. They also completed a questionnaire consisting of items adapted from the Urogenital Distress Inventory regarding voiding function. Prolapse size was analyzed using a modification of POP-Q staging. Women with prolapse 1 cm below the hymen made up Stage 2 (n = 46), those with prolapse 2 to 3 cm below the hymen Stage 3a (n = 64), and those with prolapse at least 4 cm below the hymen Stage 3b (n = 41). Anterior and posterior prolapse were considered present if point Ba or Bp were ≥ +1 and apical prolapse if point C was ≥ −3. These designations led to groups of posterior (n = 20), anterior (n = 49), and multicompartment

prolapse involving two or more areas (n = 82). χ^2 and ANOVA were used to assess bivariate relationships and logistic regression to adjust for prolapse type and size on rates of SUI and voiding dysfunction.

Results: Higher rates of demonstrable stress incontinence and less evidence of voiding dysfunction were observed among women with Stage 2 and posterior prolapse. A feeling of taking "too long to empty the bladder" due to a "weak stream" was less common among women with Stage 2 prolapse compared to those with Stage 3a or 3b prolapse (21.7% v 31.7% v 50%, $P = .018$). With adjustment for prolapse type, Stage 2 prolapse remained associated with a higher risk for SUI (OR 1.93, CI 1.2–3.1) and a lower risk of voiding dysfunction characterized by "taking too long to empty the bladder" (OR 0.66, CI 0.48–0.92). Prolapse type was not independently associated with either outcome.

Conclusion: Among women with primary pelvic organ prolapse, smaller prolapse is associated with an almost 2-fold increased risk of stress urinary incontinence and a lower risk of voiding dysfunction. Type of prolapse was not a significant factor when adjustment for size of prolapse was made.

Key Words: pelvic organ prolapse, stress urinary incontinence, lower urinary tract

Disclosure - Nothing to disclose.

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Non-Oral Poster 19

Predictors of Fecal Incontinence in Women With Urge Urinary Incontinence: From the Urinary Incontinence Treatment Network's BEDRI Study

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Objectives: We sought to determine the prevalence and predictors of fecal incontinence (FI) and to evaluate the impact of FI on quality of life (QoL) in women seeking treatment for urge-predominant urinary incontinence (UUI).

Materials and Methods: This is an ancillary analysis of baseline information collected from 307 women enrolled in the Urinary Incontinence Treatment Network's Behavior Enhances Drug Reduction of Incontinence (BEDRI) study. BEDRI randomized women with UUI seeking treatment to drug or drug plus behavioral therapy. FI type was defined by participants' responses to "Do you have leaking or loss of control of liquid/solid stool?" Participants reporting FI "more than once a month" were then categorized as FI. Independent variables included: sociodemographic characteristics (age, race, education, and Nam Powers occupation score), health status and history (body mass index [BMI], diabetes, congestive heart failure, obstetrical history, prior surgical history, and menopausal status), physical examination findings (pelvic organ prolapse quantification [POP-Q], pelvic muscle strength and duration [Brink score], anal sphincter contraction, UI severity (daily UI episodes on 3-day bladder diary), and UI symptom bother (urogenital distress inventory [UDI], incontinence impact questionnaire [IIQ]). The overactive bladder questionnaire (OAB-Q) and SF-12 scores measured condition-specific and general QOL, respectively. In univariate analysis, independent variables were compared between 2 groups: women with isolated UUI (n = 251) and women with UUI and FI (n = 56). Multivariable logistic regression models were created using variables significant at 0.1 level to distinguish factors that may impact having both FI and UUI from isolated UUI. Results of the logistic regression are presented as: odds ratio, 95% confidence interval.

Results: Eighteen percent of participants (mean 57 ± 14 years of age) reported monthly FI: 12% had liquid stool FI and 6% had liquid and solid stool FI. All mean QOL measures were significantly worse in women with UUI and FI than those with UUI only: IIQ (192 ± 104 vs. 145 ± 97, $P = .002$); SF-12 (88 ± 16 vs. 94 ± 15, $P = .003$); OAB-Q QoL (55 ± 27 vs. 63 ± 23, $P = .03$). The following sociodemographic and clinical variables were significantly different between the 2 groups and included in the multivariable regression model: age, occupational score, BMI, ethnicity, diabetes, prior UI treatment, POPQ Bp, vaginal delivery (yes/no), MESA stress and urge scores, and UDI score. Women with UUI and monthly FI were more likely to have had a vaginal delivery (2.67, 1.08–6.64), more likely to have a more prolapsed POP-Q point Bp (1.38, 1.06–1.81), more likely to have higher BMI (1.05, 1.01–1.09), and more likely to have higher MESA urge score (1.15, 1.04–1.26) than those with UUI only.

Conclusion: Nearly 20% of women enrolled in a clinical trial comparing drug and behavioral therapy for UUI reported monthly FI. Women with UUI and FI reported greater general and condition-specific health-related QoL impact than those with isolated UUI. Significant predictors of FI in women with UUI included prior vaginal delivery and posterior compartment prolapse.

Key Words: fecal incontinence, risk factors, urge-predominant urinary incontinence

Disclosure - Nothing to disclose.

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National Network Name: Urinary Incontinence Treatment Network (UITN).

Non-Oral Poster 20

Mixed Urinary Incontinence Symptoms in Women With Prolapse

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Objectives: To describe the distribution of mixed urinary incontinence (MUI) symptoms and the relationship of symptoms to leading edge of prolapse in women with prolapse.

Materials and Methods: In this IRB-approved cross-sectional study, 336 women presenting for urogynecologic evaluation with POPQ ≥ stage I were enrolled. All participants completed the Pelvic Floor Distress Inventory (PFDI), underwent the Pelvic Organ Prolapse Quantification (POP-Q) examination, and simple cystometry or multiple channel urodynamics (UDS). MUI was defined as at least one

"yes" response to questions in both the irritative and stress subclasses of the Urinary Distress Inventory (UDI) subscale of the PFDI. Urge-predominant MUI was defined as irritative > stress score on the UDI subscale. Stress-predominant MUI was defined as stress > irritative score on the UDI subscale. Data analysis included Student *t* test and multivariable linear regression.

Results: Total study population by UDI symptoms groups were: MUI 242/336 (72%), urge-only 80/336 (24%), stress-only 1/336 (0.3%), and no UI symptoms 13/336 (3.7%). Only women with MUI were included in the analysis. Participants with MUI were predominantly white 222/242 (94%), postmenopausal 183/242 (80%), and nonsmokers 223/242 (93%).

Multivariable linear regression modeling revealed a decrease in MUI and stress-predominant MUI symptoms as leading edge of prolapse increases ($P = 0.01$ and <0.01, respectively). For urge-predominant MUI, there was no change in symptoms as the leading edge of prolapse increases ($P = 0.55$).

Conclusion: The majority of women with prolapse have mixed urinary incontinence symptoms. On average, women with stress-predominant MUI are younger than women with urge-predominant MUI, and as women age, urge symptoms appear to exceed stress symptoms. Stress-predominant MUI symptoms decrease with increasing prolapse. Urge-predominant MUI is unchanged by advancing prolapse.

Key Words: prolapse, mixed urinary incontinence, stress-predominant urinary incontinence, urge-predominant urinary incontinence

Disclosure - Nothing to disclose.

Non-Oral Poster 21

Efficacy and Tolerability of Fesoterodine Versus Placebo in Women With Overactive Bladder: Pooled Analysis of Two Phase III Trials

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Objectives: The purpose of this study was to evaluate the effects of the new antimuscarinic drug fesoterodine (FESO) versus placebo (PBO) in women with overactive bladder (OAB).

Materials and Methods: Data from female subjects only were pooled from two phase III randomized placebo-controlled trials for this study (n = 1543). In both trials, eligible subjects (≥18 years) with frequency (≥8 micturitions/24 hours) and urgency urinary incontinence (UUI; ≥1 episode/24 hours) were randomized to 12 weeks of PBO (n = 430), FESO 4 mg (n = 434), or FESO 8 mg (n = 452); one trial also included a positive control arm with tolterodine extended release (TOL ER) 4 mg (n = 227). All subjects completed a 3-day bladder diary. Statistical analysis was performed using ANCOVA.

Results: Change from baseline to end of study in UUI episodes/24 hours (LS mean [standard error]) was significantly reduced by FESO 4 mg (−1.9 [0.1]), FESO 8 mg (−2.3 [0.1]), and TOL ER (−1.7 [0.2]) compared with PBO (−1.1 [0.1], all $P < 0.01$). In addition, change from baseline in UUI episodes was significantly greater for FESO 8 mg versus TOL ER ($P = 0.010$). Change from baseline in mean volume voided (mL per void) was significantly increased by FESO 4 mg (25.5 [2.8]), FESO 8 mg (32.1 [2.8]), and TOL ER (26.6 [3.9]) compared with PBO (9.4 [2.8]; all $P < 0.001$). Change from baseline in urgency episodes/24 hours was significantly reduced by FESO 4 mg (−2.0 [0.2]), FESO 8 mg (−2.2 [0.2]), and TOL ER (−2.1 [0.2]) compared with PBO (−0.9 [0.2]; all $P < 0.001$). Change from baseline in continent days/week (extrapolated from 3-day diary) was significantly increased by FESO 4 mg (2.5 [0.2]), FESO 8 mg (3.0 [0.2]), and TOL ER (2.3 [0.2]) compared with PBO (1.7 [0.2]; all $P \leq 0.012$). In addition, change from baseline to the end of the trial in micturitions/24 hours were significantly reduced by FESO 4 mg (−1.8 [0.1]), FESO 8 mg (−1.9 [0.1]), and TOL ER (−1.9 [0.2]) compared with PBO (−1.0 [0.1]; all $P < 0.001$). A positive treatment response (ie, subjects indicating any benefit on the 4-point treatment benefit scale) was reported by 49%, 70%, 77%, and 74% in subjects receiving PBO, FESO 4 mg, FESO 8 mg, and TOL ER, respectively ($P < 0.001$ vs. PBO). The incidence of dry mouth with FESO 8 mg (34%) was higher than that with TOL ER 4 mg (17%); however, the related discontinuation rate was low and similar.

Conclusion: In conclusion, FESO 8 mg and 4 mg significantly improved OAB symptoms in women compared with PBO, with significant improvement for FESO 8 mg compared with TOL ER in UUI episodes and number of continent days. Treatments were well tolerated.

Key Words: urinary incontinence, overactive bladder, clinical trial, antimuscarinic

Disclosure - Pfizer Inc, Advisor, Pfizer Inc, Investigator.

Non-Oral Poster 22

Concurrent Procedures to Correct Apical Prolapse and Stress Urinary Incontinence in the State of California: 2001–2005

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Objectives: To determine the rate of incontinence procedures performed in patients who underwent reparative surgery for apical pelvic organ prolapse.

Materials and Methods: The California Patient Discharge Database was used to obtain the results of all apical suspension procedures performed in California between the years of 2001 and 2005. All cases were abstracted using ICD-9 procedure codes and assessed for the simultaneous performance of stress urinary incontinence (SUI) procedures. Statistical analysis including χ^2 tests, *t* tests, and multivariate regression trees were performed using the SAS system.

Results: Of 14,417 cases identified, 40.6% of patients underwent concurrent procedures to correct for SUI. SUI procedures included the Burch colposuspension (36.50%), midurethal slings (60.20%), and paraurethral needle suspensions (3.28%). Over the course of the 5-year period, the percentage of vaginal suspension procedures accompanied by SUI surgery increased from 36.86% to 43.26%. Hospitals with ACGME-approved obstetrics and gynecology residency programs also had a small but significantly higher rate of concurrent procedures, 46.38% versus 39.84% respectively (OR 1.32, $P < 0.0001$). Patients treated at Kaiser Permanente were almost 60% more likely to undergo a combined procedure than patients with other private insurance (OR 1.58, $P < 0.0001$). Multivariate regression demonstrated that the diagnosis of SUI had the greatest impact on the choice to include an incontinence correction procedure (OR 16.76, $P < 0.0001$) followed by mixed urinary incontinence (OR 4.23, $P < 0.0001$), and urinary incontinence not otherwise specified (OR 1.44, $P < 0.0001$). A diagnosis of incomplete bladder emptying also carried

an increased likelihood of a combined procedure (OR 1.42, $P = 0.05$) whereas urge urinary incontinence was not predictive. More complications were seen in patients with combined procedures to correct SUI, with respect to acute anemia (OR 1.5, $P < 0.0001$), cystotomy (OR 1.49, $P < 0.0003$), fever (OR 1.41, $P = 0.005$), and genitourinary complications such as urinary retention (OR 1.29, $P = 0.01$). More serious complications, such as sepsis, myocardial infarction, thromboembolism and death were not significantly different between the two groups, and there was no difference in the rate of wound infections or urinary tract infections. Patients with combined procedures had a significantly greater length of stay compared to the vaginal suspension procedure alone (2.7 vs. 2.2 days, $P = 0.003$).

Conclusion: The concurrence of apical suspension and SUI procedures in this study (40.6%) was similar to the rates reported in the literature for abdominal sacrocolpopexy and sacrospinous ligament fixation combined with SUI procedures (47% and 38.3%, respectively). The increase in prevalence of combined procedures (36.86% to 43.26%) during the time period under study may reflect increased awareness of the risk of occult incontinence with apical prolapse, as was addressed recently by the CARE study.

Key Words: stress urinary incontinence, apical suspension, occult urinary incontinence

Disclosure - Nothing to disclose.

Non-Oral Poster 23

Sphincter Tears in Primiparous Women: Is Age a Factor?

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Objectives: An underdeveloped or contracted pelvis can lead to dystocia and subsequent overt pelvic floor injuries. We explored for a potential relationship between maternal age and anal sphincter tear during primiparous vaginal delivery.

Materials and Methods: The University of Alabama at Birmingham obstetric automated record (OBAR) database was accessed, and data from January 1, 1992 to December 31, 2001 were analyzed. Primiparous women who delivered a live term (≥37 weeks) singleton infant were included. Exclusion criteria included multiparity, preterm delivery, twin gestation, fetal anomalies, and cesarean delivery for reasons other than dystocia, cephalopelvic disproportion, or failed induction. To test for an association between age and anal sphincter tear rates, three age groups were considered: young adolescents (age ≤16 years, N = 1056), older adolescents (age 17–20 years, N = 3556) and adults (age ≤21 years, N = 2195). Our primary outcome variable was anal sphincter tear (third or fourth degree). Differences in clinical and demographic variables between the three age groups were evaluated using ANOVA and $\chi 2$. All variables significantly associated with age group ($P < 0.05$) were then included in the stepwise logistic regression model to adjust for confounding factors. Variables entered into the final model included age group, cesarean delivery, birth weight > 4000 grams, tobacco use, forceps use, vacuum use, episiotomy, and shoulder dystocia.

Results: The mean age of the younger adolescent, older adolescent, and adult cohorts was 15.4 + 0.8, 18.5 + 1.1, and 23.9 + 3.5 years, respectively. The characteristics of the three groups differed with respect to race, BMI, marital status, tobacco use, alcohol use, cesarean delivery, and vacuum use (all $P < 0.0001$). They also differed with respect to gestational age at delivery, fetal birth weight, episiotomy, forceps use, and shoulder dystocia (all $P < 0.05$). The rate of cesarean delivery for dystocia, cephalopelvic disproportion, or failed induction was higher in the adult cohort ($P < 0.0001$). The overall sphincter tear rate was 11.6% with no difference among cohorts ($P = 0.58$). In the final model, women who were aged 16 years or less were not more likely to have an anal sphincter tear compared to women aged 21 or greater with an OR = 0.98 (CI: 0.7–1.3). Additionally, women between the ages of 17 and 20 were not more likely to have an anal sphincter tear compared to women aged 21 or greater with an OR = 1.0 (CI: 0.8–1.2).

Conclusion: In this analysis, younger women were not at increased risk of anal sphincter tears when compared to older cohorts. This finding was not due to a higher cesarean delivery rate in the younger cohort compared to the older cohort. In fact, the inverse was true in our population. With consideration of these findings, decisions regarding interventions to decrease sphincter tear during a first vaginal delivery should not be made on the basis of maternal age alone.

Key Words: sphincter tears, perineal lacerations, primiparous, maternal age

Disclosure - Nothing to disclose.

Non-Oral Poster 24

Morphology of the Female Bony Pelvis and Minimally Invasive Sling Placement

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Objectives: In the environment of increasing use of minimally invasive midurethral slings to treat stress urinary incontinence, the objective of this study is to examine the morphology of the female bony pelvis and its effect on retropubic sling and single incision sling (mini-sling) placement.

