Title: Preferences and expectations of OBGYN subspecialty fellowship program directors in the robotic surgery training of incoming fellows

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Objective: The primary objective is to compare the level of robotic surgery training preferred by subspecialty fellowship program directors (FPD) to the level of robotic surgery training expected by FPD of incoming fellows.

Methods: A cross-sectional study was performed utilizing an electronic survey distributed to FPD in subspecialty fields of maternal-fetal medicine (MFM), reproductive endocrinology and infertility (REI), gynecologic oncology (Gyn Onc), minimally invasive gynecologic surgery (MIGS), and female pelvic medicine and reconstructive surgery (FPMRS) between February 2014 to April 2014. Sixteen specific variables of robotic surgery training were scored on a Likert-like scale, resulting in average robotic surgery preference and expectation scores ranging from 0 to 64. At a power of 80% and an alpha of 5%, a response rate of 30% results in an effect size of 0.33.

Results: 253 FPD were identified and 76 completed the electronic survey for a response rate of 30%. Respondents included: FPMRS (n=20), MIGS (n=18), MFM (n=16), Gyn Onc (n=13), and REI (n=9). For all FPD, the robotic surgery preference score was significantly higher than the robotic surgery expectation score (27.3 vs. 17.0, p<0.0001). FPD of historically high robotic volume subspecialties (Gyn Onc, MIGS, and FPMRS) had significantly higher expectation scores compared to FPD of historically low robotic volume subspecialties (MFM and REI) (23.8 vs. 3.3, p<0.0001). When stratified by robotic volume alone, FPD of programs that performed >30 robotic surgeries/year had higher expectation scores compared to those that performed <30 robotic surgeries/year (23.7 vs. 5.6, p<0.0001)

Conclusions: FPD prefer a higher level of robotic surgery training of incoming fellows than they expect. FPD of historically high robotic volume subspecialties expect a greater level of robotic training of incoming fellows compared to FPD of historically low robotic volume subspecialties. Independent of subspecialty type, FPD of programs that perform more robotic surgery have higher robotic surgery expectations of incoming fellows compared to FPD of programs that perform less robotic surgery. The results of this study add to the growing body of literature in the robotic surgical training of residents and have implications for residency curriculum development.
Title: Analysis of Rescue Antenatal Corticosteroid Use

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Objective:
We evaluated the uptake of a Maternal Fetal Medicine division guideline regarding use of a rescue course of antenatal corticosteroids in a free-standing women’s hospital.

Methods:
Pregnant women who received a first course of antenatal corticosteroids between April 2008 and April 2013 were screened. Detailed chart abstraction was performed for women who either received a rescue course of antenatal corticosteroids or were eligible to receive a rescue course according to the guideline. The primary study outcome was the change in rate of administration of rescue course antenatal corticosteroids following guideline implementation using the Cochran-Armitage trend test. The study had 80% power to detect an increase from 5% to 45% in the rate of administration of rescue corticosteroids assuming an alpha of 0.05.

Results:
Of 2528 women who received a first course of antenatal corticosteroids, 142 were eligible for a rescue course. During the pre-guideline period, 18.2% of eligible women received a rescue course of steroids (95% Confidence Interval [CI], 5.2-40.3) compared to 82.5% in the post-guideline time period (95% CI, 74.5-88.8, P < 0.0001). The rate of administration of rescue steroids among eligible women steadily increased over the post guideline period from 18.2% pre-guideline to 96.1% at the end of the study period (P<0.0001). There were no demographic characteristics associated with lack of administration of rescue steroids among those who were eligible and did not receive a rescue course. The latency period from time of administration of rescue course to delivery varied by indication: from 1.0 week for women with hypertension/preeclampsia to 3.8 weeks for those with suspected abruption. PPROM, a condition considered to be an exclusion for the use of rescue steroids, was present in (44%) of ineligible women receiving rescue corticosteroids.

Conclusion: Implementation of a Maternal Fetal Medicine division guideline on rescue course antenatal corticosteroids increased hospital wide administration of rescue steroids.
**Title:** Hydramnios and the Risk of Abnormal Neurologic Outcomes.

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Preceptor: Barbara O’Brien, MD
Other Authors: Mollie McDonald, MD, Vrishali Lopes MS, Mary Alice Richter, MD.

