

# ABSTRACTS

## Predictors of Long-Acting Reversible Contraception Use Among Unmarried, Young Adults

Angela R. Dempsey; Caroline C. Billingsley;  
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**Objective:** To improve understanding of long-acting reversible contraception (LARC) use patterns among unmarried, young adults at risk of unintended pregnancy.

**Study Design:** We performed a secondary data analysis of a national survey conducted by Guttmacher Institute of unmarried women and men ages 18-29. Predictors of LARC use among those at risk for unintended pregnancy (n=1222) were assessed using chi square analysis and logistic regression models.

**Results:** LARC use was associated with older age, high intrauterine device (IUD) knowledge, and earlier onset of sexual activity. Respondents with high IUD knowledge were 6 times more likely to be current LARC users (OR 6.3, 95% CI 1.4, 28.8). Socio-demographic variables did not predict use. Respondents with lower education (OR 1.76, 95% CI 1.0, 3.0), an external locus of control (OR 1.6, CI 95% 1.1, 2.3), male gender (OR 2.8, 95% CI 1.9, 4.1), and foreign language had less knowledge of IUD.

**Conclusions:** Increasing knowledge of IUD among certain groups may improve LARC use among young, unmarried adults and in turn decrease unintended pregnancy.

Keywords: contraceptive implant, intrauterine device, LARC use, knowledge of LARC

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## Antibiotic Resistance Profiles of Group B Streptococcus in Charlotte, NC

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Robert L. Sautter, PhD; Marcy Nussbaum, MS.

**Objective:** To establish the local GBS resistance rates and assess for possible demographic risk factors associated with antibiotic resistance.

**Methods:** All GBS positive ano-genital swabs in March, 2011 were analyzed for antibiotic resistance to 12 antibiotics according to CLSI standards. 50 samples were obtained. Demographics evaluated were clinic type, ethnicity, country of origin, maternal age, BMI, number of prenatal visits, and antibiotic use prior to labor.

**Results:** All isolates were susceptible to ampicillin, penicillin, vancomycin, cefepime, cefotaxime, and ceftriaxone. 24% were resistant to clindamycin, 42% to erythromycin, 90% to tetracycline, 44% to azithromycin, and 2% to levofloxacin. No demographic parameter was associated with an increased risk of having a resistant GBS strain, although advanced maternal age approached significance for clindamycin (p=0.082).

**Conclusion:** There is a high prevalence of clindamycin resistance in Charlotte, NC and AMA may be a risk factor for resistance. The ACOG/CDC guidelines for intrapartum management of GBS are supported.

## Endothelial Function Gene Polymorphisms Are Associated With Preterm Birth

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Elizabeth Hauser, PhD; Andy Olshan, PhD; Carrie Salafia, MD;  
Siqun Zheng, MD; John Thorp, MD

**Objective:** The purpose of this study was to investigate whether maternal single nucleotide polymorphisms (SNPs) in endothelial function genes are associated with preterm birth in association with placental pathology.

**Study design:** We performed a retrospective nested case-control study, incorporating genetic and placental data. SNPs in genes for Apo A1, Apo A5, ApoC3, endothelin-1, E-selectin, ICAM-1, IL-6, MTHFR, and VEG-F were studied.

**Results:** After correction for multiple comparisons, the endothelin-1 K198N rs# 5370 SNP was associated with decreased risk for preterm birth, independent of placental pathology. The ICAM-1 K469E rs# 5498 SNP was associated with decreased risk for PTB, in Black women only.

**Conclusions:** In our study, the endothelin-1 rs#5370 SNP was protective against PTB. The ICAM-1 rs#5498 SNP was protective against PTB in Black women only. Neither SNP was associated with placental pathology. Further research is needed to confirm this association and to identify the nature of this protective effect.

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## Management of Mesh Complications From Pelvic Organ Prolapse Repair

Jessica Feranec, MD; Georgine Lamvu, MD, MPH

Pelvic organ prolapse is a worldwide health issue affecting up to 31% of patients across age groups. Graft and mesh implants in pelvic floor repair procedures have become increasingly common, and with their use, considerable complications have emerged. Treatment of these problems is hampered by the numerous surgical products and approaches to prolapse repair. Literature on the subject is limited by past use of differing terminology, rare long-term follow-up and few randomized trials. Patients who are treated for severe complications rarely see their original surgeon. In this review, we discuss approaches for management of the most common postoperative complaints, including prosthetic extrusion and exposure, chronic vaginal discharge, vaginal bleeding, dyspareunia, infection, immediate and chronic pelvic pain. Conservative, medical, minor and major surgical approaches are discussed, including options for treatment of coincident pelvic floor muscle spasm, bladder and rectal spasm and neuralgias.