Materials and Methods: Ninety-six disarticulated female pelvises were selected from the Hamann-Todd collection at the Cleveland Natural History Museum and reassembled using a standardized technique. This collection consists of more than 3100 human skeletons with documentation of demographics. Three-dimensional coordinates of all pertinent architectural bony landmarks were obtained using the MicroScribe G2 3-D Digitizer (Immersion Corporation, San Jose, CA) and distances and angles were calculated. Measurements for right and left sides were averaged. Pubic angle was measured using a protractor. The midurethra was approximated to be 1.5 cm inferior to the inferior border of the pubic symphysis, and the insertion of the hammock configuration of the mini-sling was approximated to be at the ischial pubic ramus at this level. As a marker of pelvic breadth, the angle created between the posterior pubic symphysis and bilateral ischial tuberosities was calculated.

Results: There was considerable variability of the bony architecture of the female pelvis that affects sling trocar targets. For the retropubic sling, the pubic symphysis angle and pubic symphysis length were highly variable. The angle of the pubic symphysis in relation to the pelvic inlet averaged 99 ± 7 degrees (range 77–115) and the average pubic symphysis length was 3.2 ± 0.4 cm (range 2.1–4.4). For the

mini-sling targets, the distance between insertion sites, pubic angle, and pelvic breadth were also highly variable. The pubic angle averaged 75 ± 12.2 degrees (range 44–110) and pelvic breadth averaged 139.2 ± 12.8 degrees (range 94.1–169). The distance between mini-sling insertion sites averaged 6.8 ± 0.8 cm (range 5.3–9.5).

Conclusion: There is considerable variability in the bony architecture of the female pelvis that may affect retropubic and mini-sling trocar targets. The variability seen in the pubic symphysis provides an explanation for the clinical findings of difficult retropubic trocar passage and bladder perforation. The variation seen in pubic angle, pelvic breadth, and mini-sling insertion site distance may have a great impact on the ability to place and tension a mini-sling. One brand of mini-sling measures 8 cm in length. Ten percent of our specimens had a distance between insertion sites greater than 8 cm, demonstrating that one size may not fit all.

Key Words: bony pelvis, single incision sling, retropubic sling, mini-sling

Disclosure - Nothing to disclose.

Non-Oral Poster 25

Pelvic Floor Muscle Function and Stress Urinary Incontinence Symptoms in a Heterogeneous Population

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Objectives: Pelvic floor muscle strengthening is an effective treatment for stress urinary incontinence (SUI). However, it is not known whether women who present with SUI symptoms have poorer pelvic muscle function than women without these symptoms. The purpose of this study was to investigate differences in pelvic muscle function between women with and without SUI in a heterogeneous population of adult women.

Materials and Methods: Patients were recruited from a population of women over 40 years of age presenting to outpatient clinics at our institution. They completed a demographic survey and the Pelvic Floor Distress Inventory short form (PFDI-20), and underwent pelvic examinations including the pelvic organ prolapse quantification scale (POPQ). Pelvic muscle function was assessed with the Brink score, which ranges from 0 to 9 with higher scores indicating better function. We defined SUI as a positive response to the PFDI-20 question "Do you usually experience urine leakage related to coughing, sneezing, or laughing", with a response indicating at least "somewhat" bother. We compared women with and without SUI using either χ^2 for dichotomous variables or Student t test for continuous variables. We then used multivariate logistic regression to investigate whether Brink score (or its components) were associated with SUI, independent of other factors.

Results: Of 305 participants, 300 had complete data. The mean age was 56.0 ± 11.1, mean BMI was 28.9 ± 6.9, 235 (78.3%) were white, and 217 (72.3%) reported at least one vaginal birth. SUI was reported by 81 women (27%). The mean Brink score for women with SUI was 5.8 ± 2.6, and for those without SUI was 5.2 ± 2.4 ($P = 0.10$). SUI was associated with a history of prior vaginal births but not with age, BMI, or race. SUI was also associated with increasing stage of prolapse. When controlling for a history of prior vaginal births and prolapse stage, the odds of SUI increased by 15% for every one-point increase in Brink score (odds ratio 1.15; 95% confidence interval 1.02, 1.29; $P = 0.016$).

Conclusion: Although we expected that women with SUI would have decreased pelvic muscle strength in this population, increased pelvic floor muscle strength was associated with increased odds of SUI. This observation is surprising in light of the documented benefits of pelvic muscle strengthening as a treatment for SUI.

Key Words: pelvic, incontinence, muscle, function, stress, urinary

Disclosure - Nothing to disclose.

NIH Grant K23HD045806.

Non-Oral Poster 26

Sensory Neural Changes Are Present in the Lower Urinary Tract of Women After Reconstructive Pelvic Surgery

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Objectives: Changes in urinary tract sensation may be associated with symptoms and response to treatment. Our aim was to determine whether reconstructive pelvic surgery (RPS) induces measurable changes in afferent nerve fibers in the lower urinary tract.

Materials and Methods: After IRB approval, we prospectively recruited consecutive women planning RPS. Participants underwent 2 forms of standardized neurophysiologic testing in the bladder and urethra preoperatively and 1 to 2 days after RPS. Current perception threshold (CPT) testing quantifies afferent nerve function (A-β, A-δ, and C fibers) by applying sine wave stimuli at 3 frequencies (2000 Hz, 250 Hz, and 5 Hz). Higher CPT suggests decreased sensation consistent with neuropathy. Sacral reflex testing is conducted by applying electrical stimulus to the urethra or bladder with responses recorded from the anal sphincter (urethral anal reflex (UAR) and bladder anal reflex BAR)). UAR and BAR measure the latency between stimulus and muscle response and reflect integrity of urethral and bladder afferent fibers, the pelvic plexus, and efferent fibers to the anal sphincter. Immediately prior to postoperative neurophysiologic testing, catheterized postvoid residual urine volumes (PVR) were measured after instilling 300 ml of saline into the bladder and a spontaneous void attempt.

Results: Twenty-one patients with mean age of 59(± 12) years participated: 71% had vaginal RPS, and 29% had an abdominal RPS. Median postoperative PVR was 40 ml (range 10–120). CPT was significantly higher in the urethra after RPS. UAR and BAR latencies were not significantly longer following surgery; however, UAR were absent in 8 women (38%) after RPS compared to 2 women (9%) prior to surgery ($P < .003$). BAR were absent in 11 women (52%) after RPS compared to only 5 (24%) prior to surgery ($P < .01$). PVR did not correlate with any CPT values or BAR or UAR latencies ($P > .05$).

Conclusion: RPS has a short-term desensitizing affect on the urethra, consistent with small fiber afferent neuropathy. Likewise, absent sacral reflexes are more common postoperatively, which is also consistent with neuropathic changes after RPS. Further studies are needed to determine the clinical significance of this finding.

Key Words: pelvic surgery, current perception testing, threshold, sacral reflex testing

Disclosure - Nothing to disclose.

Non-Oral Poster 27

Does Spontaneous Genital Tract Trauma Impact Postpartum Sexual Activity and Function?

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Objectives: To determine whether spontaneous genital tract trauma at birth impacts postpartum sexual function.

Materials and Methods: A prospective cohort of midwifery patients consented to documentation of genital trauma at birth and assessment of sexual activity and function 3 months postpartum. All women delivered vaginally. Trauma was categorized into minor trauma (no trauma or first degree perineal, labial, periurethral or clitoral trauma that did not require suturing) or major trauma (second, third, or fourth degree lacerations or any trauma that required suturing). Sexual activity was defined as a positive response to the question, "Have you been sexually active since the birth of your baby?" Sexually active women completed the Intimate Relationship Scale (IRS), a 12-item validated and reliable questionnaire designed to measure postpartum sexual function. Lower IRS scores indicate poorer sexual function. Wilcoxin and *t* test used where appropriate. Significance set at $P < .05$.

Results: Fifty eight percent (326/565) of enrolled women gave sexual function data, of those, 276(85%) reported sexually activity since delivery. Women who followed up were similar in patient characteristics and labor care measures to those who did not follow-up. Mean age of sexually active participants was 25.7 ± 5.4, 112 (41%) were primiparas, 193 (70%) had minor trauma, and 83 (30%) major trauma. There was one anal sphincter laceration, 52 (19%) second-degree lacerations, and 71(26%) first-degree lacerations. Women who underwent episiotomy and/or operative delivery (n = 11) were excluded from analyses. Women with major trauma were as likely as women with minor trauma to be sexually active (82% vs. 86%, $P = .41$) but had lower IRS sexual function scores (33.5 ± 6.4 vs. 35.6 ± 8.0 total scores, $P = .02$). No differences existed in complaints of dyspareunia between major and minor trauma groups (30 vs. 21% more or much more discomfort with sex, $P = .11$). Women with major trauma had less desire for intercourse ($P = .03$), were less likely to initiate sexual activity ($P = .03$), and were less satisfied with their bodily appearance ($P = .04$).

Conclusion: We found that spontaneous major genital tract trauma resulted in poorer sexual function than minor trauma in a low risk cohort of women, implying that reduction of spontaneous genital tract trauma at birth may improve postpartum sexual function.

Key Words: sexual function, childbirth, genital tract trauma

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Non-Oral Poster 28

Surgical Outcomes of Tutoplast Fascia Lata Graft Placement for the Repair of Posterior Vaginal Prolapse: A Case Control Study

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Objectives: Compare the outcomes of Tutoplast fascia lata augmentation with traditional repairs in the surgical treatment of posterior vaginal wall prolapse.

Materials and Methods: Case control study comparing patients who received Tutoplast cadaveric fascia lata with those who had a traditional repair for the treatment of a posterior vaginal wall defects from January 2001 to June of 2005. Cases with incomplete follow-up data were contacted and asked to return for evaluation. Surgical cure was defined when both Ap and Bp points were less than −1 as determined by the POP-Q exam, and no reoperation occurred on the posterior vagina since the index procedure.

Results: A total of 56 cases were identified during the study period and were matched with 56 controls. The groups had similar length of follow-up (Tutoplast mean = 13.8 months, controls mean = 12.6 months) and were statistically similar in all demographic parameters including body mass index (BMI), parity, comorbidities, and smoking, except for age, which was slightly greater in the Tutoplast group (mean = 54.8) than the controls (mean = 60.9, $P < 0.005$). Of note, more patients receiving Tutoplast had prior prolapse surgery (46% vs. 23%, $P = 0.010$) and a prior posterior repair (PR) (23% vs. 9%, $P = 0.044$) as compared to the controls. Preoperative POP-Q points Ap and Bp values were similar as well (Tutoplast Ap mean = 0.5, Bp mean = 0.5: control Ap mean = 0.3, Bp mean = 0.3). Objective cure rates were statistically equivalent at 6 weeks (Tutoplast = 100%, control = 100%), 6 months (Tutoplast = 97%, control = 90%), and at 1 year or greater (Tutoplast = 92%, controls = 83%) between the two groups. Posterior POP-Q points were significantly more negative in the Tutoplast group at 6 weeks, but the difference was lost at the later exam points. The mean difference between the preoperative Bp and postoperative Bp points also favored the Tutoplast group at 6 weeks, but diminished at later follow-up. Mean total vaginal length (TVL) was significantly greater in the control group at 1 year.

Conclusion: Surgical cure rates are not different than controls when using Tutoplast fascial lata graft in the treatment of posterior vaginal wall prolapse, but there is a statistically significant shortening of the vagina. However, patients with prior prolapse surgery and/or posterior repair may benefit from utilizing this graft for rectocele repair.

Key Words: rectocele, prolapse surgery, allograft

Disclosure - Honorarium for consulting and teaching: Boston Scientific, consultant, teacher; consulting and teaching honorarium: Gyrus Medical, consultant; speaker honorarium: Pfizer, speaker.

Non-Oral Poster 29

Obesity Is Associated With Increased Incidence and Severity of Pelvic Floor Disorders in Women Considering Bariatric Surgery

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Objectives: Although an association between obesity and urinary incontinence has been reported, the association between obesity and pelvic organ prolapse and anal/ fecal incontinence is less clear. The objective of this study was to determine the prevalence of pelvic floor disorders (PFD) including stress (SUI) and urge urinary incontinence (UUI), pelvic organ prolapse (POP) and anal/ fecal incontinence (AI/FI) in obese women contemplating laparoscopic bariatric surgery compared with normal weight subjects.

Materials and Methods: From September 2006 to September 2007, obese women (body mass index (BMI) > 30 kg/m2) contemplating laparoscopic bariatric surgery completed a screening questionnaire for PFD including the validated Sandvik incontinence severity index and Rockwood fecal incontinence severity index as well as questions on

POP. Normal weight women from general obstetrics and gynecology clinics were also screened with the above questionnaire. Information on demographic variables and other clinical parameters were also obtained.

Results: Two hundred and twenty obese (mean BMI of 50 ± 10 kg/m2) and 120 normal weight controls (mean BMI 24 ± 3 kg/m2) were screened. Mean age in the obese patients was 45 years ± 12 (range 15–71) and 41 years ± 15 (range 19–81) ($P = 0.006$) in the normal weight patients. The presence of any PFD was 72% in the obese group compared with 35% in normal weight patients with UI as the most common disorder. Forty-five percent of obese women who were UI had slight incontinence and 55% had moderate or severe incontinence compared with 74% of normal weight controls who had slight incontinence and 26% with moderate or severe incontinence ($P = 0.002$). Of the 23% of obese subjects that complained of AI/FI, the most common was flatal incontinence (100%), followed by liquid (69%), mucus (45%), and solid (41%). Although obese patients also had a higher fecal incontinence severity index compared with normal weight controls (mean score 21 ± 11 vs. 14 ± 11), this was not statistically significant. Obesity remained a risk factor for urinary and anal/fecal incontinence even after adjusting for baseline demographic differences between the groups with an adjusted odds ratio (OR) of 7.8 (95% confidence interval (CI) 3.0–21.6) and OR of 2.9 (95% CI 1–9), respectively.

Conclusion: The prevalence of PFD including SUI, UUI, and AI/FI and severity of UI is higher in obese women contemplating weight reduction surgery than in normal weight women. There were no significant differences in the prevalence of POP between groups.

Key Words: urinary incontinence, fecal incontinence, pelvic organ prolapse, obesity

Disclosure - Nothing to disclose.

Non-Oral Poster 30

Appearance of the Levator Ani Muscle Subdivisions in Endovaginal 3-Dimensional Ultrasonography: Part II, Validation

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Objectives: To formulate a system for visualization of the levator ani subdivisions as seen on endovaginal 3-D ultrasonography.

Materials and Methods: Three-dimensional endovaginal ultrasounds of 60 women were reviewed. The images from 22 healthy nulliparous were chosen to construct a system for image scoring by the reviewers. Subject 10's images were chosen as the reference model. The vaginal scan was divided into levels 0–6 (caudad-cephalad), such that level 0 contained the superficial transverse perinei muscle; level 1 the perineal body; level 2 the puboanalis hypoechoic triangles; level 3 the puboperineal, puboanal, puborectal and the pubovaginal insertion into the pubic bone; level 4 pubovisceral, puborectal, and the pubovaginal muscles; level 5 the iliococcygeous and the pubovisceral muscles; and level 6 the iliococcygeous muscle. Each of these levels was separated by approximately 1 cm. The structures were further divided into those below the pubic bone, A (levels 0 and 1); under the pubic bone B (levels 2, 3, 4); and those cephalad to the pubic bone C (levels 5 and 6). The clarity of the structures and the origin-insertion points were assessed by two blinded reviewers at each level as: clearly seen or partially seen/not seen. Additionally, using the computer workstation the 3-D cubes were manipulated as needed to visualize the entire target muscle. The scans were captured mostly by the principal investigator. All the investigators agreed on the scoring system as a group prior to commencing the evaluation. Two raters (A.S., E.L.) independently performed the post-processing and scoring of the images. The raters were blinded to the subjects' identity. The inter-rater reliability was calculated as the percentage of times a given muscle was seen by both observers.

Results: Twenty-two nulliparous volunteers had a mean age of 24 years (23–30), mean BMI of 24 (20–34), 21 were white and one was Asian. None had any prior surgeries, and none suffered from any acute or chronic illnesses. The entirety of the target muscle could be visualized using 3-D ultrasonography in any given plane. There were the following agreements at each level: 0 = 100%, 1 = 100%, 2 = 91%, 3 = 95%, 4 = 91%, 5 = 91%, and 6 = 68%. The iliococcygeous muscle visualization at level 6 was improved when the subject was asked to squeeze her pelvic floor muscles.

Conclusion: 3-D endovaginal ultrasonography reliably demonstrates all the subdivisions of the levator ani muscle except for the iliococcygeous muscle. The 3-D ultrasound planes can be rotated to visualize the whole length of a given muscle.

Key Words: levator ani, ultrasound, puboperinealis, puboanalis, pubovaginalis, iliococcygeous

Disclosure - Nothing to disclose.

Non-Oral Poster 31

Complications After Uterine Artery Embolization for Symptomatic Uterine Leiomyomas

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Objectives: To determine the incidence and risk factors for complications following uterine artery embolization (UAE) for symptomatic uterine leiomyomas.