**Objective:** Although perinatal mortality associated with hydramnios has been evaluated, immediate neonatal neurologic outcomes have not. The objective of this study was to evaluate whether neonates born to mothers with hydramnios are at increased risk of abnormal neurologic outcomes.

**Methods:** A retrospective cohort study was performed. Hydramnios was defined as an amniotic fluid index of greater than 24.0 cm or greater than 90th percentile for gestational age. Controls were selected from women with a documented normal AFI at the time of anatomy scan then matched by gestational age at delivery, year of delivery and mode of delivery. Neurologic outcomes were evaluated using a composite outcome that included abnormal tone, alertness, abnormal reflexes, neonatal seizures, respiratory distress, or feeding difficulty. Assuming an abnormal outcome rate of 1% in the general population, the sample size was calculated by setting alpha to 0.05 and using a power of 80%. Given this, a sample size of 121 patients per group would be needed to detect a 10% rate of abnormal outcomes in the hydramnios group.

**Results:** 199 cases of hydramnios were compared to 193 controls. Of these cases, 39 (19.6%) were associated with diabetes, 32 (16.1%) with genetic or structural abnormalities, and 128 (64.3%) were unexplained. Overall, 28% of the infants in the hydramnios group had at least one abnormal finding (a composite outcome score > 0), as opposed to 11% of those in the normal group (p < 0.001). This difference did not persist when only those infants with unexplained hydramnios were compared to the normal group. When comparing mild and severe hydramnios (AFI greater than 30), there were more abnormal composite scores (22% vs. 57%, p < 0.0001) and more genetic or syndromic abnormalities of the newborn (2.4% vs. 25.8%, p < 0.0001) in the severe group.

**Conclusion:** There is an increased risk of neonatal neurologic abnormalities associated with hydramnios, but this is primarily due to a concomitant increased risk of genetic and structural disorders. In the absence of these disorders, hydramnios is not associated with an increased risk of adverse neonatal neurologic outcome.
Staple skin closure after cesarean delivery associated with increased incision complication in patients with diabetes

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Objectives:

Pre-existing and gestational (GDM) diabetes complicates a large number of pregnancies. Rhode Island has one the highest rates of GDM encompassing almost 7% of all pregnancies. Given increasing cesarean section rates, there is increased risk for wound complications. No studies to date that have looked specifically at wound closure in diabetic patients undergoing cesarean section to determine which skin closure type, staples or sutures, is associated with wound disruption in this vulnerable population. This retrospective chart review compared the rates of wound complications in GDM and pre-existing diabetic patients whose cesarean-section skin closure utilized staples to those closed with sutures. We hypothesized that closure with staples would be associated with higher wound morbidity.

Methods:

This is a retrospective cohort study of cesarean deliveries in pre-existing and gestational diabetics in 2010-2013 at WIHRI. Subjects were managed or co-managed by the Diabetes in Pregnancy Program and delivered by cesarean. Excluded were patients admitted to the ICU for non-wound related issues. Three hundred seventy-five charts were reviewed and data regarding type of skin closure, type of wound disruption and type of intervention were collected.

Results:

Of 375 subjects, 147 incisions were closed with sutures and 228 with staples. Using chi-square test a significant difference (p = 0.003) was found between the two groups: 4.1% rate of wound complication in the suture group compared to 13.6% wound complication rate in the staple group. After adjusting for confounders, using staples was still associated with higher odds of wound complications (adjusted OR 3.14, 95%CI 1.23 – 8.03).

Conclusion:

Skin closure with staples after cesarean delivery is associated with a significantly increased risk of wound disruption compared to skin closure with sutures for diabetic patients. Even after adjusting for potential confounders the risk remains higher. Given this finding, it is important for us to reconsider the use of staples as a method of incision closure for patients with diabetes after cesarean delivery.
Title: Evaluation of the pregnant patient after minor trauma: Does monitoring predict outcomes?