## **Influence of Editorials on the Rising Cesarean Rates in a Large Private Obstetric Practice**

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Jeffrey Roth, Ph.D

### **Background**

The increasing Cesarean section (C/S) rate is a public health concern. Maternal risk factors of obesity, advancing age, medical complications of pregnancy have all been associated with increased rates of surgical delivery, but little emphasis has been placed on the influence of position papers (editorials, ACOG Committee Opinions, and policy statements) on the behavior of physicians and their patients, and subsequent change on the C/S rates. The present study investigated the relationship between the appearance of an editorial in the New England Journal of Medicine (NEJM) in 2001 by Greene that suggested Vaginal Birth After Cesarean section (VBAC) was unsafe, and the rising C/S rate in a large private practice.

### **Methods**

This was a retrospective record review of all the deliveries (22,743) from February 1993 to June 2010 from a single large private practice. Total and primary C/S rates were calculated for each year. Time-series and multivariate analysis were used to investigate the relationship between the appearance of the Greene editorial and the rate of Cesarean section.

### **Results**

From 1994 to 2001 there was not a significant increase in the C/S rate of the practice which was lower than the national average. From 2002 to 2010 the C/S rate increased at a rapid rate, eventually approximating the national average. The VBAC rate dramatically dropped in the private practice starting in 2001, paralleling the rise in the C/S rate. The appearance of the editorial in 2001 suggesting that VBAC was unsafe was associated with a 3% increase in caesarean rate per year (p value 0.009). The effect was gradual, not abrupt. Other factors that were independently and significantly associated with increased caesarean section rate in the patient population included: BMI (1%), age (1%), diabetic mother (17%), high risk pregnancy (10%), and race (blacks had higher rate than whites).

### **Discussion**

There was a strong association with the decrease in VBACs and the rise in the C/S which occurred just after the risk of VBAC was highly publicized in 2001. The multivariate analysis suggested that part the increase in the C/S rate was due to factors other than characteristics of the patients in the practice. Publicity of the risks of VBAC, such as the Greene NEJM editorial, may have influenced physician practice patterns. Optimal obstetric care can only be established after understanding the influences and consequences of policy recommendations on physician and patient behavior.

## Simulation of Robotic Hysterectomy Utilizing the Porcine Model

Mitchel Hoffman, MD

**Purpose:** This paper describes simulation of robotically-assisted hysterectomy utilizing the porcine model.

**Materials and Methods:** Utilizing 3 domestic pigs a technique for robotically-assisted hysterectomy was developed. An edited videoclip of the model was assessed by 5 gynecologic surgeons.

**Results:** The steps of the operation are described in detail and shown in a videoclip. Overall the procedure simulated that done in the human both anatomically and surgically. The evaluators rated cervicovesical surgical plane development as relatively easier in the model.

**Conclusion:** Reported here is a technique for robotically-assisted hysterectomy in the domestic pig that may be useful for training purposes.

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## Robotic-Assisted Laparoscopic Cerclage During Pregnancy: A Case Report and Review of The Literature

John R. Lue MD, MPH; Stephen Bush II MD;  
Andrew Helfgott MD; Tondra Newman MD

A 37-year-old female, gravida 4 para 0, at 9 weeks gestation presented for consultation secondary to cervical insufficiency. She had three previous pregnancy losses even after vaginal cerclages. At 11 weeks gestation the patient was taken to the operating room and a robotic abdominal cerclage was performed successfully. In review of the literature, only 2 reports of robotic assisted laparoscopic abdominal cerclage were found. Our procedure differed in the suture type and placement. Traditional vaginal and abdominal cerclage can be extremely difficult due to limited mobility, visualization, increased bleeding, poor dexterity, difficulty in securing the knot and many other issues. We have demonstrated that Robotic assisted laparoscopy is perfectly suited to this procedure as it allows extra dexterity with the seven degrees of motion and 3 dimensional views. Our robotic assisted approach went smoothly with minimal blood loss and in our opinion should replace the traditional open laparotomy approach.

# ABSTRACTS

## Immediate Post-partum Implanon®: Can We Prevent Rapid Repeat Pregnancy for Teen Moms?

Elizabeth A. Lutz, MD MPH

### Faculty Advisor(s):

Gretchen Stuart, MD; Amy Bryant, MD; Seth Brody, MD

**Introduction:** We sought to assess acceptability of immediate post-partum etonogestrel implant placement among new teenage mothers.