Materials and Methods: Electronic medical records of all patients who underwent uterine artery embolization for symptomatic uterine leiomyoma at a tertiary care institution from June 1996 to August 2007 were reviewed. Complications related to UAE were categorized using the Dindo classification system, which is a reliable measure for defining and grading postoperative complications. Grade I referred to any deviation from the normal postoperative course without the need for pharmacologic treatment; grade II complications included treatment with drugs other than those allowed for grade I complications; grade III complications required surgical, endoscopic or radiological intervention - not under general anesthesia grade IIIa, and requiring general anesthesia grade IIIb; grade IV included life-threatening complications requiring ICU management; grade V included patient death. Logistic regression was used to identify independent risk factors for complications related to UAE.

Results: The overall complication rate was 11.6% (53/454), with the majority (10.8%, 49/454) of these events occurring within the first 3 months. One perforation occurred intraoperatively with no sequelae after embolization. Seven patients (1.5%) required hospitalization and 4 patients (0.9%) went into menopause within 3 months after UAE. Grade I complications occurred in 6.1% of patients (28/454), grade II in 4.2% of patients (19/454), grade IIIa in 0.2% of patients (1/454), grade IIIb in 0.7% of patients (3/454), and grade V in 0.2% of patients (1/454). The most common grade I and II complications included: febrile morbidity (2.2%), vaginal discharge (2.2%), pain (1.3%),

presumed endometritis (1.1%), and allergic reactions (1.1%). Urinary retention or infection affected 1.2% of patients. One patient (0.2%) developed cervical necrosis. Three patients (0.7%) required removal of prolapsed submucosal fibroids, 1 in the office and 2 in the operating room. There was one small bowel obstruction secondary to small bowel adherent to the uterine fundus 7 months after UAE requiring laparoscopic enterolysis. Of those patients who underwent subsequent hysterectomy for failed UAE, there was a 12% complication rate (8/69) including: cystotomy (1), hemorrhage >1 liter (3), conversions from laparoscopy to laparotomy (2), conversion to supracervical hysterectomy due to significant adhesions (1), and a single death (1) in a patient who underwent a hysterectomy after presenting with sepsis and disseminated intravascular coagulation 4 months after UAE. After controlling for confounding variables, patients with a history of prior myomectomy are at increased risk (adj OR 1.63, 95% CI 1.11–2.35) for complications following UAE.

Conclusion: Although there is a low rate of morbidity associated with UAE, there are a substantial number of minor complications following this minimally invasive procedure. Patients with a prior myomectomy are at increased risk for developing a complication.

Key Words: complications, uterine artery embolization, interventional radiology, fibroid uterus

Disclosure - Nothing to disclose.

Non-Oral Poster 32

An Anonymous Survey of Urogynecology Fellowship Surgical Experience: A Pilot Study

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Objectives: To determine the breadth and depth of surgical experience within urogynecology fellowship training programs and to ascertain fellows' impression of their training experience.

Materials and Methods: During the September 2007 meeting of the Fellows' Pelvic Research Network, fellows voluntarily and anonymously reported their fellowship surgical experience. Participants estimated their case experience with reconstructive and obliterative procedures and indicated in which areas of expertise they believed they could benefit from an external rotation. The mean of the sum of case experiences was drawn from fully completed surveys (n = 23) and was weighted based on months of fellowship training.

Results: Thirteen of 25 respondents were enrolled in accredited urogynecology fellowship programs and the responses represented all 3 years of training; 10 first, 10 second, and 5 third year fellows. The monthly mean of cases performed was similar across all fellowship years and procedure types but varied markedly between fellows in the same year at different programs (as shown by the broad range reported). The composite total case experience of fellows across the 3 years averaged 84 (40–187) for first years, 318 (145–910) for second years and 1113 (252–1790) for third years. The mean total case experience among third year fellows was: anti-incontinence 337 ± 176 (95–510), apical suspension 269 ± 169 (75–465), colporrhaphy 416 ± 404 (42–840), paravaginal repair 50 ± 36 (10–85), fistula repair 8 ± 8 (0–18), colpocleisis 30 ± 18 (10–50) and sphincteroplasty 4 ± 2 (2–5). Within surgical categories; eg, apical suspensions, most fellows experienced a large number of one procedure and very few of the alternative operations meant to accomplish the same goal. While third year fellows performed 80 to 400 (average 257) midurethral sling procedures, they averaged 14, 15, and 13 pubovaginal slings, urethral bulking, and Burch procedures, respectively. Two of the four third year fellows who responded have not yet participated in a Burch colposuspension. Seventeen of 23 respondents reported performing ≤ 2 paravaginal defect repairs during fellowship training. Seventy percent of fellows reported that they would like to participate in an away elective to enhance their surgical skills and clinical perspectives.

Conclusion: This pilot survey demonstrated tremendous variation in surgical experience between urogynecology fellowship training programs as informally reported by current fellows. These data also highlight the relatively low numbers of paravaginal defect, fistula and sphincter repairs, as well as colpocleisis performed during urogynecology fellowships. This preliminary data (not fully reported here) reveals important trends and disparities in urogynecology fellowship training. A future survey, distributed to all urogynecology fellows, will include office-based clinical practices as well as records from surgical case logs.

Key Words: surgical, urogynecology, fellowship, training, experience, survey

Disclosure - Nothing to disclose.

Non-Oral Poster 33

Surgical Checklists As a Resident Teaching Tool

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Objectives: To design and implement a set of checklists to minimize operative complications occurring during surgical procedures and to serve as guidelines for teaching obstetrics and gynecology residents how to avoid complications.

Description: Weekly resident educational sessions began in July 2005 to identify operative complications of commonly performed surgical procedures and discuss how to prevent those complications. Checklists were created for abdominal incisions, abdominal and vaginal hysterectomy, laparoscopy, Cesarean section and hysteroscopy by listing techniques to avoid complications in the order they would be expected to be performed. Face validity was assessed by experienced surgeons at two separate institutions. Faculty were instructed to review the checklists with residents before and after each procedure and to indicate items not addressed during the procedure. An open-item test was administered at baseline and at 18 months when residents were asked to list specific techniques that prevented complications during the procedures. Scores were compared at baseline and 18 months using Wilcoxon signed rank test and $P < .05$ was considered statistically significant. Eleven residents, 8 (73%) PGY 1 or 2 and 3 (27%) PGY 3 or 4 participated during the study period. Total scores significantly improved from a mean 30% of questions answered correctly to 56% with no statistical differences between groups. PGY 1 and 2 residents had greater improvement in total scores than PGY 3 and 4 residents (33% vs. 3%; $P = .063$). Only 21% of residents were able to describe techniques to avoid visceral injury at baseline. This improved to 44% during the time period. Most faculty did not encourage or help residents use the checklists even though they agreed in principle that this was a worthwhile teaching tool.

Conclusion: Checklist implementation was difficult due to factors such as inconsistent faculty knowledge about surgical techniques and

safety principles, limited faculty and resident post-procedure debriefing time and other logistical barriers. However, the process of developing, refining, and referencing gynecological surgical checklists results in improvement in resident knowledge about surgical complication prevention. Checklists are available from the author (F.R.J.).

Key Words: resident surgical skill, education, surgical technique, surgical checklists

Disclosure - Nothing to disclose.

Non-Oral Poster 34

Comparison of Estimated Cervical Length From the Pelvic Organ Prolapse-Quantification Exam and Actual Cervical Length at Hysterectomy: Can We Accurately Determine Cervical Length?

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Objectives: To determine if the estimated cervical length (eCL) measured by subtracting point D from point C from the Pelvic Organ Prolapse Quantification exam (POP-Q) can be used to determine actual cervical length (aCL).

Materials and Methods: The charts of 39 consecutive patients who underwent hysterectomy in 2007 were reviewed. Subjects were included if they had a preoperative POP-Q exam documented and a cervical length measurement recorded on the pathology report. The eCL was calculated from the preoperative POP-Q by subtracting point D from point C. A two-tailed paired *t* test was performed comparing eCL and aCL to determine if the measurements differed.

Results: The mean age and parity for the 39 patients were 54.1 (±11.80) and 3.3 (±2.17) respectively. The mean eCL was 5.6 (±2.91) cm and the mean aCL was 3.2 cm (±0.99). The paired comparison showed that there was a statistically significant difference ($P < 0.0001$).

Conclusion: The diagnosis of cervical elongation can be challenging. Many clinicians use the POP-Q to help make this diagnosis preoperatively, by subtracting point D from point C to get an estimated cervical length. The assumption of correlation of eCL and aCL may not be accurate.

Key Words: prolapse, POP-Q, cervical length

Disclosure - Nothing to disclose.

Non-Oral Poster 35

Toward a Large Animal Model of Obstetrical Fistula

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Objectives: To provide a descriptive analysis of adult female sheep anatomy, physiology, and histology as relevant to the creation, and validation of an ovine model of obstetrical fistula.

Materials and Methods: Three live adult female sheep underwent urethral pressure profilometry. Functional urethral length, maximum urethral closure pressure (MUCP), and baseline resting vesical pressure were measured. Cadaveric dissection was performed on 3 female adult sheep. Surgical access to the bladder base and urethra was assessed. Histological slides were prepared from 2 different adult female sheep urogenital explants and urethral ultra structure was analyzed.

Results: Using standard instrumentation vaginal surgical access to the urethra and bladder was adequate for the creation of experimental vesicovaginal fistula.

Anatomic Findings:

1. The urethra and bladder base are positioned directly adjacent to the anterior vaginal wall.
2. The external urethral meatus was found along the anterior vaginal wall at a point approximately 2 cm from the introitus.
3. The vagina could be easily distended to a diameter of 5 cm.
4. Intravesical ureteral ostia were 1.5 cm apart (± 0.2 cm.)
5. Intravesical ureteral ostia were 3.0 cm from internal urethral meatus (± 0.5 cm.).
6. Vaginal length = 15 cm (± 0.6cm.)
7. Anatomic urethral length = 6.5 cm (± 0.3 cm.)

UPP Findings:

1. Functional urethral length = 6.0 cm (± 0.3 cm)
2. Resting intravesical pressure = 9 cm H_20 (± 1.8 cm H_2O)
3. Maximum urethral closure pressure = 199 cm H_2O (± 20 cm H_2O).
4. The UPP curve was found to be a symmetric crescendo-decrescendo curve with the MUCP recorded at approximately 50% anatomic urethral length.

Histological Findings:

1. Distance from urethral lumen to vaginal lumen at midurethra = 5 mm.
2. Distance from urethral lumen to vaginal lumen at bladder neck = 8 mm.
3. The female sheep urethra is composed of pseudostratified columnar epithelium, a densely vascular submucosa, an inner longitudinal band of smooth muscle, and an outer circular band of smooth muscle as seen in the human female urethra.

Conclusion: Obstetrical fistula affects millions of women in developing countries. An animal model provides a means to study fistula repair, in the near term, and subsequently restoration of the urethral continence mechanism via stem cell technology. This pilot paper shows that:

1. Vaginal surgical access to the adult female sheep bladder base and urethra is adequate for creation of experimental vesicovaginal fistula.
2. Vaginal caliber and length, the position of the external urethral meatus, position of ureteral ostia within the bladder, and the relationship of urethra and bladder to the anterior vaginal wall are comparable to the human female.
3. Histology of the adult sheep urethra and bladder base is similar to human.
4. The adult female sheep urethral length and MUCP are approximately twice that of the human female.

Key Words: obstetric fistula, animal model, sheep

Disclosure - Nothing to disclose.

Non-Oral Poster 36

The Relationship of Prolift Trocar Targets to the Female Bony Pelvis

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Objectives: To examine the relationship between the Prolift trocar targets and the surrounding bony architecture of the female pelvis.

Materials and Methods: Ninety-six disarticulated female pelvises were selected from the Hamann-Todd collection at the Cleveland Natural History Museum and reassembled using a standardized technique. Three-dimensional coordinates of all pertinent architectural bony landmarks were obtained using the MicroScribe G2 3-D Digitizer (Immersion Corporation, San Jose, CA) and distances were calculated. Measurements for right and left sides were averaged. Prolift mesh was measured with a measuring tape and the area was calculated using Image-J (NIH, Bethesda, MD). The positions of ligaments were calculated from their bony attachments.

Results: For the anterior segment of the Prolift mesh, two straps secure to the distal (pubic) and proximal (ischial) arcus tendineus fascia pelvis (ATFP) bilaterally. The mean distance that the distal trocar traverses from its site of entrance into the pelvis (medial obturator foramen) to its ATFP target was 1.9 cm (SD 0.2, range 1.4–2.4). The mean distance that the proximal trocar must traverse from its site of entrance into the pelvis (inferior obturator foramen) to its ATFP target was 3.7 cm (SD 0.3, 3.1–4.5). The posterior Prolift mesh is secured to the sacrospinous ligaments (SSL) by straps bilaterally. The mean distance between the anterior ischial tuberosity and the posterior trocar target (SSL) was 8.8 cm (SD 0.6, 7.3–10.4). Widths of the Prolift mesh were compared to corresponding distances in the pelvis. The mean distance between the middle of the ATFP on either side of the pelvis was 6.3 cm (SD 0.05, 5.4–7.6); significantly smaller than the mean width of the anterior Prolift mesh (9.25 cm [8.0–10.5]). The mean distance between the middle of the SSL bilaterally was 8.4 cm (SD 0.6, 7.1–11.5); significantly larger than the mean width of the Prolift mesh (4.75 cm [3.5–6]). The mean area of the pelvis that the anterior mesh is intended to cover was 48.73 cm^2 (SD 4.98, 38.2–63.5), which is smaller than the area of the anterior Prolift mesh (66.8 cm^2).

Conclusion: Variability in the bony architecture of the female bony pelvis may affect Prolift trocar targets. Given human error in blindly inserting a trocar to a distant target in the pelvis, the variation in positions of these targets is not significant (SD $\leq$0.6 cm). However, taking this variation and human error into account, there is concern that these trocars can be placed in a consistent manner if bony landmarks and ligaments are the only reliable points of reference. Given the discrepancy between the mesh areas and morphologic distances, there is great potential for excess mesh as well as mesh arm bridges. These variations may have an impact on placement, tensioning, and complications related to the Prolift procedure.

Key Words: Prolift, bony pelvis, transvaginal mesh

Disclosure - Nothing to disclose.

Non-Oral Poster 37

Descriptive Study of the Location of the Ischial Spines in Women Undergoing Apical Suspension Surgery

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Objectives: To assess the relationship between total vaginal length and the location of the ischial spines and points 1 and 2 cm caudad to the spines as a means to characterize potential prespinous suspension points for the correction of apical defects.

Materials and Methods: One hundred patients were recruited for this prospective case series. Measurements in centimeters for total vaginal length, distance of right and left ischial spines (IS) from the introitus, and characterization of pelvic types (gynecoid, android, arachnoid, or platypelloid) were taken. The location of the ischial spine along the length of the vagina was determined as a percentile of the total vaginal length. Prespinous fixation points 1 cm (IS-1) and 2 cm (IS-2) caudad to the ischial spine were also characterized as measured points along the total vaginal length and reported as percentiles of total vaginal length. Utilizing these three points (IS, IS-1, IS-2) as potential fixation sites for apical support surgery, the relevance for each point as a site for apical support was assessed. Differences in findings for menopausal status, prior hysterectomy, prior pelvic organ prolapse surgery, stage of pelvic organ prolapse, and pelvic types were also examined.

Results: The mean total vaginal length (TVL) was found to be 9.3 cm $\pm$ 1.0 cm. Mean ischial spine distance from the hymenal ring on the left and right spines were 7.4 $\pm$ 0.7cm (79.1% $\pm$ 8.0 of the TVL) and 7.4 $\pm$ 0.8 cm (79.4% $\pm$ 8.5 of the TVL), respectively. Suspensory point IS-1 was found to be located at 6.4 $\pm$ 0.7 cm (68.3% $\pm$ 7.4) on the left and at 6.4 $\pm$ 0.8 cm (68.6% $\pm$ 8.0) on the right. Suspensory point IS-2 was located at 5.4 $\pm$ 0.7 cm (57.5% $\pm$ 6.9) on the left and 5.4 $\pm$ 0.8 cm (57.8% $\pm$ 7.6) on the right. The differences in locations (ie, percentile) of all three points (IS, IS-1, IS-2) along the vagina were statistically significant ($P < 0.0001$). This finding did not change when controlling for variables such as menopause, hysterectomy, prior prolapse surgery, and severity of current prolapse. However, prespinous suspension points were found to be higher in the vagina (ie, greater percentile of the TVL) in a platypelloid pelvis compared to an android pelvis ($P < 0.03$).