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Objective: To determine whether cardiotocography is useful in predicting placental abruption after minor trauma

Methods: This is a retrospective cohort study reviewing the demographics and outcomes of pregnant following evaluation after minor trauma. Eligible participants were pregnant, 20 weeks gestation or greater, who were evaluated for minor trauma in the Women and Infants Emergency Department between 2010-2014. The main independent variable was the number of contractions on initial monitoring. The main outcome variables were abruption or composite adverse pregnancy outcome which included abruption, preterm birth and birthweight < 10%. In order to detect a 4% difference in abruption prevalence, assuming an overall rate of abruption of 1.5%, with a power of 80%, the calculated sample size is 768 charts. Categorical variables will be compared by Fisher’s exact test. Continuous variables will be compared by T-test or the Wilcoxon rank-sum test. A subset of reviewed charts will be presented.

Results: These preliminary analyses include a subset of 181 charts. Of this cohort, 38.7% of patients presenting after minor trauma had 6 or more contractions during any 1 hour of monitoring which triggered 24 hours of inpatient cardiotocography. In this subset, we have not detected a difference in composite adverse pregnancy outcome between women with ≥6 contractions per hour and women with < 6 contractions (14.5% vs. 18.0% p=0.7 OR 0.77 (0.34-1.76). Additionally, comparing women admitted and not admitted for 24 hours of monitoring we have not found a difference in incidence of adverse pregnancy outcome (17.5% vs. 16.2% p=0.8 OR 1.09 (0.48-2.47).

Conclusion: Our preliminary analyses suggest that cardiotocographic monitoring results of pregnant women after minor trauma may not be a sensitive predictor of abruption or adverse pregnancy outcome. Data collection is ongoing and additional data is needed to determine whether a more appropriate screening modality following minor trauma exists.
The impact of a hospital wide CME session on the incidence of prophylactic salpingectomy at the time of hysterectomy

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Objectives: The emerging theory of tubal intraepithelial carcinoma as the origin of some serous epithelial ovarian cancers was presented at the height of its development as a hospital wide CME session in a large tertiary care women’s hospital in December 2010. The purposes of this study were (1) to evaluate whether or not this educational session affected the incidence of prophylactic salpingectomy at the time of hysterectomy and (2) to examine specific provider factors related to performance of salpingectomy.

Methods: This is a retrospective cohort study of hysterectomies with ovarian conservation at a single tertiary center between December 2009 and December 2011. Data collected included +/-salpingectomy, primary surgeon, attendance at the session, provider year of birth, year of completion of residency, level of training, and provider annual volume of hysterectomies. Incidence of salpingectomy was compared by Chi-square test and the Cochran-Armitage test. For our sample size calculations we assumed alpha=0.05 and beta=0.20. To detect an absolute difference of 20% in performance of salpingectomy pre- and post- CME session, we needed 156 hysterectomies performed by session attendees and 78 by session non-attendees, and ended up with 557 by attendees and 668 by non-attendees. We collected data from all hysterectomies performed during the time period in an effort to generate a comprehensive institutional hysterectomy database.

Results: We reviewed 1287 hysterectomies performed by 93 different surgeons; 628 performed before the educational session and 658 performed after the session. Of the 628 performed before the session, 1.8% (n=11) included prophylactic salpingectomy, compared to 16.9% (111/658) after the session (p <0.0001). In the 4 quarters after the session, the rate of salpingectomy was 11.6% (n=22/190), 13.0% (n=21/162), 21.2% (n=33/156), and 23.3% (35/150), respectively (p-trend=0.0009). Among prophylactic salpingectomies, the proportion performed by generalists increased from 0% before the session to 69.4% after the session (p<0.0001). After the session, the odds of performance of prophylactic salpingectomy were 1.81 times greater if the provider attended the session (95%CI: 1.19-2.76; p=0.005).

Conclusions: The educational session had a positive, measurable impact on the surgical practice of gynecologists. This suggests that simple educational sessions can be useful tools to disseminate advancements in the medical field.
Choosing Trial of Labor After Cesarean (TOLAC) at Women & Infants Hospital
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Objective: The purpose of this study is to investigate whether the predicted chance of success using the Vaginal Births After Cesarean (VBAC) calculator, as well as other patient factors, are associated with the choice to undergo trial of labor after Cesarean (TOLAC).