**Methods:** We conducted a retrospective study at WakeMed Hospital in Raleigh, NC. Eligibility criteria included age 15-19 years, live birth between January 1 and December 31, 2008, and receipt of an etonogestrel implant after delivery but prior to discharge. Data on demographics, reproductive characteristics, and contraceptive choices were collected via abstracting medical records and one phone call.

**Results:** Twenty-one of 72 eligible women completed the survey. Women reported overall satisfaction (81%). Eleven women (52%) were using the implant at the time of the survey. Five of the 10 women not using the implant reported an intervening pregnancy.

**Conclusions:** Immediate post-partum Implanon® is an acceptable contraceptive method for adolescent mothers. The rapid repeat pregnancy rate for the 21 women in the study was lower than the expected 35% for this population.

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## Successful Medical Management of Cervical Pregnancy with Fetal Heart Using Systemic Methotrexate A Case Report

Brian J. Murray, MD; Cedric Walls, MD; Adelina M. Emmi, MD

A 36-year-old female, G 2 P 0 presented with a two week history of vaginal spotting and lower abdominal discomfort. She was found to have an hCG level of 26,577 mIU/mL and underwent a transvaginal ultrasound which revealed a cervical pregnancy with fetal cardiac activity at 6w0d gestation.

The patient was counseled regarding her options which included surgical or medical management. The patient opted for medical management. She was admitted and treated with a multidose Methotrexate regimen and discharged. She was followed with serial hCG titers and ultrasounds on an outpatient basis. The pregnancy resolved without complications over a 42 day course. The use of Methotrexate with leucovorin rescue without intracardiac KCL injection should be considered as a reliable option in the management of cervical pregnancy.

We have now been able to successfully treat cervical pregnancies with and without cardiac activity without the morbidity of surgery or intra-gestational sac methotrexate administration.

# ABSTRACTS

## Improved Outcomes and Decreased Toxicity in Locally Advanced Cervical Cancer Patients Undergoing Radical Hysterectomy Compared to Primary Chemoradiation

Charlie Pickens, Jr., MD; Catherine Gasper; Matthew Kohler MD; Whitney Graybill MD, MS; Jennifer L. Young MD, MPH. Medical University of South Carolina, Charleston, SC

**Objective:** It has been proposed that given the high likelihood of the need for postoperative adjuvant chemoradiotherapy, that radical hysterectomy in patients with locally advanced cervical cancer be discarded as a treatment option. Further older studies suggested higher rates of toxicity with a combination of radical surgery and radiation. The purpose of this study was to evaluate the toxicity and disease outcomes associated with radical surgery versus chemoradiotherapy in treating locally advanced cervical cancer stages IB2-IIA.

**Methods:** A retrospective chart review was undertaken for patients diagnosed with stage IB2-IIA cervical cancer treated at MUSC from 2000-2009. Patients with metastatic disease on imaging or biopsy at the time of diagnosis were excluded. Analysis was conducted in an intention-to-treat fashion in order to compare outcomes of patients initially undergoing radical hysterectomy compared to chemoradiation.

**Results:** Fifty patients met the inclusion criteria for this study. The mean age was 47 (range 26-90). Ninety-four percent of tumors were squamous histology, with the rest being adenocarcinoma. Seventy-three percent of patients' tumors were between 3 and 6.9 cm, and 23.5% had positive lymphovascular space involvement. For treatment, 25/50 patients (50%) underwent chemo/radio-therapy (chemo/XRT) as their initial treatment, 11 patients (22%) had only a radical hysterectomy and 14 (28%) had a radical hysterectomy followed by chemo/XRT. There was a trend towards improved outcomes with radical hysterectomy compared to chemoradiation. Chemoradiation was associated with significantly more late toxicities (44% compared to 24%,  $p=0.0046$ ). There were no differences in acute toxicities.

	Radical Hysterectomy with or without adjuvant chemo/XRT (n=25)	Chemo/XRT only or chemo/XRT with completion hysterectomy (n=25)	p-value	Relative Risk
PFS (months)	50.2	32.1	0.192	
Median OS (months)	48	33	0.728	
OS (%)	84.0	72.0	0.496	
Recurrence (%)	28.0	36.0		0.78 95% CI (0.34-1.8)

PFS = progression free survival  
OS = overall survival

**Conclusions:** As indicated in the table, there was a trend toward better outcomes associated with patients given a radical hysterectomy with statistically significantly less late toxicity. More studies are needed to determine the optimal treatment for locally advanced cervical cancers.