Conclusion: The designation of an apical fixation point caudad to the ischial spine risks supporting a statistically significant lower percentage of the total vaginal length. This finding becomes more dramatic as the distance from the ischial spine increases. When performing an apical suspension surgery, whether by suture fixation, graft placement, or mesh suspension kit, it would subsequently appear beneficial to avoid prespinous anchor points and consider attachment points at the level of the ischial spine or higher (eg, sacrospinous ligament, uterosacral ligament).

Key Words: prolapse surgery, ischial spine, prespinous suspension

Disclosure - Nothing to disclose.

Non-Oral Poster 38

Composite Graft Use in Abdominal Sacral Colpopexy Reduces Erosion Rates

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Objectives: To determine the erosion rate of a composite biologic and synthetic graft during abdominal sacral colpopexy. The cost effectiveness of the composite graft was compared to the reoperation rate due to erosion of a synthetic-only graft.

Materials and Methods: Retrospective chart review of all patients who underwent abdominal sacral colpopexy at our institution between April 2001 and May 2007. Patients received either a biologic graft (porcine dermis or donor allograft), a synthetic graft (polypropylene), or a composite biologic/synthetic graft (porcine dermis, bovine dermis, or human dermis in combination with polypropylene). The primary outcome was erosion rate. The number needed to treat was calculated based on the 3% risk of reoperation for mesh erosion that has been reported in the literature. The cost of a composite graft was compared to the cost of reoperation for mesh erosion of a synthetic-only graft.

Results: A total of 55 charts were reviewed. Twelve patients received synthetic-only grafts, 5 received biologic-only grafts, and 38 received composite biologic/synthetic grafts. Mean age was 62 years (SD 11, range 35–79), mean BMI was 28 (SD 5.4, range 17–47), and median parity was 3. Mean follow-up time was 12 months (SD 13, range 2.5–65). One of 12 patients (8.3%) in the polypropylene group experienced mesh erosion. Zero patients in the composite graft group (N = 38), and 0 patients in the biologic graft group (N = 5) experienced mesh erosion. The number needed to treat was calculated assuming a 3% risk of reoperation due to graft erosion. Thirty-three patients need to be treated with a composite graft in order to avoid one mesh erosion from a synthetic-only graft. Estimated cost of reoperation for mesh erosion was calculated. Total cost for reoperation using an abdominal approach is approximately $17,650, and for a vaginal approach $5450. The cost of the addition of a biologic graft to the polypropylene mesh alone ranges from $500 to $900. Thus, to treat 33 patients with a composite graft costs in the range of $16,500 to $29,700. If a $500 composite graft is used, the cost of reoperation performed abdominally is more expensive than the cost of the actual graft. However, if reoperation is performed vaginally, the cost of the graft is more expensive. A $900 composite graft is more expensive than the cost of reoperation performed abdominally or vaginally. These calculations do not include lost wages or the cost of increased doctor visits related to graft erosion.

Conclusion: In this case series, the use of a composite graft resulted in a lower overall erosion rate when compared to synthetic-only grafts. However, given the number needed to treat with a composite graft in order to avoid one mesh erosion of a synthetic graft, the use of combined biologic/synthetic grafts may or may not be cost effective. Not all costs of reoperation were included in this analysis and impact on quality of life could not be accounted for.

Key Words: erosion, composite graft, abdominal sacral colpopexy

Disclosure - Nothing to disclose.

Non-Oral Poster 39

Reconstructive Pelvic Surgery and Plastic Surgery: Safety and Efficacy of Combined Surgery

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Objectives: As the population lives longer and enjoys more active lifestyles, patients actively pursue surgical options that will improve body image as well as quality of life. Today patients are seeking to combine pelvic floor and aesthetic reconstructive surgery. The objective of this study is to address the feasibility and safety of combining such surgical procedures.

Materials and Methods: A case-control study of patients who underwent combined pelvic floor reconstructive and aesthetic surgical procedures between 2001 and 2007. Patients were matched by age and procedure to one of two control groups: isolated pelvic or plastic surgery. Estimated blood loss, preoperative and postoperative complete blood counts, surgical time, length of hospital stay, perioperative and postoperative complications were compared between groups using the t test, χ^2 and Kruskal-Wallis statistics.

Results: A total of 54 patients were enrolled. Data from 18 combined cases, 18 pelvic controls, and 18 plastic controls are available for comparison. The mean age is 53 years. No significant difference was seen in BMI between groups. The combined group included 11 complications: 2 transfusions, 2 plastic surgery revisions, 1 case of cellulitis, 2 mesh sling erosions requiring office resection, and 3 cases of persistent stress urinary incontinence (SUI). All three cases of SUI occurred in patients who had undergone concomitant abdominoplasty. The complication rate in the pelvic surgery group was 16.7% and 33% in the plastic group. Mean number of complications is significantly greater in the combined group versus pelvic controls (0.78 vs. 0.22, $P = .001$). No significant difference in complications was seen in the combined versus plastic group. There was no significant difference in estimated blood loss between groups; however, the mean difference in preoperative versus postoperative hemoglobin was significantly greater in the combined versus pelvic groups (3.07 vs. 1.91, $P = .009$) as was the mean difference in preoperative versus postoperative hematocrit (9.01 vs. 6.2, $P = .02$). Mean operative times were significantly greater in the combined versus pelvic group (396 vs. 163 minutes, $P < 0.001$) but not the combined versus plastic group (396 vs. 359 minutes, $P = 0.282$).

Conclusion: Combining pelvic and aesthetic surgery can increase minor complication rates, operative times, and lower postoperative blood counts compared to pelvic reconstructive surgery alone but not isolated plastic surgery. Incontinence procedures combined with abdominoplasty may increase the risk of recurrent incontinence but additional studies are needed.

Key Words: pelvic reconstructive surgery, plastic surgery, abdominoplasty, recurrent incontinence

Disclosure - Nothing to disclose.

Non-Oral Poster 40

Perioperative Morbidity in Women Undergoing Vaginal Hysterectomy With and Without Additional Reconstructive Pelvic Floor Surgery

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Objectives: Quality improvement is predicated on outcomes assessment, and risk adjustment is critical for meaningful outcomes evaluation. We sought to compare the complication rates in women undergoing vaginal hysterectomy alone to those with additional reconstructive surgery. We also identified important factors predicting morbidity with pelvic reconstructive procedures.

Materials and Methods: We reviewed all cases of total vaginal hysterectomy for benign indications from January 2004 through December 2005. The chart review consisted of the initial surgical consultation, operative note, inpatient and anesthesia records, direct patient communication, and postoperative examination; complete records were required. The cohort was divided into women who did and did not have additional pelvic reconstructive surgery. Complications were defined as an unplanned ICU admission, perioperative reoperation, hospital readmission, or any medical problem requiring intervention from the time of surgery to 9 weeks postoperative. Comparisons between groups were made using the χ^2 test or Fisher exact test for nominal variables and the Wilcoxon rank sum test for continuous variables.

Results: A total of 712 patients met inclusion criteria. Compared to vaginal hysterectomy alone (N = 376), women undergoing additional reconstructive pelvic surgery (N = 336) were significantly more likely to have a perioperative complication (43.2% vs. 20.2%, $P < 0.001$). Specifically, urinary tract infection (26.2% vs. 5.1%) and pulmonary

edema (1.5% vs. 0%) were more likely. Although there were no differences in the number of readmissions or reoperations, patients with pelvic reconstruction were more likely to have medical problems requiring intervention (35.4% vs. 13.8%, $P < 0.001$) as well as unplanned ICU admissions (2.1% vs. 0%, $P = 0.005$). Within the group who underwent additional reconstructive pelvic surgery, patients who experienced a complication had a significantly longer operating room time (mean 203.1 vs. 184.2 minutes, $P = 0.006$) and higher estimated blood loss (mean 322.8 vs. 285.2 milliliters, $P = 0.014$). Additionally, patients with cardiopulmonary comorbidities were more likely to have a complication (3.7% vs. 0.4%, $P = 0.002$).

Conclusion: Women undergoing vaginal hysterectomy with concurrent pelvic reconstructive surgery have a higher frequency of complications compared to those just having a vaginal hysterectomy. Specific medical illnesses increase perioperative morbidity, although the frequency of readmission or reoperation did not differ between these groups.

Key Words: vaginal hysterectomy, perioperative complications, reconstructive surgery

Disclosure - Nothing to disclose.

Non-Oral Poster 41

Bladder Symptoms Following Surgical Mesh Kit Placement

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Objectives: The purpose of this study was to assess de novo urge and stress urinary incontinence (SUI) symptoms as well as resolution of urge and stress incontinence following Prolift polypropylene mesh system (Ethicon WHU, Sommerville, NJ).

Materials and Methods: A prospective cohort of subjects undergoing vaginal reconstructive surgery for prolapse using Prolift was followed for up to 12 months postoperatively. History, physical examination, (including POP-Q measurements) and validated quality of life questionnaires (PFDI-20 and PFIQ-7 short forms) were assessed at baseline, 3 and 12 months after surgery. Urodynamic studies (UDS) were performed at baseline. Answers to questions 16 (urge incontinence) and 17 (stress incontinence) of the PFDI questionnaire were extracted and evaluated independently.

Results: Sixty-two subjects underwent vaginal reconstructive surgery with 6 (10%) of them having a concomitant midurethral sling (3 TOT and 3 TVT). Of the cohort, 58 (93.6%) were postmenopausal, 17 (27.4%) had prior prolapse surgery, and 12 (19.4%) had prior anti-incontinence surgery. Mean POP-Q stage at baseline 2.9 ($\pm$0.5) decreased to a mean stage of 0.9 ($\pm$0.8) at 3 months and a mean stage of 1.0 ($\pm$0.8) stage at 12 months. Interval anti-incontinence operations (1 sling and 5 periurethral bulking injections) were performed at 3 and 12 months. At baseline, 19 subjects (30.7%) had urodynamic detrusor overactivity with 15 (78.9%) having bothersome urge incontinence symptoms on PFDI #16. Thirty (48.4%) subjects were found to have urodynamic stress incontinence preoperatively with 18 (60%) of them having bothersome SUI on PFDI #17. At follow-up, 14/36 (38%) subjects with urge incontinence symptoms at baseline and 15/29 (52%) subjects with stress incontinence symptoms at baseline had symptom resolution. No factors were found to be significantly associated with de novo urge or stress incontinence. However, resolution of urge and stress incontinence symptoms was strongly associated with the use of anterior and total Prolift mesh kits.

Conclusion: Our findings suggest that de novo urge and stress symptoms are fairly uncommon in patients undergoing vaginal prolapse repair using the Prolift mesh system. Moreover, resolution of urge urinary incontinence symptoms is found to be strongly associated with anterior and total Prolift insertion.

Key Words: Prolift, bladder symptoms, de novo stress incontinence, de novo urge incontinence, resolution of stress incontinence, resolution of urge incontinence

Disclosure - Nothing to disclose.

Non-Oral Poster 42

Development and Testing of a Fluid Intake Knowledge Questionnaire in Women With Lower Urinary Tract Symptoms

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Objectives: Prior studies have shown a relationship between fluid intake behavior and lower urinary tract symptoms in women. There is a need to define women's knowledge and attitudes about fluid intake to understand fluid intake behavior and subsequently develop educational modules directed at modifying fluid intake. The aim of this study was to validate a questionnaire designed to measure and describe knowledge, attitudes, and perception about fluid intake.

Materials and Methods: One hundred sixty-eight women older than 18 years reporting to the urogynecology clinic for their initial visit were included in the study. Women were excluded if they had diabetes, diuretic use, renal disease, or neurological disorders. At the baseline visit, all enrolled patients were administered a new instrument: the Knowledge, Attitudes, and Perceptions about Fluid Intake Questionnaire (KAP-FI). Instrument content was based on literature review and the result of focus groups. The final instrument contained 22 items assigned to 3 subscales: knowledge of the amount of and type of fluid intake, attitude to fluid intake, and perceived health benefits from fluid intake. The KAP-FI was also administered to a sample of 50 urogynecologists to assess construct validity. All women also completed a 48-hour traditional voiding diary using a log and a container and the Bristol Lower Urinary Tract Symptom-Scored form (LUTS-SF). Seventy-two women completed the KAP-FI after a 2-week run-in period with no change in treatment, and 2 to 3 months later following treatment of their urinary symptoms. The psychometric properties of the final instrument were assessed.

Results: Mean age, parity and BMI of the 90 women was 55 $\pm$ 15, 2 $\pm$ 1.5 and 27 $\pm$ 6, respectively. Seventy-five percent of women were white. The questionnaire demonstrated strong internal consistency (Cronbach alpha = 0.81) and test-retest reliability (Intraclass correlation coefficient = 0.74). The instrument also has good construct validity, with the experts' scores differing significantly from the patients' scores on total fluid, water and fruit juice intake ($P < 0.01$) but not on caffeine or soda intake ($P > 0.05$). Most study participants (53%) believed that the appropriate amount of total daily fluid intake is more than 6 glasses and 31% felt that the appropriate amount of daily water intake is more than 6 glasses. Mean total fluid intake in this population was 95 $\pm$ 52 oz. However, 70% of the study participants felt that experts would suggest that they increase their daily fluid intake. Over half of the women (52%) reported forcing themselves to drink water in the absence of thirst. There was a moderate correlation between the attitude to fluid intake and the frequency subscale of the Bristol LUTS-SF ($r = 0.51$, $P < 0.01$).

Comparison of scores before and after treatment showed the ability of the instrument to be responsive to change.

Conclusion: The Knowledge, Attitudes, and Perceptions about Fluid Intake Questionnaire is a brief, valid, and reliable questionnaire that will be useful in studying the relationship between fluid intake knowledge and fluid intake behavior.

Key Words: questionnaire validation, patient education, pelvic floor health, bladder symptoms

Disclosure - Nothing to disclose.

Non-Oral Poster 43

Effect of Hormone Replacement and SERMS on the Biomechanical Properties of Pelvic Organ Support Ligaments: Lessons From the Monkey Model of Menopause

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Objectives: To evaluate the effects of three common synthetic estrogen replacement modifiers (SERMS) on the viscoelastic properties of the uterosacral ligament in the monkey model of menopause as characterized by the peak and equilibrium moduli obtained by a series of stress relaxation experiments.

Materials and Methods: A randomized, double blind, placebo controlled study on adult female Macaca fascicularis. All procedures were approved by the Institutional Animal Care and Use Committee of all three institutions. Specimens: Animals were ovariectomized and randomized to receive 12 months of either no treatment (OVX) (control, n = 3), raloxifene n = 2), tamoxifen (n = 2) or ethinyl estradiol (n = 1) at doses that were scaled from those doses taken by an average women consuming 1800 kcal/day. At the end of this period animals were humanely euthanized. The uterosacral ligaments were harvested immediately after sacrifice, stored in physiologic saline (0.15 M) at −25° C until testing. A 0.05N tare load was applied to determine the initial test length of the specimen. Mechanical testing done by same blinded tester using a computer-controlled custom made tensile testing apparatus (MicroTester 5848, Instron). A series of step strains ranging from 5% to 30% measured the resulting force in the ligament, which was continuously bathed in physiologic (0.15M) saline. Then the ligaments were allowed to relax and a ramp displacement of 0.1 mm/sec was applied until failure. Analyses: The specimens were allowed to stress-relax at each strain level. The cross-sectional area of the specimen was computed from the average width and thickness of the specimen obtained from optical measurements (ImageJ, NIH) and the engineering stress was computed at each strain level. The resulting stress-strain curves were fit to an exponential relationship for both the peak and equilibrium stresses. The peak and equilibrium moduli at 0% strain were computed from these curve-fits (3). Statistics: Individual one-way ANOVAs with treatment as the factor were run for to determine if there were statistically significant differences in the peak and equilibrium stresses, as well as for the ratio of peak to equilibrium stress between treatments for percentage strains of 5, 10, 15, 20, 25, and 30. A Student-Newman-Keuls multiple comparisons test was used to discern differences between treatment regimens. A value of $P < 0.05$ was taken to represent a statistically significant difference.

Results: The raloxifene group had the lowest peak (0.153 ± 0.016 MPa) and equilibrium moduli (0.050 ± 0.006 MPa) of the 4 groups. The tamoxifen group had the next lowest peak (0.290 ± 0.096 MPa) and equilibrium moduli (0.105 ± 0.048 MPa), followed by the control group (0.457 ± 0.115), with the ethinyl estradiol sample having the highest peak (1.155 MPa) and equilibrium moduli (0.271 MPa).

Conclusion: The moduli represent the stiffness of the ligament. Both raloxifene and tamoxifen were found to have a lower stiffness than the control group, whereas the ethinyl estradiol sample had a greater stiffness than the control group. These findings support clinical observations reported by our group.

Key Words: Macaque monkey, uterosacral ligaments, SERMS, raloxifene, tamoxifen, hormone replacement

Disclosure - Nothing to disclose.