Methods: In this retrospective cohort study, women who delivered a term singleton at Women and Infants Hospital (WIH) in 2012 and had a single previous Cesarean section at WIH were identified in the electronic medical record. Patients with obstetric contraindications to TOLAC, intrauterine fetal demise, and known fetal anomalies were excluded. The VBAC calculator score was calculated for each patient. The primary outcome was percentage of women choosing TOLAC compared to elective repeat Cesarean section (ERCS) among women with favorable and unfavorable VBAC scores. The study was powered to detect a 20% absolute difference in the rate of women choosing TOLAC, with VBAC score as a dichotomous variable, ≤70% and >70%.

Results: A total of 510 women were included in the study: 91 patients had a VBAC score of >70%, while 419 patients had a VBAC score of ≤70%. Of the women with a VBAC score of >70%, 50.5% chose TOLAC compared to 18.4% of the women with a VBAC score of ≤70% (p<0.0001). Women with a VBAC score between 25 and 50% were as likely to choose TOLAC as women with a VBAC score between 51 and 75% (p<0.0001). Patient characteristics significantly associated with the choice to undergo TOLAC or ERCS in a univariate analysis were desired sterilization, payer, prenatal care provider type, and spontaneous labor or rupture of membranes (p=0.002). For a sub-group of patients with a history of a non-elective primary Cesarean section, the threshold VBAC score at which patients were more likely to choose TOLAC appeared to be 60%. There was no significant difference in maternal and neonatal outcomes in the TOLAC and ERCS groups.

Conclusion: Factors predicting successful VBAC and other patient characteristics affect the decision to undergo TOLAC. Further research is necessary to better understand how to help patients make an informed decision when faced with this choice.
Title:
The immediate postpartum depot medroxyprogesterone acetate (DMPA) bridge: are we helping or hindering the uptake of IUDs and implants at the postpartum visit?

Authors:
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Objectives: When immediate postpartum insertion of long-acting reversible contraception (LARC) is unavailable, DMPA is frequently offered as a contraceptive bridge until the postpartum visit for women who desire LARC. The study aim was to compare LARC uptake by sixteen weeks postpartum in women who received a DMPA bridge to women who did not.

Methods: This retrospective cohort study included women who received prenatal care at the Women’s Primary Care Clinic and delivered at Women & Infants Hospital in 2012. Charts were reviewed for desire for LARC, DMPA administration prior to hospital discharge, postpartum visit attendance, LARC placement within 16 weeks of delivery, and related sociodemographic and clinical characteristics. Baseline characteristics and LARC uptake between the groups were compared using the t-test, Wilcoxon rank-sum test, and Fisher’s exact test. We used multivariable logistic regression to estimate odds of receiving LARC at a postpartum visit and to adjust for confounders. Setting our α= 0.05, power=80%, and an estimated effect size of 20%, we calculated that we needed a sample size of 103 women with postpartum follow-up per study group.

Results: During the study period 347 women were identified who planned LARC at a postpartum visit. Of these women, 135 (38.9%) received a DMPA bridge immediately postpartum. 78.5% of the DMPA group (106/135) and 79.3% of the no DMPA group (168/212) attended the postpartum visit, which was not significantly different (p=0.9). The DMPA group was younger and more likely to be single (p=0.008 and 0.003, respectively), but the groups did not differ by race/ethnicity, parity, or mode of delivery. We found a difference in LARC uptake between the DMPA group (n=63, 59.4%) and the no DMPA group (n=124, 73.8%) when adjusted for age, parity, mode of delivery and relationship status (single vs. other), (p=0.05, adjusted OR=0.58, 95% CI 0.34-1.00), that approached statistical significance.

Conclusions: We observed a trend toward decreased LARC uptake at sixteen weeks postpartum among women who received a DMPA bridge, though this was not statistically significant. The DMPA bridge, while providing immediate protection against unintended pregnancy, may hinder LARC uptake, though a prospective trial is needed to determine causality.
Objective: To determine the multidrug resistant (MDR) transporter activity in oocytes and their potential role in oocyte susceptibility to chemotherapy.

Methods:
- **Design:** Experimental laboratory study
- **Setting:** University and Academic Center for reproductive medicine.
- **Patients/Animals:** Women with eggs retrieved for ICSI cycles and adult female FVBN and B6C3F1 mouse strains.
- **Intervention:** Inhibition of MDR activity in oocytes.
- **Main Outcome measure(s):** Efflux activity of MDRs using quantitative fluorescent dye efflux and oocyte cell death when exposed to chemotherapy.