Non-Oral Poster 44

The Role of Urinary Tract Imaging in the Management of Recurrent Urinary Tract Infections

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Objectives: To describe the prevalence of positive findings on urinary tract imaging in women with recurrent urinary tract infections and to determine the frequency of treatment modification based on imaging findings.

Materials and Methods: Charts of women presenting to a urogynecology referral center with complaints of recurrent urinary tract infections were identified for the period of January 2003 to April 2007. From this group, women evaluated with upper urinary tract imaging were identified and their charts were reviewed. Information collected and evaluated included demographics, past medical and surgical history, laboratory and imaging findings, and treatment modification resulting from imaging findings. Descriptive statistics, Fisher exact test and Student *t* test were performed as appropriate.

Results: One hundred twenty-one women were identified and included in this study. Mean age was 59.1 (±16.8) and 69% were postmenopausal. Mean number of urinary tract infections reported was 4.9 (±3.5) per year. Seventy-six percent of women reported incontinence, 10% currently used tobacco, 15% were diabetic, 8% used chronic steroids, 1% were immunocompromised, and 13% had prior bladder surgery. On laboratory examination, 12% of subjects had hematuria on an uninfected urinalysis. The prevalence of positive findings on cystoscopy was 8.1% (9/112), and for all radiologic imaging 39.7% (48/121). Overall prevalence of positive findings on any imaging study was 24.5% (57/233). The frequency of treatment modification after cystoscopy was 4.5% (5/112), and after all radiologic imaging was 18.2% (22/121). Overall frequency in treatment modification for all imaging obtained was 11.6% (27/233). Variables found to be significantly associated with positive imaging findings were age and postmenopausal status ($P = .003$ and .017, respectively). Number of urinary tract infections reported, hematuria, steroid use, prior bladder surgery, tobacco use, and diabetes were not associated with positive imaging findings. There was a trend towards association between incontinence symptoms and positive imaging findings, although this was not statistically significant ($P = .052$).

Conclusion: Imaging studies obtained secondary to recurrent urinary tract infections in our population yield positive findings 24.5% of the

time, and treatment modification occurs as a result of this imaging 11.6% of the time. Positive findings on imaging do not always mean treatment will be modified. This suggests that obtaining imaging in this population may not be high yield, although older postmenopausal women may be more likely to have positive imaging findings. Further studies are needed to evaluate the cost-effectiveness of imaging in this patient population.

Key Words: treatment, recurrent urinary tract infection, imaging

Disclosure - Nothing to disclose.

Non-Oral Poster 45

Risk Factors for Advanced Pelvic Organ Prolapse in Asian Women

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Objectives: To identify risk factors for advance pelvic organ prolapse in Asian women.

Materials and Methods: We performed a retrospective study of a convenience sample of women referred for evaluation of pelvic organ prolapse (POP) or urinary incontinence between January 1, 1991 and June 1, 2000, in the San Francisco Community Health Network (CHN). Details of a structured pelvic examination performed under the supervision of the senior author and demographic information were abstracted from medical records. POP was assessed by noting the maximum level of descent of each of six sites (bladder neck, anterior vaginal wall cephalad to the bladder neck, apex, cervix, superior and inferior posterior vaginal wall) when the patient was examined in dorsal lithotomy position. The Baden-Walker classification was used to categorize the level of prolapse. The χ^2 or Fisher exact test (where appropriate) were used to analyze categorical variables while the Student t test was used for continuous variables. All statistics were performed with the SPSS package.

Results: One hundred thirty Asian women were identified during the study period. The mean age was 57.7 years (range 23–93). Women with Grade 3 and 4 prolapse of the anterior vaginal wall cephalad to the bladder neck had higher gravidity (6.4 ± 3.0 vs. 4.5 ± 3.5, $P = 0.002$), parity (5.4 ± 2.8 vs. 3.5 ± 2.6, $P < 0.001$) and were less likely to have had a hysterectomy (4% vs. 20%, $P = 0.02$) than women with Grade 1 and 2 prolapse. No risk factors were identified for the other five sites.

Conclusion: Increasing gravidity and parity are risk factors for Grade 3 and 4 anterior vaginal wall prolapse in Asian women. A prior hysterectomy appears to be protective against advance prolapse of the anterior vaginal wall.

Key Words: pelvic organ prolapse, Asian women, risk factors

Disclosure - Nothing to disclose.

Non-Oral Poster 46

Symptoms of Anal Incontinence and Impact on Sexual Function

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Objectives: To determine if symptoms of anal incontinence have an impact on sexual function as measured by the Pelvic Organ Prolapse/Urinary Incontinence Sexual Questionnaire (PISQ-12) in a cohort of women with pelvic floor disorders and/or incontinence. We propose that sexual function in women with symptoms of anal incontinence (AI) would be affected by advancing stage of prolapse. Women with AI and prolapse would have more sexual dysfunction than those without AI and the same stage of prolapse.

Materials and Methods: We analyzed a cohort of consecutive women with pelvic floor disorders and/or incontinence presenting for care to an academic urogynecology practice from January 2007 to August 2007, inclusive. Demographic information, medical history, pelvic organ prolapse quantification (POPQ) exam, and answers to the Pelvic Floor Distress Inventory (PFDI-20) relating to the symptoms of anal incontinence (AI) and the PISQ-12 were recorded. A control group was established from those patients who answered "no" to questions 9 through 11 on the PFDI-20. The AI group consisted of those selecting "yes" to any or all of the same questions on the PFDI-20. The stage of prolapse was categorized by the POPQ exam. χ^2 tests were used to compare equality of distributions for categorical variables. Student t test was used to compare differences between groups for each of the PISQ-12 questions and total score. Analyses were conducted with SPSS 14.0 (SPSS Inc., Chicago, IL 2006), and $P < 0.05$ was considered statistically significant.

Results: Five hundred sixty-two charts were reviewed; 203 met inclusion criteria, 107 in the control group and 96 with symptoms of AI. There were no statistically significant differences between the control group and AI group with respect to parity, number of vaginal deliveries, or cesarean sections. The AI group was more likely to report a history of forceps-assisted vaginal delivery (36 vs. 21, $P = 0.016$). The control group had a significantly lower mean score on the PISQ-12 as compared to the AI group, 13.6 and 16.2 ($P = 0.008$), respectively. The mean PISQ-12 score in patients with AI having stage 0 or 1 prolapse (n = 29, mean = 14.5) did not have a significant difference as compared to those with stage 2 or greater prolapse (n = 67, mean = 16.9, $P = 0.106$). Women with stage 0 or 1 prolapse had a lower score on the PISQ-12 than those with stage 2 through 4 prolapse, with means of 12.7 and 16.0, respectively ($P < 0.001$). Comparing the AI and control group, based on stage of prolapse, there was no difference in sexual activity.

Conclusion: Symptoms of AI did not decrease sexual activity among women with different stages of prolapse as compared to controls with the same stage of prolapse. Symptoms of AI as measured by the PFDI-20 do not correlate with poor sexual function as measured by the PISQ-12 in our patient population.

Key Words: sexual function, prolapse, anal incontinence

Disclosure - Nothing to disclose.

Non-Oral Poster 47

Objective Structured Assessment of Technical Skills (OSATS) for Repair of Fourth Degree Perineal Lacerations

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Objectives: Objective structured assessments of technical skills (OSATS) are educational tools that are used for teaching and competency-based evaluation of trainees. Our primary objective was

to assess the reliability and validity of a task-specific OSATS and global rating scale for repair of fourth-degree obstetric lacerations. Our secondary objective was to assess resident education and experience in repairing perineal lacerations.

Materials and Methods: Twenty junior (PGY 1–2) and 20 senior (PGY 3–4) obstetrics and gynecology residents from two institutions were surveyed and videotaped performing a simulated fourth-degree laceration repair using a beef tongue perineal laceration model. Three independent and blinded judges reviewed the recordings in a random order. Reviewers were instructed to complete two evaluation tools for each repair: a task-specific OSATS and a global rating scale. The task-specific OSATS assessed knowledge of relevant anatomy, choice of suture and needles, and repair techniques for a maximum score of 20. The global rating scale is a previously validated assessment of seven categories of surgical skills with a maximum score of 35. Six random repairs were reviewed a second time after 2 weeks. Inter-rater reliability was estimated using intraclass correlation coefficients and intrarater reliability by Spearman correlation coefficients. Construct validity was evaluated by Student *t* test for the total mean scores.

Results: Inter-rater reliability was 0.92 (95% CI: 0.87–0.96) for the task-specific OSATS and 0.81 (95% CI: 0.69–0.90) for the global rating scale. The intrarater reliability coefficients, by reviewer, were 0.46, 0.80, 0.83 for the task-specific OSATS and 0.81, 0.50, 0.46 for the global rating scale. The task-specific OSATS and global rating scale scores were significantly lower in junior compared to senior residents (task-specific 10.5 vs. 13.0, $P = .007$; global 19.3 vs. 24.0, $P = .001$). Fifty-five percent of residents had performed less than three third-degree laceration repairs, and 95% had performed less than three fourth-degree laceration repairs. Residents who had more experience with anal sphincter repairs had higher task-specific and global rating scores (task-specific 10.4 vs. 13.0, $P = .001$; global 19.1 vs. 24.7, $P < .001$). Regarding resident education, 75% of residents had received formal education regarding pelvic anatomy, but only 7.5% had received formal education regarding perineal laceration repair.

Conclusion: We found good inter-rater reliability and construct validity using a new, task-specific OSATS to assess fourth-degree perineal laceration repair. This instrument shows promise as a tool for education and competency-based evaluations of fourth-degree laceration repairs.

Key Words: OSATS, surgical education, perineal laceration, fourth degree laceration, anal sphincter repair, competency

Disclosure - Nothing to disclose.

Non-Oral Poster 48

We Are Missing an Opportunity to Teach Future Primary Care Providers About Female Pelvic Floor Disorders

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Objectives: Urinary incontinence and pelvic floor disorders (PFD) are more prevalent than many common medical conditions, such as diabetes and hypertension; yet most medical schools do not have formal curricula to teach pelvic floor disorders. Given the high prevalence and cost of PFD, our aim was to quantify what medical students (MS) were learning about urinary incontinence (UI), fecal incontinence (FI), pelvic organ prolapse (POP), sexual dysfunction (SD), and chronic pelvic pain (CPP).

Materials and Methods: A survey of was mailed to 266 United States and Canadian third year MS Obstetrics/Gynecology (OG) clerkship directors (CD) obtained from the Association of Professors of Gynecology and Obstetrics. The survey asked about program size, who taught the MS, time spent during the third year clerkship in 5 areas; general obstetrics (GO), benign gynecology (BG), gynecological oncology (GOnc), reproductive endocrinology (REI), urogynecology (UG), the importance of and barriers to teaching MS about PFD, and, lastly, ways to help incorporate the topic into the curriculum. Data were analyzed using SPSS Version 13 (Chicago, IL).

Results: One hundred seventeen CD responded (44%). The mean clerkship size was 105 MS (range 10–260). The majority of first and second year MS had no exposure to topics in PFD (89% and 80%, respectively). This changed by the third and fourth year when 95% and 57%, respectively, had exposure to physicians that dealt with PFD. The primary instructors of PFD in the third year were 21% urogynecologists (UG), 23% gynecologists (GYN), 40% UG and GYN, and 10% urologist with any combination of UG and GYN. The vast majority of third year MS spent at least 2 weeks on BG (87%) and GO (93%). Eighty-six percent of third year MS spent time on a GOnc rotation. In contrast, 40% and 48% of third year MS spent no time on an UG or REI clinical rotation. More than 97% of third year MS received lectures on hypertension in pregnancy, normal labor, and abnormal uterine bleeding, and at least 90% received lectures on obstetric hemorrhage, placenta previa, and menstruation. Third year MS were exposed to lectures on PFD topics as follows; 85% UI, 82% POP, 78% CPP, 59% SD, and 40% FI. The percent of clerkship directors who rated PFD topics as somewhat important or extremely important are as follows by topic; 84% UI, 81% POP, 82% SD, and 74% FI. The majority of CD had the faculty to teach (80%), felt the topics were relevant (91%), and had thought of the topics (97%). The real barrier was limited teaching time (79%). The majority of CD felt that a web-based (57%) or CD-ROM (59%) program would be helpful in incorporating PFD into the medical school curriculum. Learning objectives and board questions were less likely to help (37% and 25%, respectively).

Conclusion: Thirty-six percent of MS will have careers in internal medicine and family practice, which is 5-fold higher than the number in OG. We are missing an opportunity to educate MS about PFD and are focusing limited clerkship time on advanced topics in OG. Web-based or CD-ROM programs developed by specialists in FPD have been identified by CD as a way to incorporate these topics in the third year MS curricula.

Key Words: urinary incontinence, pelvic floor disorders, surgical education

Disclosure - Nothing to disclose.

Non-Oral Poster 49

Cloacal Deformities Following Obstetrical Injury: Perioperative Management and Outcomes of Repair

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Objectives: To describe presenting characteristics, perioperative management, and long-term anal continence status and quality of life in women who underwent an overlapping anal sphincteroplasty for chronic fourth-degree lacerations or "cloacal" deformities of the perineum.

Materials and Methods: Hospital records of women who underwent an anal sphincteroplasty from 1996 to 2006 were queried. Of 40 women identified, 23 underwent an overlapping sphincteroplasty for cloacal deformities; these represented the study cohort. Sphincteroplasties performed by colorectal surgeons or for other indications were excluded. Demographic and peri- and postoperative data were abstracted from medical records. Patients in the study group were mailed a standard letter in English or Spanish, informing them of the purpose of the study and content of the questionnaires, as well as providing them with contact information. Multiple attempts to contact subjects were made via telephone and mail. The validated, telephone-administered version of the Modified Manchester Health Questionnaire (MMHQ) was used to assess current anal continence and quality of life status. Statistical analyses included χ^2, Student t test, and Wilcoxon rank sum test. A P value ≤ 0.05 was considered statistically significant.

Results: The mean age of the cohort at time of sphincteroplasty was 33.3 ± 11.9 years. Thirteen women (57%) were Hispanic, 7 (30%) were white, and 3 (13%) were black. Median time (and [interquartile range]) from the fourth-degree laceration event to surgical repair was 30 months [12, 60]. Presenting complaints included: anal incontinence in all 23 women; anal penetration during intercourse in 3/23; and distorted body image in 2/23. All 23 women underwent overlapping repair of the external anal sphincter with 2-0 or 3-0 polydioxanone suture. Perioperative antibiotic prophylaxis was used in all 23 women. Additionally, 21/23 women were discharged on a 5- to 10-day course of prophylactic antibiotics. Early postoperative complications were limited to superficial wound separations, occurring in 3/23 patients. Of the 23 patients in the study group, 8 (35%) have completed the telephone interview. Based on the Fecal Incontinence Severity Index component of the MMHQ, 6/8 women (75%) were totally continent at a median follow-up time (and [interquartile range]) of 49 months [40, 78]. The remaining 2 women (25%) reported some combination of solid, liquid, or flatal incontinence. Analysis of the individual domains on the quality of life component of the MMHQ revealed a statistically significant reduction in quality of life in six of seven domains in the 2 women who reported anal incontinence. No significant differences in age, race, or time since surgery were noted between respondents and nonrespondents.

Conclusion: Cloacal deformities are rare sequelae of obstetrical trauma commonly associated with anal incontinence. Anal incontinence following overlapping sphincteroplasty for cloacal defects may negatively impact many components of quality of life. Continued efforts to capture responses from this cohort are likely to shed further light on the long-term outcomes of surgical repair in these women.

Key Words: anal sphincteroplasty, quality of life, anal incontinence, cloacal deformity, chronic fourth-degree laceration

Disclosure - Nothing to disclose.

Non-Oral Poster 50

The Impact of Premenstrual Syndrome on Sexual Function, Pelvic Pain, and Depression

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Objectives: To assess the relationship between Premenstrual Syndrome/Dysphoric Disorder (PMS/PMDD) and sexual function, pelvic pain of bladder origin and depressed mood, entities related to pelvic floor dysfunction (PFD).

Materials and Methods: A cross-sectional survey administered to 432 twins attending 2 annual twin gatherings in 2005 and 2006. The use of a twin model allowed for control over familial variance. Participants completed demographics and self-report, validated questionnaires; the Premenstrual-Symptoms-Screening-Tool (PSST), the Pelvic Floor Distress Inventory-20 (PFDI-20), the Beck Depression Inventory-II (BDI-II) and the Pain and Urgency/Frequency symptom scale (PUF). The PSST was used to identify women who suffer from severe PMS/PMDD. The BDI-II was administered to measure depression severity. The PUF scale was chosen for its ability to assess bladder-origin pelvic pain with a balanced attention to urinary urgency/frequency, pelvic pain, and sexual dysfunction. Sexual function was assessed by a general and a condition-specific sexual function questionnaire, the Index of Female Sexual Function (IFSF), and the short Pelvic Organ Prolapse/Urinary Incontinence Sexual Questionnaire (PISQ-12), respectively. Mixed effects linear models for clustered data were used for group comparisons on summary scores, and generalized estimating equations were used for comparisons of categorical measures.

Results: Three hundred sixty-two of 432 (84% participation) premenopausal identical twins fully completed the questionnaires and were included. PMS/PMDD was found in 44/362 (12.15%). Of those, 28 were discordant twins (64%) for PMS/PMDD. Demographics were similar in women with and without PMS/PMDD. Women with PMS/PMDD had significantly worse bothersome pelvic floor dysfunction on all 3 PFDI-20 inventories, ($P = <0.0001$). BDI-II and PUF total scores and individual items were worse in women with PMS/PMDD ($P < 0.0001$, $P = 0.0036$, respectively). In women with bothersome POP/UI and PMS/PMDD (38/44), total BDI-II, PUF scores and individual PISQ-12 items were significantly worse ($P < 0.0002$) versus women with POP/UI but no PMS. Furthermore, comparing total BDI-II scores in the 28 discordant pairs, women with PMS/PMDD were more depressed than their twin sister without PMS/PMDD ($P = 0.0002$). Worse PUF items in women with PMS/PMDD included more severe and bothersome dyspareunia ($P = 0.0141–0.0335$), bladder pain ($P = 0.0031–0.0057$), and urinary urgency ($P = 0.0013–0.0392$). There were more women in the PMS group with POP/UI that documented worse dyspareunia on the PISQ-12 ($P = 0.0226$).

Conclusion: Women with PMS/PMDD had increased PFD, worse depressive symptoms, sexual dysfunction, and pelvic pain of bladder origin. Discordance for PMS (64%) suggests that the impact of PMS on depression and dyspareunia extends beyond familial variance. Prospective studies are warranted to assess causality between PMS, pelvic floor disorders, and related entities to improve diagnosis, treatment, and, consequently, women's functionality and overall quality of life.

Key Words: pelvic floor disorders, premenstrual syndrome, pelvic pain of bladder origin, sexual dysfunction, depression, pelvic organ prolapse and urinary incontinence

Disclosure - Nothing to disclose.

Non-Oral Poster 51

Global and Site-specific Magnetic Resonance Assessment of the Levator Ani Is Reproducible

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Objectives: To assess reproducibility of 1) normal/abnormal assessments of the levator ani and 2) type of any observed muscular

abnormality as determined by experienced abdominal radiologists evaluating pelvic magnetic resonance images (MR).

Materials and Methods: Thirty-two nulliparas and 67 postpartum primiparas were enrolled in a prospective cohort study of maternal pelvic floor injury. The primiparas were scanned twice: at 6 weeks and 6 months postpartum. Sequence details: 1.5T (GE Siemens), axial and coronal fast spin echo, FSE (TR 3000, TE 104, 2/0 thickness, FOV 16 cm, matrix 256 × 160, sagittal single shot fast spin echo, SSFSE (TR max, TE 100, 90-degree flip, 5/5 thickness, FOV 20 cm, matrix 256 × 256, NEX 0.5). These studies were combined in an unpaired fashion with the nulliparas, yielding a group of 162 pelvic magnetic resonance (MR) studies. Three radiologists blinded to subject parity performed a standardized assessment of the levator ani using static axial and coronal images chosen to maximize the visualization of the right and left puborectalis and iliococcygeous portions of the levator ani. Ten yes/no questions emphasized integrity of muscular insertion and muscle belly integrity, and qualitative determinations of muscle thinning were reported. We calculated percent agreement between reader pairs for each individual question and grouped questions by muscle site to calculate percent agreement between reader pairs of the global integrity of the muscle at that site. We validated our dataset by comparing qualitative yes/no determination of muscle bulk to measurement in mm (Wilcoxon rank sum), determining the percent of nulliparas who were called normal by the readers, and by comparing the frequency of abnormal muscle sites seen on MR to those determined abnormal by electromyography in the same subjects.

Results: Readers' assessments of 10 questions about levator integrity of insertion and muscle belly integrity were uniformly highly reproducible, with median 93.8% (83.8–100) agreement between pairs. Reproducibility was similar for global assessments of muscle normalcy. Different combinations of pairs of readers were similar. One reader performed millimeter measures of levator thickness at four sites and at each site those he characterized as "thinned" measured less than those "not thinned" muscles ($P < .001$). Each reader described 94% to 100% of global muscle sites in nulliparas as normal, with the exception of the right puborectalis site, which had some type of abnormality noted in 9%, 16%, and 25% of nulliparas, depending on the reader. The right puborectalis was the most common "abnormal" site in postpartum subjects as well, described as abnormal in 20% to 29%, depending on the reader. When compared to electromyography assessments of the same muscle sites, median agreement for normal/abnormal as determined by MR was 81.1% (51.3, 89.7).

Conclusion: MR is a highly reproducible modality for certain specific assessments of levator ani integrity, suggesting that one experienced reader may suffice for interpretation of pelvic MR images in some research settings. Readers can discriminate between normal and abnormal muscle and can generally and specifically describe any observed abnormality.

Key Words: magnetic resonance, reproducibility, levator ani

Disclosure - Nothing to disclose.

NIH Grant HD038661.

Non-Oral Poster 52

Presenting Symptoms of Mesh Erosions Following Mersilene Suburethral Slings

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Objectives: To describe the presentation of vaginal mesh erosions following Mersilene suburethral slings for urinary incontinence.

Materials and Methods: We performed a retrospective cohort study of all Mersilene suburethral slings placed at a tertiary referral center from January 1996 to January 2007. Operative reports containing "sling revision" or "sling excision" were reviewed. Presenting symptoms of mesh erosion, concurrent infection, initial date of surgery, and date of reoperation were recorded. Charts were reviewed to assess whether conservative management strategies had been attempted.

Results: We identified 62 women that underwent surgical revision or excision of a Mersilene sling due to mesh erosion. During the same study period at the same institution, 772 women underwent placement of a Mersilene suburethral sling. Assuming all women represented to the same institution for complications of the mesh material, this is an overall 8% erosion rate of all Mersilene suburethral slings. Mean age was 62.6 years old. Seventeen percent of women undergoing operation for mesh erosion reported daily tobacco use, and 3% of women were diagnosed with diabetes mellitus. The most common presenting symptom was vaginal discharge reported in 37% (23/62) of women. Other presenting symptoms included: vaginal bleeding in 31% (19/62), pain or dyspareunia in 13% (8/62), and voiding dysfunction or recurrent urinary tract infections in 21% (13/62) of women. There was no presenting symptom recorded in 10% of patients, most of whom had their erosion diagnosed on physical exam or at the time of another surgery. The mean time to reoperation was 3.22 years (range 9 days to 20 years) and only 40% of women presented within the first year after sling placement. Excision of the mesh erosion took place within 5 years of the initial surgery in 85% of cases. Attempts at conservative management with trimming of the exposed mesh in the office were unsuccessful in 7 patients, while 6 failed a trial of vaginal estrogen. Seven women experienced erosion into the bladder seen on cystoscopy. Urinary frequency and dysuria were present in 6 of the 7 women with bladder erosions. No cases of vesicovaginal fistula due to mesh complication were found. Six women required postoperative antibiotics. Ten women required more than one operation due to recurrent mesh erosion. Of the women requiring more than one procedure due to mesh erosion, vaginal discharge was again the most common presenting symptom (5/10). Cellulitis complicated 8.3% of erosions (0.6% of all Mersilene slings). An abscess cavity was described in 15% of sling excisions.

Conclusion: This study highlights the importance of a complete and careful vaginal exam following placement of a synthetic material following anti-incontinence surgery. The primary presenting symptom of mesh erosion was vaginal discharge and bleeding, most often within 5 years of the initial surgery. Mesh erosion should be considered as an etiology for vaginal discharge in any woman with permanent mesh.

Key Words: erosion, mesh complications, Mersilene, sling procedure

Disclosure - Nothing to disclose.

Non-Oral Poster 53

Aortic Lymphadenectomy to Renal Vessels: The Robotic Approach

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Objectives: To evaluate the feasibility and results of a technique for robotic aortic lymphadenectomy extending to the renal vessels in the context of surgical management for gynecological malignancies.

Materials and Methods: A total of 25 patients who underwent this technique from July 2005 to October 2007 were identified for analysis through operative log and medical record review. Surgical and postoperative outcomes were extracted. The technique, which incorporated three unique elements: the use of robotic instrumentation, rotation of the patient 180 degrees intraoperatively to facilitate four quadrant surgery, and a new approach of aortic node dissection to the renal vessels.

Results: The mean patient age was 60 years (range 25–79) with mean (SD) BMI 24.7 (4.0). The following additional procedures were

performed robotically in conjunction with the aortic lymphadenectomy: hysterectomy (n = 17), BSO (n = 21), pelvic lymphadenectomy (n = 22), omentectomy (n = 15), appendectomy (n = 11), cystotomy closure (n = 2), small bowel resection (n = 1), liver resection (n = 2), and diaphragm resection (n = 1). Mean (SD) total operating, console, operating table rotation, and docking times were as follows: 274.5 (78.7), 129.4 (54.9), 8.8 (3.9), and 3.4 (3.1) minutes, respectively. Mean time of aortic lymphadenectomy was 42 minutes (range 27–64). No intraoperative difficulties with airway and fluid management were encountered. The mean (SD) number of aortic lymph nodes obtained was 11.2 (5.6). Hospital stay was 2.8 days on average. Estimated blood loss and actual 24-hour change in hemoglobin were 164 ml and 2.1 g, respectively. One patient required conversion to a laparotomy due to bleeding from a branch of the inferior mesenteric artery. Postoperative complications included trocar site hernia (n = 3), pulmonary edema (n = 1), pneumonia (n = 1), and pancreatitis (n = 1). Patients initiated adjuvant chemotherapy 5.4 weeks and radiation 5.0 weeks postoperatively on average.

Conclusion: Robotic instrumentation facilitated the performance of aortic lymphadenectomy to renal vessels. Rotation of the operating table 180 degrees after pelvic surgery, such that the robotic column is at the patient's head, is necessary to reach the renal vessels. This newly proposed robotic technique allowed excellent exposure for the removal of the upper aortic nodes above the inferior mesenteric artery, particularly those on the left side.

Key Words: aortic lymphadenectomy, minimally invasive surgery, robotic surgery

Disclosure - Nothing to disclose.

Non-Oral Poster 54

Extraperitoneal Reconstruction With Modified Total Prolift to Optimize Vaginal Length for Coexisting Anterior/Apical Prolapse

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Objectives: To evaluate the feasibility and safety of surgical treatment for coexisting apical/anterior support defects using a 6 arm polypropylene mesh graft delivered through a single anterior colpotomy.

Materials and Methods: The study is a retrospective review of patients with anterior/apical prolapse who underwent the procedure between July 2006 and September 2007. Data include: demographics, POP-Q findings; QOL and sexual function instruments; operative/postoperative data, and short-term outcomes. Two cadaver dissections were undertaken following graft placement to determine relationships of the ureters and pertinent neurovascular structures. Modification of the total Prolift procedure was performed as follows: A 4-cm saggital colpotomy incision is made through the full thickness of the anterior vaginal fibromuscular wall. In the true vesicovaginal space, the bladder is mobilized cephalad over the paracervical ring (or apex), caudad to the urethrovesical junction (UVJ), and laterally to the pelvic sidewalls. The paravesical spaces are developed along the full length of the arcus tendineus fascia pelvis (ATFP). The pararectal spaces are developed bluntly over the sacrospinous ligaments. The anterior four Prolift cannulae are placed as originally described at the origin and termination of the ATFP. The posterior (apical) cannulae are placed through the sacrospinous ligament 2 cm medial and cephalad to the ischial spine, utilizing a transgluteal approach. All six retrieval devices emerge through the anterior colpotomy. The total Prolift graft is modified by disarticulating the posterior arms from the body of the mesh, which is then excised, and reattaching them on either side the apical apron of the anterior graft using interrupted 2-0 Prolene. The graft is affixed to the paracervical ring (or apex) and vaginal wall at the level of the UVJ. All six arms are introduced through their corresponding cannula and adjustments made allowing the graft to lie flat and tension-free in the vesicovaginal space. Support at Delancy level II is provided by the four arms spanning the length of the ATFP, while the apical arms recreate the anatomic pathway of the cardinal/uterosacral complex to support level I.

Results: Seventeen patients underwent surgery. Mean age 64.3 years (48–77); parity 3; BMI 28.2 (±4); 6/17 had prior hysterectomy. Three had midurethral slings. All had spinal anesthesia. Mean surgical time was 95 (±12) min, 16 (±3) min of that used for graft modification. Mean EBL 72 (±43) ml. No cystotomy/proctotomy was encountered. All but one had a single night hospital stay. Two patients had voiding dysfunction, 1 of which persisted 6 months in a patient with preexisting dysfunction. There were 2 cases of de novo SUI. All patients have completed 6 weeks and 8/17 have completed 6 months of follow-up. To date there have been no cases of graft erosion or complications. POP-Q exam revealed significant differences in points Aa, Ba, C, and D. No change in TVL or progression of the posterior points has been found.

Conclusion: Treatment of coexisting apical/anterior compartment prolapse using this modification of the Prolift system appears to demonstrate feasibility and short term safety in optimizing vaginal length. Anatomic and functional outcomes are being collected.

Key Words: apical vaginal wall prolapse, vaginal length, prolapse surgery, anterior compartment prolapse

Disclosure - Consulting Fee: Ethicon, consultant; Honoraria: Astellas, speaker, Pfizer, speaker.

Non-Oral Poster 55

Seven-year Surgical Experience With Uterine Fibroids Greater Than 1 Kilogram at LBJ Hospital

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Objectives: The purpose of the study is to find an association between increasing uterine weight and perioperative complications

Materials and Methods: Chart review was performed on 66 patients with a history of abdominal hysterectomy performed since 2000 for symptomatic fibroid uterus and a final pathology report indicating uterine weight >1 kg. Logistic regression was used to assess the relationship between uterine weight and perioperative complications. Linear regression was used for quantitative variables

Results: The median uterine weight was 1535 grams (1–8.8 kilograms) and BMI was 31 (20–48). Statistically significant associations were found between increasing uterine weight and the following variables: length of stay more than 4 days, presence of at least one intraoperative complication (*P* values 0.028 and 0.027, respectively). Intraoperative complications were bleeding requiring transfusion and major organ damage. The association between uterine weight and length of stay persisted after controlling for BMI. No statistically significant differences were found with presence of infection, presence of hydronephrosis, or perioperative blood transfusion (*P* values 0.6, 0.1, and 0.055, respectively). Greater than 97% of our patients had documented postoperative follow-up, and the incidence of cuff cellulitis was 1.5% and wound infection 7.7%. Of the 53% that had imaging (CT or

IVP) 31% were found to have hydronephrosis. Over 53% of the patients required blood transfusion, 31% in the preoperative period, 24% intraoperatively, and 9% postoperatively.

Conclusion: In women with massively enlarged uteri greater than 1 kilogram, the rate of intraoperative complication and length of stay increase as the uterine weight increases.

Key Words: complications, uterine fibroids, abdominal hysterectomy

Disclosure - Nothing to disclose.

Non-Oral Poster 56

Robotic-assisted Sacrocolpopexy: A Retrospective Review of 80 Cases

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Objectives: To evaluate the feasibility, safety, and postoperative complications of robotic-assisted sacrocolpopexy.

Materials and Methods: This was a retrospective study looking at 80 consecutive patients who underwent robotic-assisted sacrocolpopexy between November 2004 and June 2007. Seventy (88%) patients were treated concomitantly with the following robotic and/or vaginal procedures as indicated: robotic paravaginal defect repair in 39 (49%) patients, midurethral sling in 17 (21%), lysis of adhesions in 14 (17%), vaginal rectocele repair in 17 (21%), bilateral adnexectomy in 12 (15%), transanal rectal resection in 6 (8%), vaginal cystocele repair in 5 (6%), supracervical hysterectomy in 4 (5%), and Burch procedure in 3 (4%). All patients had a cystoscopic examination of the bladder after administration of intravenous indigo carmine at the end of the procedure. Mean follow-up period was 4.8 months.

Results: Eighty patients with mean age of 66.5 (SD 8.3) years underwent robotic-assisted sacrocolpopexy. Mean operative time was 197.9 (SD 66.8) minutes. The mean length of hospitalization was 2.6 days. Two (2.5%) patients had injury to the bladder, and 1 (1.3%) patient had a small bowel injury. Both injuries were diagnosed and repaired intraoperatively. Postoperatively 5 (6%) patients developed vaginal mesh erosion, 1 (1.2%) patient developed a pelvic abscess, 1 patient had postoperative ileus, and 1 (1.2%) patient was diagnosed with a ureteric injury. Four (5%) cases were converted to laparotomy. Conversion was secondary to limited exposure in 3 patients and to adequately repair a bladder injury in 1 patient.