Results: Oocytes effluxed the fluorescent reporters and this activity was significantly reduced in the presence of the MDR inhibitor PSC 833. GV oocytes are more efficient at efflux compared to M2. Human oocytes exposed to cyclophosphamide and PSC 833 showed cell death using two different viability assays compared to controls and those exposed to cyclophosphamide alone. Immunoblots detected MDR-1 in all oocytes with the greatest accumulation in the GV stage.

Conclusions: Oocytes have a vast repertoire of active MDRs. The implications of this study are that these protective mechanisms are important during oogenesis, and these activities change with maturation, increasing susceptibility to toxicants. Future directions may exploit the up regulation of these transporters during gonadotoxic therapy.
EARLY TERM VERSUS TERM DELIVERY IN THE MANAGEMENT OF FETAL GROWTH RESTRICTION: A COMPARISON OF TWO PROTOCOLS

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OBJECTIVE: To compare two management protocols for women with fetal growth restriction (FGR; estimated fetal weight < 10 percentile for gestational age [GA]).

METHODS: We retrospectively analyzed all singleton, non-anomalous pregnancies during who two protocol periods (Early Term: Jan 2008-Feb 2010 and Term: March 2010-July 2012). The Early Term protocol specified delivery at 37 weeks if antenatal testing was normal and did not specify timing of delivery when UA doppler S:D ratios were elevated (>95%ile for gestational age). In contrast, the Term protocol specified delivery at 39 weeks if antenatal testing was normal at 37 weeks if S:D ratios were elevated. The primary outcome was mean difference in GA at delivery, and secondary outcomes included total number of UA Doppler ultrasounds, delivery < 37 weeks, neonatal intensive care unit (NICU) admissions and composite maternal and neonatal morbidity.

RESULTS: There were 228 and 312 women in the Early Term and Term protocol, respectively, that met inclusion criteria. Compared to the Early Term protocol cohort, the Term protocol significantly increased mean GA at delivery (36.8 vs 37.6, p=0.0002) and decreased deliveries <37 weeks (37% vs 24%) and NICU admissions (38% vs 28%). Composite maternal and neonatal morbidity was similar between the two groups.
CONCLUSION: Modification of a protocol for management of FGR increased GA at delivery and decreased the rate of preterm birth and NICU admissions without changing composite neonatal morbidity.
**Title:** Surgical management of breast cancer and impact on sexual function


**Objective:**
Contralateral prophylactic mastectomy (CPM) is increasing across the country. Given the favorable cosmetic results of breast reconstruction, we sought to evaluate the impact of breast cancer surgery on sexual function. A survey incorporating the Female Sexual Function Index (FSFI) was employed.

**Methods:**
This is a prospective survey of 4,086 eligible women undergoing breast cancer surgery at an academic cancer program between 2000-2012. Excluded were patients < 21 or with a diagnosed sexual disorder. Eligible patients completed a survey of 28 FSFI and 7 investigator-generated questions.

**Results:**
Of 278 surveys accepted for review, 131 were completed. Patients underwent lumpectomy (L) (68.7%), mastectomy with reconstruction (MR) (15.3%), or mastectomy (M) alone (16.0%). Patients who underwent L or MR were more satisfied with the appearance of their chest (77.5% and 80%) than those undergoing M (42.9%, $p = 0.003$). The importance of the patient’s chest in intimacy after surgery was highest in MR (85%) compared to L (75%) or M (60%, $p = 0.4$). Patients with MR reported decreased breast specific sexuality compared to L (37% vs. 52%, $p=0.4$). Evaluation of FSFI revealed a mean score of 25.9 (<26 = sexual dysfunction). Women with MR had better sexual function (26.2) compared to L (25.9) or M (23.7, $p= 0.6$). The 5 domains evaluated by FSFI, women with MR and L had higher scores.