Conclusion: Our initial experience indicates that robotic-assisted sacrocolpopexy is a feasible and safe procedure with acceptable intraoperative and postoperative complication rates.

Key Words: sacrocolpopexy, robotic, prolapse surgery

Disclosure - Nothing to disclose.

Non-Oral Poster 57

Five Hundred Robotic Surgical Cases for Benign and Oncologic Conditions in Gynecology

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Objectives: To review the operative characteristics and short-term complications of all patients who underwent robotic surgery for gynecologic disease.

Materials and Methods: After institutional review board approval, computer-generated search and medical records review was performed examining all patients who underwent surgery utilizing the da Vinci surgical system at our institution from August 2004 until July 2007. Data were extracted and analyzed.

Results: Five hundred fifty-nine patients were included. The mean age was 51.5 years (range 17–89) with a mean BMI of 27.2 (range 16.1–61.6). The median operative time was 118 minutes (range 11–504), which included a median time spent by the surgeon at the operating console of 72 minutes (range 7–318). Multiple procedures were performed including, but not limited to, hysterectomy (275), salpingo-oophorectomy (354), aortic lymphadenectomy (40), pelvic lymphadenectomy (70), and myomectomy (36). The median estimated blood loss was 75 cc (range 10–4600) with only 16 patients (2.86%) requiring blood transfusion. Eleven cases (1.96%) were converted to open procedures. Six patients (1.07%) required reoperation for complications. Mean follow-up time was 6.1 months.

Conclusion: Minimally invasive surgery has evolved and now encompasses the use of robotics. Robotic surgery in the field of gynecology is technically safe and feasible.

Key Words: robotic surgery, gynecology, review, robotics, minimally invasive surgery

Disclosure - Nothing to disclose.

Non-Oral Poster 58

Transvaginal Graft Repair for Apical Prolapse: Comparison of Uterine Versus Vault Suspension

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Objectives: To compare outcomes of transvaginal graft repair of apical pelvic organ prolapse (POP) using either uterine (UTS) or vault suspension (VS) techniques.

Materials and Methods: Retrospective cohort study evaluating all women who underwent repair of POP using a transvaginal graft procedure with the Apogee system (American Medical Systems) from October 2005 to August 2007 with a minimum of 6 weeks of follow-up. Two graft types were used: polypropylene mesh (PRO) and noncross-linked porcine dermis (XN). Preop evaluation included POP-Q exam and multi-channel urodynamics (UDS). Concomitant surgical procedures were performed as indicated. Postoperative evaluation included POP-Q exam, documentation of healing abnormalities, PVR, and pelvic floor symptoms. Bivariable and multivariable analysis were performed between the two groups.

Results: One hundred eighteen women were treated, 68 (58%) with UTS and 50 (42%) with VS. Graft type used was 54 (46%) XN (37% UTS, 58% VS), and 62 (53%) PRO (63% UTS, 42% VS). Mean age was (60 ± 11yrs), parity (2.6 ± 1.4), and BMI (27 ± 5). Seventy-nine percent were postmenopausal and 15% had prior POP surgery. Preoperative demographics, UDS findings, and symptoms were similar between groups and by graft type, except that the XN group was older (63 ± 11 years, $P = 0.01$). Relevant preoperative mean POP-Q measurements did not differ between groups: Ap (−0.11 ± 1.59, $P = 0.99$), Bp (0.08 ± 2.12, $P = 0.76$), C (−2.13 ± 3.48, $P = 0.29$), and D (−4.04 ± 3.60, $P = 0.62$). Concomitant procedures did not differ except for hysterectomy; they included: cystocele repair (99%), enterocele repair (100%), rectocele repair (100%), sling (95%), and hysterectomy (26% VS only). Intraoperative complications were 2

(1.7%) enterotomies with dissection, mean EBL was 125 ± 89 cc, and median hospital stay was 2 days. Mean follow-up was 22 ± 16 weeks (6–104). Postop mean POP-Q values were similar between groups: Ap (−2.91 ± 0.36, $P = 0.95$), Bp (−2.91 ± 0.36, $P = 0.95$), and for vault comparision: C (−8.44 ± 0.98, VS) versus D (−8.79 ± 1.33, UTS) ($P = 0.13$). Apical recurrence, defined as >stage 2 prolapse, occurred in 3 (2.5%) overall; all in the UTS group (4.4%) but did not reach statistical significance ($P = 0.14$). Failures by graft type were: 2 (3.7%) XN and 1 (1.6%) PRO ($P = 0.47$). There were 2 (1.7%) graft exposures, 1 (1.5%) UTS and 1 (2.0%) VS ($P = 0.83$); one with each graft material ($P = 0.95$). These were successfully treated with conservative measures. Healing abnormalities consisting of granulation tissue and adhesions occurred in 6 (9%) UTS and 9 (18%) VS ($P = 0.13$), with no difference by graft material ($P = 0.65$). Fifty-seven percent were sexually active preoperatively, with a dyspareunia rate of 33%. At 6 months postoperatively, 51% were sexually active with an overall dyspareunia rate of 29%, a dyspareunia resolution rate of 77%, and a de novo dyspareunia rate of 11% with no differences between groups ($P = 0.91$) or graft type ($P = 0.44$). In the UTS group there was 1 patient who required a subsequent hysterectomy due to abnormal uterine bleeding and another who required a trachelectomy for cervical hypertrophy.

Conclusion: Transvaginal graft repair of apical prolapse appears to be safe and effective, utilizing either uterine or vault suspension techniques. Short-term follow-up does not appear to demonstrate advantage by graft type.

Key Words: vaginal surgery, vaginal and uterovaginal vault prolapse, Apogee, transvaginal graft repair, vaginal vault suspension, vaginal graft

Disclosure - Nothing to disclose.

Non-Oral Poster 59

Lower Urinary Symptoms Do Not Predict Bacteriuria in a Urogynecologic Population

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Objectives: The relationship between urinary incontinence and bacteriuria in a urogynecologic population is unclear. Our objective was to determine whether there is a link between bacteriuria and urinary symptoms in women seeking urogynecologic care and to determine whether the antibiotic resistance profile of any uropathogens differed from the resistance profile of uropathogens found in the general hospital population.

Materials and Methods: We performed a retrospective chart review of all new urogynecology patients seen during March to December 2004, recording age and responses to the Urogenital Distress Inventory (UDI6) and the Medical, Epidemiological and Social Aspects of Aging (MESA) incontinence questionnaires. Urine culture specimens were obtained by catheterization, and significant infection was considered to be present if at least 10,000 colonies of a uropathogen were present. We compared UDI6 and MESA scores of women with and without positive culture, using Mann-Whitney testing. Uropathogen antibiotic sensitivities were also compared to those of the general hospital population during that time.

Results: Sixty-two positive urine cultures were found in 530 patients with a mean age 58 years (range 36–93). We did not detect differences in MESA and UDI6 scores between patients with and without positive urine cultures. Uropathogens included Escherichia coli[r] (n = 43), *Klebsiella pneumoniae* (n = 13), *Proteus mirabilis* (n = 4), Group B *Streptococcus* (n = 1), and *Citrobacter freundii* Complex (n = 1). Antibiotic resistance profiles were similar to those found in the general hospital population.

Conclusion: In this sample of urogynecologic patients, and using a definition of 104 colonies of a uropathogen for definition of a positive culture, we found no evidence that urinary incontinence symptoms are more prevalent and/or more severe in women with bacteriuria than in women without bacteriuria. We suggest that incontinence may not be a reliable symptom of bacteriuria in women attending a female urology/urogynecology clinic.

Key Words: urinary incontinence, urinary tract infection, bacteriuria

Disclosure - Nothing to disclose.

Video 1

Tips and Techniques for Non-robotic Laparoscopic Sacrocolpopexy

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Objectives: To demonstrate a series of techniques and methods to facilitate non-robotic laparoscopic sacrocolpopexy

Description: A video case series is employed to demonstrate techniques to assist the non-robotic laparoscopist to overcome the common difficulties and challenges associated with laparoscopic sacrocolpopexy. Methods for retraction of the sigmoid colon and/or presacral peritoneum, sacral and vaginal dissection and preparation, mesh introduction and fixation, and retroperitonealization of mesh are presented. To supplement laparoscopic footage, schematic and anatomic images are presented.

Conclusion: A variety of techniques are available to assist the non-robotic laparoscopist in performing laparoscopic sacrocolpopexy without cutting corners or compromising safety.

Key Words: sacrocolpopexy, pelvic floor repair, minimally invasive surgery, laparoscopy, techniques

Disclosure - Consultation fee: Boston Scientific Inc, consultant.

Video 2

Latzko Partial Colpocleises for Post-hysterectomy Vesicovaginal Fistula

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Objectives: To understand vesicovaginal fistula (VVF), which is an abnormal communication between the urinary bladder and the vagina that results in the continuous involuntary discharge of urine into the vaginal vault. To understand that the majority of VVFs are caused by gynecologic surgery or undetected injury in the Western world as

opposed to obstetric trauma in developing countries. To present a surgical solution via the Latzko partial colpocleises procedure and to present clinical pearls to aid in visualization and vaginal repair of a post-hysterectomy VVF.

Description: Vaginal and cystoscopic localization of fistula site and the relationship to the trigone and ureters is reviewed. A lacrimal duct dilator and a pediatric Foley catheter are used to aid in visualization of the tract. A right ureteral stent is placed due to close proximity of the ureteral orifice to the fistula. A circumferential vaginal incision is made around the fistula followed by vescicovaginal dissection around the fistula tract. Layered imbricating closure is shown in three layers. A methylene blue test confirms watertight integrity of repair. Bladder drainage by urethral Foley for 2 weeks postoperatively is accomplished. Cystoscopy 2 months after the repair shows the healed fistula site; however a methylene blue test shows stress incontinence remains.

Conclusion: Early diagnosis and surgical cure of this post-hysterectomy complication may be accomplished with this simple, vaginal approach in 93% to 100% of cases. Stress incontinence demonstrated after successful fistula repair may be addressed surgically after healing is complete because the prior fistula site is remote from the urethrovesical junction.

Key Words: vaginal surgery, fistula, colpocleisis, vesicovaginal fistula, Latzko

Disclosure - Nothing to disclose.

Video 3

Transvaginal Mesh Excision for Complications Following Transvaginal Mesh Placement

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Objectives: To describe a transvaginal technique of excising either anterior or posterior transvaginal mesh kits for complications following transvaginal mesh placement for pelvic organ prolapse.

Description: The surgical procedures of patients with complications of transvaginal mesh placement such as severe chronic pelvic or thigh pain, dyspareunia, and/or mesh erosion, who requested removal of the mesh, were filmed. This video reviews a step-by-step guide of the removal of transvaginal mesh.

- Cystoscopy or proctoscopy at the beginning and end of the case to evaluate for any preexisting mesh erosions/fistulas into the viscera
- Lateral dissection of vaginal epithelium flaps similar to anterior or posterior colporrhaphy
- Mobilization of the superior and inferior portions of the mesh off the underlying viscera
- Midline transection of the mesh
- Development of mesh flaps and dissection as laterally as possible
- Traction and counter-traction with Allis clamps on the mesh flaps
- Forceps retracting the viscera are essential in avoiding visceral injury
- Isolation and transection of the lateral mesh arms
- Concomitant prolapse repair (anterior and/or posterior colporrhaphy) may also be performed after removal of the mesh

Of the 16 patients who underwent transvaginal mesh excision, 85% reported improvement, 92% stated that they would not have had the initial transvaginal mesh placed, and 93% would undergo mesh excision again. There were no visceral injuries as a result of this procedure.

Conclusion: Mesh removal can safely be performed with a low complication rate and good short-term patient satisfaction rate.

Key Words: transvaginal, mesh complications, mesh excision

Disclosure - Nothing to disclose.

Video 4

Vesicovaginal Fistula Repair Using a Skin Flap For a Patient Without Anterior Vaginal Wall Tissue

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Objectives: This video demonstrates the formation of a neourethra and transposition of an inner thigh skin flap for repair of a vesicovaginal fistula when the anterior vaginal wall tissue is absent secondary to extensive obstetric trauma.

Description: The vesicovaginal fistula is found to involve the entire bladder base including the trigone and proximal urethra. Both ureteral orifices are stented with difficulty because both are found at the edge of the fistula. All avascular tissue is debrided. A 16F Foley catheter is placed and a neourethra formed from tissue mobilization. The bladder is then circumferentially freed first from any remaining vaginal mucosa and then from all of its attachments except the ureters to allow appropriate mobilization to close this large 7 cm defect. The defect is closed with a continuous 2-0 polyglycan absorbable suture. A second layer of interrupted 2-0 polyglycan absorbable suture is placed. An elliptical incision is made on the inner thigh, and the skin with subcutaneous fat is removed from lateral to medial, leaving the subcutaneous fat in the proximal quarter attached to its underlying blood supply. A Kelly clamp is used to open a tunnel underneath the labia minora. The labia minora is retracted away from this area with Allis clamps. The skin flap is then tunneled underneath the labia minora. It is placed into the remaining mucosal defect of the vagina and sutured in place with interrupted 2-0 polyglycan absorbable suture. The donor site incision is closed.

Conclusion: The fistula is currently closed. The patient was seen 3 months postoperatively demonstrating stress urinary incontinence. An autologous fascia lata sling was placed, and the patient has reported significant decrease in stress incontinence at 1-year follow-up.

Key Words: Africa, vesicovaginal fistula, neourethra, inner thigh skin flap

Disclosure - Nothing to disclose.

Video 5

Imperforate Anus With Rectovestibular Fistula and Absent or Atretic Vagina

L. L. Breech,* M. A. Levitt,† and A. Pena† **Pediatrics, Cincinnati Children's Hospital Medical Center, Cincinnati, OH; †Surgery, Cincinnati Children's Hospital Medical Center, Cincinnati, OH*

Objectives: Imperforate anus with rectovestibular fistula and absent or atretic vagina is a rare anorectal malformation. It includes a wide spectrum of anatomic and subsequent surgical challenges affecting the reproductive tract as well as the anus and rectum. We describe our experience with the surgical management of this unique anomaly,

including a new approach that eliminates the need for vaginal replacement.

Description: Of 1837 patients with anorectal malformations, 22 were cared for with this unique anatomy. What appeared to be the vagina was actually the rectal orifice ending in the vestibule, and the vagina was absent. In 14 cases, the distal rectum was utilized as the neovagina. In 8 cases, the distal rectum was mobilized and, in 7 of these, the vagina was replaced (in 4 cases with sigmoid colon, in 2 with small bowel, and in 1 by mobilizing and pulling through the native vagina). In the remaining patient, vaginal repair was deferred at the time of initial surgery. In 18 of the 22 cases, the uterus and vagina were atretic. In 4 cases, the uterine structures were present, with 3 midline single uteri and 1 case of uterine didelphus (or 2 hemiuteri). In 2 cases, the native upper vagina was anastomosed to the neovaginal replacement. One patient, with a well-developed uterus, had not yet had definitive vaginal repair at the time of last follow-up (age 6 months). All patients had 2 normal ovaries. In the last case, highlighted in the video, the full spectrum of this condition was appreciated, in that the native upper vagina was adequate to be mobilized to reach the perineum without the need for vaginal replacement.

Conclusion: Imperforate anus with rectovestibular fistula and absent or atretic vagina is a unique anorectal malformation. A meticulous inspection of the perineum in female patients with anorectal malformations is vital, as preoperative recognition of this defect is essential to guide surgical planning. The surgical approach not only affects bowel control but has important implications for the handling of reproductive anatomy at the time of definitive surgical repair.

Key Words: neovagina, imperforate anus, rectovestibular fistula, absent vagina

Disclosure - honorarium: Merck, speaker.

Video 6

Ureteroneocystostomy With Psoas Hitch

R. Adam *Gynecology and Obstetrics, Emory University School of Medicine, Atlanta, GA*

Objectives: To demonstrate the technique of ureteral reimplantation with psoas hitch for ureteral stenosis located high within the pelvis.

Description: A 21-year-old patient was referred who had undergone a total abdominal hysterectomy, left salpingo-oophorectomy, and uterosacral ligament resection for endometriosis 4 months prior. At that time, a right ureteral transection was identified and uretero-ureteral reanastomosis performed with placement of a ureteral stent. The postoperative course was complicated by urinary ascites and evidence of dye extravasation at the level of the renal pelvis and the area of anastomosis by a nephrostogram on postoperative day 3. The patient required replacement of her ureteral stent, with resolution of ureteral extravasation. Over the ensuing months, the patient continued to have right-sided pelvic and flank pain. When the stent was removed, evidence of ureteral stenosis was documented and persisted despite several attempts at balloon dilatation. MAG-3 scan revealed adequate renal function. Due to the patient's severe, persistent right lower quadrant and flank pain with documented right ureteral stenosis, she elected to proceed with surgery.

Conclusion: The patient underwent exploratory laparotomy, appendectomy, extensive lysis of adhesions, right salpingo-oophorectomy, and right ureteroneocystostomy with psoas hitch. This was successful despite the relatively high lesion in this patient, with reanastomosis adjacent to the iliac artery bifurcation. Ureteral patency was verified by an IVP 4 months postoperatively.

Key Words: ureter, ureteral reimplantation, ureteroneocystostomy, ureteral stenosis

Disclosure - Nothing to disclose.

Video 7

A Novel Teaching Approach to Laparoscopic Gynecologic Anatomy

H. E. Herrell, B. E. Foulk, and R. Jelovsek *Obstetrics and Gynecology, East Tennessee State Univ, Johnson City, TN*

Objectives: Laparoscopic surgery can be challenging to accurately and safely teach. Beginning surgeons face challenges in handling new instrumentation as well as learning correct pelvic anatomy and the proper approach to surgical procedures. This instructional video is intended to create an educational exercise for beginning gynecologic surgeons, including residents as well as medical students, that would help teach pelvic anatomy visible through the laparoscope without dissection, emphasize why specific anatomic landmarks are important surgically, and stimulate improved learner hand-eye coordination during early laparoscopic exposure following a laparoscopic simulation lab.

Description: For use during laparoscopic tubal ligations or diagnostic laparoscopies, a surgical checklist was developed containing 50 points of pelvic anatomy. Also included were key points of surgical importance for these anatomic landmarks to an operating surgeon. A 15-minute short film was then created and edited digitally, providing an audiovisual resource containing these points of anatomy. The beginning surgeon is able to view the video at his/her leisure and then when scrubbed in on laparoscopic tubal ligations or diagnostic laparoscopies can more accurately and efficiently identify a subset of the anatomic points (eg, right-sided or left, anterior or posterior) to the attending or preceptor physician. Being encouraged to establish good exposure laparoscopically and to point out these different anatomic landmarks, the surgeon will improve his/her hand-eye coordination as well as accurately learn those structures that are important in both laparoscopic and open gynecologic procedures. At the time of several laparoscopic surgeries, the video feed was captured digitally and then edited with Apple iMovie and other editing software applications. Descriptions of anatomic landmarks as well as the surgical significance of each are narrated into the film and are visually demonstrated. The complete video has been edited down to less than 10 minutes to meet the presentation requirements. The full 15-minute video is available on request.

Conclusion: The video is a basic overview of the female pelvic anatomy, meant not for the expert gynecologic surgeon but instead for novice surgeons just beginning their training. By developing this stepwise approach of an educational simulation, a surgical checklist of anatomic points and their importance, and then video viewing, we enable residents to develop laparoscopic hand-eye coordination and become more efficient in the operating room. Through simulated training, learners can avoid the pressures of the operating room with living patients and can be closely monitored and instructed without the constraints of time, money, and their limited experience. Procedures are easily reproducible through this technique, with adjustments made as needed for each learner's specific needs. This allows a much quicker learning curve for beginning surgeons.

Key Words: anatomy, education, resident, laparoscopy, surgical, gynecology

Disclosure - Nothing to disclose.

Video 8

A Low-cost Cystoscopy Teaching Model

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Objectives: To illustrate the development and use of a low cost model for training residents in the instrumentation, surgical technique, and recognition of normal and abnormal findings during cystourethroscopy.

Description: Cystourethroscopy has long been used by gynecologists for diagnostic and a few operative indications. However, a unified system for training residents in cystourethroscopy and documenting competence has never been developed. Many residents in obstetrics and gynecology are not exposed to enough intraoperative cystoscopy to differentiate normal from abnormal findings; they also may not be taught to visualize the entire bladder. Recently, the American College of Obstetrics and Gynecology released a Committee Opinion that postgraduate education in obstetrics and gynecology should include education in the instrumentation, technique, and evaluation of findings of cystourethroscopy, and in the pathophysiology of diseases of the lower urinary tract. The use of bench models and surgical simulators have gained popularity recently as efficient methods of providing training outside the operating theatre as well as providing a means of testing competence. With this in mind, we have created a low cost cystoscopy model that resembles a normal bladder and urethra complete with ureteral orifices, vessels and different pathologies. The cost of creating each bladder model is less than $1.00.

Conclusion: The importance of adequate training and verification of competence in cystourethroscopy is outlined by recent ACOG recommendations. Additionally, with the increasing use of midurethral slings and other mesh kits by many gynecologists, the need for full evaluation of the bladder and urethra cannot be understated. This model provides a relatively simple and very cost-effective means of both training and testing residents in the use and applications of cystourethroscopy.

Key Words: cystourethroscopy, teaching models, resident education

Disclosure - Nothing to disclose.

Video 9 – Videofest

Robotic-assisted Supracervical Hysterectomy With Sacrocolpopexy

M. O. Schimpf and P. K. Tulikangas *Division of Urogynecology, Department of Obstetrics and Gynecology, Hartford Hospital, Hartford, CT*

Objectives: To demonstrate performance of a supracervical hysterectomy combined with a sacrocolpopexy using laparoscopy assisted by the da Vinci-S robotic system (Intuitive Surgical, Sunnyvale, CA).

Description: Dorsal lithotomy position with both arms tucked close to the body was used with shoulder bolsters and appropriate padding. For port placement, we place a 12-mm midline port about 22 cm above the symphysis to allow adequate presacral visualization. Two 8-mm robotic ports are placed about 8 cm away from the midline port, positioned about 15 degrees downward. The placement of the lower 8 mm robotic port and the 12 mm assistant port are determined following insufflation but are generally 1 to 2 cm superior to the anterior superior iliac spine. A combination of monopolar and bipolar cautery are used for the hysterectomy. We prefer a supracervical hysterectomy in patients about to undergo sacrocolpopexy to lower the risk of vaginal cuff erosion and because of the superiority of the cervix compared to the vagina for mesh attachment. The uterus is placed in a visible location during the remainder of the procedure and later morcellated. We use two pieces of polypropylene mesh, which is sutured together using 2-0 polytetrafluoroethylene (GoreTex, Flagstaff, AZ). Interrupted stitches of GoreTex are then used to secure the mesh to the vagina anteriorly and posteriorly. The mesh is secured to the sacrum using two permanent sutures, one polypropylene and one polyethylene. The mesh is reperitonealized, and cystoscopy is performed to confirm ureteral patency and the absence of bladder injury. Other concomitant surgeries, such as a sling or colporrhaphy, can also be performed vaginally as necessary.

Conclusion: Robotic-assisted laparoscopic supracervical hysterectomy and abdominal sacrocolpopexy is an option for patients with a uterus requiring pelvic reconstructive surgery.

Key Words: supracervical hysterectomy, hysterectomy, robotic surgery, sacrocolpopexy

Disclosure - Nothing to disclose.

Video 10 – Videofest

Robotic-assisted Retropubic Dissection for Urinary Retention After Urethropexy

D. Giles and P. Magtibay *Gynecologic Surgery, Mayo Clinic, Phoenix, AZ*

Objectives: Robotic dissection of the space of Retzius with urethrolysis and removal of sutures from a prior urethropexy.

Description: An 84 year-old G9P9 woman presents with a history of long-standing urinary retention after urethropexy performed at an outside facility 7 years ago. Surgical history is significant for an abdominal hysterectomy and two bladder suspensions. The last bladder suspension surgery was in 2000. After failed medical management, she underwent cystoscopy that revealed a 2.5-cm bladder calculi and metal fragments consistent with surgical pledgets used in her prior bladder suspension surgery. Upon presentation to our institution, the patient was unable to spontaneously void and could only void after placing her hand in a bowl of cold water. Physical examination revealed a normal vagina and nontender urethra. Cystoscopy revealed firmness along the bladder neck suggestive of extravesical sutures protruding on the bladder mucosa. Complex urodynamics revealed a low bladder capacity of 209 ml and detrusor instability at 120 ml. Open laparoscopy was performed prior to docking of the robotic arms. Dissection of the space of Retzius was performed utilizing the da Vinci (Intuitive Surgical, Sunnyvale, CA) robot. Extensive scarring was noted. The urethra was completely mobilized and Prolene sutures, suggestive of a previous MMK procedure, were noted on the both side of the urethra. The sutures were removed, and a suprapubic catheter was placed into the dome of the bladder.

Conclusion: The patient was discharged home in stable condition on the first postoperative day with an estimated blood loss of 100 ml. Follow-up revealed spontaneous voiding with normal postvoid residuals. This video presents one of the many uses of robotics in gynecology.

Key Words: robotics, urinary retention, retropubic dissection

Disclosure - Nothing to disclose.

Video 11 - Videofest

Laparoscopic Resection of Chronically Inflamed Urachal Cyst

T. Lee and L. Yang *Magee Womens Hospital, Pittsburgh, PA*

Objectives: This video will describe the common symptoms, pathophysiology, workup of urachal cyst, as well as the surgical techniques for the laparoscopic resection of urachal cyst.

Description: Urachal cyst is a fluid-filled structure occurring in between the two obliterated ends of the urachus, ie, the umbilicus and bladder dome. The cyst can reside anywhere between the umbilicus and the bladder but most occur in the distal third of the urachus. The cyst is retroperitoneal and situated in between the two obliterated umbilical ligaments. Symptoms are generally related to infection and chronic inflammation, and these include periumbilical pain, suprapubic pain, fever, and irritative voiding symptoms. It is characterized by abdominal pain and fever, if infected. It may rupture, leading to peritonitis. It may form a fistula to the bladder or the umbilicus, depending on its location. Development of adenocarcinoma of urachal cyst has also been described in the literature. Resection of urachal cyst is traditionally performed via a Pfannestiel or low vertical midline incision, depending on its location. This video demonstrates the ease of our laparoscopic approach for the resection of urachal cyst.

Conclusion: A laparoscopic approach for the resection of urachal cyst is feasible. Preoperative imaging to define the size and the location of the urachal cyst will help with surgical planning in terms of trocar placement. Pelvic surgeons with thorough understanding of anterior abdominal wall, retropubic anatomy, and prior experience with laparoscopic retropubic procedures should be able to perform this procedure without undue difficulty.

Key Words: laparoscopy, urachal cyst, bladder pain

Disclosure - Nothing to disclose.

Video 12 - Videofest

Uterosacral Ligament Reconstruction With Permanent Mesh-A Variation on the Bilateral Sacrospinous Colpopexy

R. Geoffrion and C. Birch *University of Calgary, Calgary, AB, Canada*

Objectives: Our surgical video illustrates a method of surgical repair of the prolapsed vaginal vault. The aim is to reconstruct the uterosacral ligaments using two strips of permanent mesh in an anatomically correct, tension-free fashion.

Description: This method is a variation of the bilateral sacrospinous vaginal colpopexy. A small posterior incision is made at the level of the perineum. The posterior vaginal mucosa is peeled off the underlying tissues. The pararectal spaces are developed and the ischial spines and sacrospinous ligaments are palpated. The dissected space needs to allow one fingerbreadth and the width of a Capio device (Boston Scientific). Minimizing the dissection in this area decreases blood loss and other potential complications. The Capio device is used to place one Prolene suture through each sacrospinous ligament, 1 to 2 cm medial to the spines. Two strips of monofilament macroporous polypropylene mesh (Gynecare, Ethicon) are cut 2 cm in width and at least 6 cm in length. The proximal ends of the strips are attached to the sacrospinous ligaments via the Prolene sutures, and the distal ends are affixed onto the underside of the vaginal vault using delayed absorbable PDS sutures. This method is appropriate for correction of all stages of apical prolapse, when the total vaginal length is shortened, and also when uterine conservation is desired.

Conclusion: Given the unsatisfactory recurrence rates of pelvic organ prolapse, we need to develop new methods to improve the durability of our repairs. The uterosacral ligaments play a major role in apical support by holding the upper vagina and cervix over the levator plate. It would then make great anatomic sense to recreate the uterosacral ligaments by bridging the normal anatomic gap between vaginal vault and sacrospinous ligament with permanent mesh in a tension-free fashion.

Key Words: vaginal surgery, permanent mesh, sacrospinous colpopexy

Disclosure - Financial Support: Cook Canada, video production.

Video 13 - Videofest

Extraperitoneal Laparoscopic Para-Aortic Lymphadenectomy

S. C. Dowdy *Gynecologic Surgery, Mayo Clinic, Rochester, MN*

Objectives: To demonstrate the technique of extraperitoneal laparoscopic para-aortic lymphadenectomy.

Description: Para-aortic lymphadenectomy can be difficult, if not impossible, in obese patients using traditional transperitoneal laparoscopy. This is problematic considering that most patients with endometrial cancer are obese. This video demonstrates the technique of extraperitoneal laparoscopic para-aortic lymphadenectomy, an approach that consistently allows the surgeon to reach the renal vessels, even in obese patients. The patient filmed here had a 6×4 cm endometrial cancer, and a BMI of 43.5.

Conclusion: The extraperitoneal approach to laparoscopic para-aortic lymphadenectomy offers advantages over transperitoneal laparoscopy. This technique is not compromised in obese patients.

Key Words: laparoscopy, oncology, surgical techniques

Disclosure - Nothing to disclose.

Video 14 - Videofest

Urethral Reconstruction and Martius Flap Pad Interposition After Posterior Urethral Disruption

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Objectives: To describe the urethrovaginal fistula repair and the ancillary Martius fat pad flap to treat posterior urethral disruption. We also review the historical literature.

Description: Urethrovaginal fistula is a devastating condition caused by direct trauma or pressure necrosis of the anterior vaginal wall. The most common cause of urethrovaginal fistula is a complication of urologic or gynecologic surgery. The subject seen in our video underwent a TVT suburethral sling and developed voiding dysfunction. Her operating surgeon cut the sling, but the dysfunction did not resolve. A second physician performed a urethral dilation and firmly distracted the urethra posteriorly, away from its pubic bone attachments. She suffered a disruption of the posterior urethra and anterior vagina, resulting in a 3 cm urethrovaginal fistula. The muscular component of the urethra needs to be widely mobilized to facilitate closure of the urethral defect without tension. To avoid overlapping suture lines, a Martius fat pad flap can be interposed between the repair and the epithelium, and this is done here. Timing is usually planned for 8 to 12 weeks after injury. If the proximal high-pressure zone of the urethra is involved, then continence may be affected. In these cases, a staged procedure (with a sling being placed distant from urethral repair) should be considered.

Conclusion: Urethrovaginal fistula is a devastating condition, usually experienced as a complication of surgery. This video demonstrates a successful repair.

Key Words: urethrovaginal fistula, Martius flap, posterior urethral disruption

Disclosure - Nothing to disclose.

Video 15 - Videofest

Transvaginal Technique to Access the Peritoneal Cavity for Post-hysterectomy Vaginal Vault Suspension

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Objectives: To describe a standardized technique of transvaginal entry into the peritoneal cavity for vaginal vault suspension in patients with post-hysterectomy prolapse.

Description: The surgical procedures of patients with post-hysterectomy vaginal prolapse who were to undergo an intraperitoneal vault suspension were filmed. This video reviews a step-by-step guide to entering the peritoneal cavity in patients with post-hysterectomy vault prolapse:

Allis clamps are placed on the dimples at the lateral edges of the vaginal cuff, at the midpoint of the vaginal cuff, and in the posterior cul-de-sac.
Pull Allis clamps on tension to create a diamond shape.
Excise the vaginal epithelium overlying this diamond shaped wedge.
Dissect the areolar tissue off the rectum while performing a rectal exam with the non-dominant hand.
Retrograde fill the bladder or place a uterine sound through the urethra to demarcate the borders of the bladder.
Place a right angle retractor to elevate the bladder and provide counter traction to find the correct surgical plane.
Grasp the peritoneum and incise sharply with scissors to enter the peritoneal cavity.

A retrospective review of all patients with post-hysterectomy vaginal prolapse who underwent a transvaginal procedure over a 6-year period was performed. Successful entry into the peritoneal cavity was achieved in 80% of patients, or in 223 of 280 patients in whom peritoneal entry was attempted. One cystotomy and one proctotomy occurred during attempted peritoneal entry, with a rate of 0.3%, respectively, for both. Prior surgery for prolapse or incontinence did not affect the ability to enter the peritoneal cavity ($P = 0.8$ and $P = 0.9$ respectively). Increasing stage of prolapse was significantly associated with increased peritoneal entry rates ($P < 0.02$ for trend) with successful entry into the peritoneal cavity by stage of prolapse as follows: 74% for Stage II, 78% for Stage III, and 100% for Stage IV prolapse.

Conclusion: Successful peritoneal entry can be obtained in the majority of patients with post-hysterectomy vaginal vault prolapse with few complications using a standardized technique of transvaginal entry.

Key Words: vault prolapse, posthysterectomy, peritoneal cavity entry

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