**Conclusion:**
This is the first study analyzing the impact of breast cancer surgery on sexual function. We noted a favorable trend in appearance of the postoperative chest in women undergoing MR or L. FSFI scores showed a trend favoring improved desire, arousal, lubrication, orgasm and satisfaction in women who underwent MR or L compared to M. Seventy-five percent of L patients report preserved breast specific sexuality. L 1.4 times as likely as MR to result in pleasant breast specific sexuality. Thus, CPM may have a negative impact on sexual function.
Title: Predictive Factors for the presence Malignant Transformation of Pelvic Endometriosis

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Objective: To determine predictive factors for the presence of malignant transformation in ovarian endometriotic cysts

Methods: An IRB approved retrospective case control study was performed. Pathology records from 2005 to 2013 were searched to identify patients with benign endometriotic cysts and ovarian carcinoma arising in the background of endometriosis. Inclusion criteria required each patient to have a preoperative diagnosis of adnexal mass and no other findings concerning for malignancy. Patient charts were queried for preoperative symptoms, serum CA125 levels and radiologic findings. Pathologic data were collected including histology, tumor grade and stage.

Results: A total of 138 patients met inclusion criteria; 42 women with histology proven ovarian cancer arising in the background of endometriosis and 96 women with benign endometriotic cysts as controls. Women diagnosed with ovarian cancer were significantly older than women with endometriosis alone (mean 53.7 vs. 39.2 years, P < 0.0001). There was no difference in presenting symptoms between the two groups with the exception of patients with malignancies had weight change and/or constipation (11.9% vs 1.1%, 9.5% vs 1.1% respectively). Statistically significant differences in tumor characteristics were observed. Malignant tumors had significantly larger cysts (14.0cm vs 7.5; p<0.0001); were less often unilocular (12.2% vs. 45.7%; p<0.0001), and more often contained solid components (77.1% vs.14.5%; p<0.0001). Serum CA125 levels tended to be higher in patients with malignant tumors but did not reach statistical significance with a mean of 204.9 vs. 66.9 (P=0.1). Among patients that were managed with observation prior to surgery there was a significant difference in the change in size of the mass over time with 4.2cm increase for cases vs. 1.0 cm increase for controls (P = 0.02).

Multiple logistic regression analysis indicated that for every 5 years increase in age there was an adjusted OR of 2.17 (p = 0.003). Age of 49 had 80.6% sensitivity and 82.9% specificity for malignancy, and solid component on imaging had an adjusted OR of 23.7 (p<0.0001).

Conclusions: Significant predictors for malignant transformation of endometriosis include cyst characteristics and age. Women above the age of 49 with multilocular cysts and solid components are at high risk for malignant transformation of endometriosis. Serum CA125 levels are not predictive of malignant transformation.
Recurrence after prolapse surgery: does partial avulsion matter?

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Preceptor: Hand Peter Dietz, MD  
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Objective: To determine whether partial avulsion of the levator ani muscle is a risk factor for prolapse recurrence after surgery.

Methods: This study utilizes data from 6 separate clinical audit projects examining recurrence after prolapse surgery at tertiary urogynecological units. All subjects underwent a standardised interview, a POP-Q examination and 4D translabial ultrasound (US). Subjective recurrence was defined as symptoms of a vaginal lump or dragging sensation. Objective recurrence was defined as a) POP-Q stage 2 or more, b) prolapse to the hymen or beyond, c) cystocele recurrence on US. Partial avulsion was defined as an abnormal levator ani insertion visible on at least one axial plane slice, but not meeting the criteria for complete avulsion on either side.

We tested potential predictors of recurrence (age, BMI, follow- up interval, previous hysterectomy and previous prolapse surgery, vaginal delivery, Forceps, age at first delivery, anterior mesh use, partial or complete avulsion and hiatal area on Valsalva) against subjective and objective recurrence as defined above, both using univariate statistics and logistic regression modelling with SPSS V 16.

Results: Between 3/2006 and 12/2012, 792 women underwent prolapse surgery at participating units, and 545 women (69%) were seen for a follow-up visits on average 2.3 years (3 months – 6.9 years) after surgery. The mean age was 63 (28.1-90), mean parity of 3 (0-10). 98% of women were vaginally parous and 31.3% reported history of forceps delivery. One hundred forty five women (26.6%) had a previous prolapse repair. A partial avulsion was found in 87 women (16.6%). On a multivariate logistic regression partial avulsion was found not to be a risk factor for prolapse recurrence based on recurrent prolapse symptoms, ICS POP-Q examination or US.

Conclusion: In this study, partial avulsion of the levator ani muscle was not associated with an increased risk of prolapse recurrence after. This is consistent with the observation that minor forms of levator trauma do not seem to be associated with pelvic organ prolapse.