## Diagnostic Accuracy of Visual Urethral Mobility Exam versus Q-Tip® Test: A Randomized Cross-Over Trial

Barbara L. Robinson MD; Elizabeth Geller MD;  
Brent Parnell MD; Andrea Crane MD; Mary Jannelli MD;  
Ellen Wells MD; AnnaMarie Connolly MD;  
Catherine A. Matthews MD

**Background:** To compare diagnostic accuracy of Visual Examination (VE) to Q-tip Test for assessment of urethral mobility.

**Methodology:** Female subjects were randomized to the VE or Q-tip Test first, followed by the alternate assessment. During VE the examiner judged the UVJ as hypermobile, not hypermobile, or indeterminate. During Q-tip Test maximum straining angle was recorded with urethral hypermobility defined as angle  $\geq 30^\circ$ . Subjects rated pain using a visual analog scale (VAS) and indicated their preference.

**Results:** 54 women completed the study. 64.7% of subjects were hypermobile on VE versus 72.2% on Q-tip Test ( $p=0.39$ ). Findings correlated ( $r=0.47$ ,  $p=0.001$ ). Positive and negative predictive value, sensitivity, and specificity for VE were 88%, 56%, 78%, and 71%. Mean pain score on VAS was 0.72 for VE and 3.15 for Q-tip Test. 83% of subjects preferred VE.

**Conclusions:** VE is diagnostically equivalent to the Q-tip Test, preferred by subjects and associated with less pain.

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## Maternal Vitamin D and Placenta Growth Factor as Diagnostic Tests of Early-Onset Severe Preeclampsia

Christopher Robinson, MD; MSCR; Carol Wagner, MD;  
John Baatz, Ph.D.; Bruce Hollis, Ph.D.; Donna Johnson, MD

**Objectives:** Decreased maternal 25-hydroxyvitamin D (25-OH-D) and placenta growth factor (PIGF) have both been associated with the diagnosis of early-onset severe preeclampsia (EOSPE). This investigation aimed to define the diagnostic performance of these biomarkers in EOSPE.

**Methods:** Patients with EOSPE and healthy controls were recruited and demographics, outcomes, and plasma were collected at matched gestational age. 25-OH-D was assessed by radioimmunoassay and reported in ng/mL. PIGF was assessed by ELISA and reported in pg/mL. Receiver operator curves were constructed for each regression model and sensitivity and specificity were reported for each biomarker.

**Results:** In EOSPE, both 25-OH-D and PIGF were decreased significantly compared to controls. The combination of age, race, and PIGF or 25-OH-D performed well in discrimination of EOSPE and controls.

**Conclusions:** PIGF and 25-OH-D are sensitive and specific markers for diagnosis of EOSPE. However, PIGF provided a higher sensitivity and specificity for EOSPE diagnosis.

# ABSTRACTS

## The Utility of Endocervical Curettage: Does Routine ECC at the Time of Colposcopy for Low Grade Cytologic Abnormalities Alter Treatment Plans or Outcomes?

Joseph Rose; Patrick Duff; Sharon Byun; Shireen Madani Sims;  
John Davis

**Background:** Endocervical curettage (ECC) is frequently performed at the time of colposcopy. The clinical utility of ECC should be weighed against time, cost, and patient discomfort.

**Objective:** To determine the utility of ECC at the time of colposcopy for low grade cytologic abnormalities.

**Methods:** We conducted a retrospective chart review of adequate colposcopies with visible lesions performed for ASCUS-HRHPV and LSIL pap smears in a subset of women from 2006-2010. We evaluated cytology and pathology after the colposcopy to determine if those findings altered treatment plans.

**Results:** Of 374 colposcopies, 16 ECCs returned with high grade dysplasia. Of these, only 4 did not correlate with concomitant ectocervical biopsies. Therefore, the number of ECCs needed to independently detect 1 case of high grade dysplasia was 93-94.

**Conclusion:** Routine endocervical curettage at the time of colposcopy does not significantly alter treatment plans or outcomes in the assessment of low grade cytologic abnormalities.

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## Pelvic Floor Spasm: Screening and Treatment

Eric D. Swisher, MD

Pelvic floor disorders are common in women and too often unrecognized in the evaluation of female pelvic pain syndromes. Although well described in the literature, these disorders present with a diversity of symptoms and findings which may be missed by a traditional exam of the cervix, uterus, and adnexal structures. Screening the posterolateral pelvic floor musculature during the routine pelvic exam is a very productive tool which often identifies spasm contributing to or resulting from a patient's pelvic pain. We present a case series and literature review relating to the successful identification and management of these acute and chronic syndromes. We advocate a brief palpation of the posterior and lateral pelvis as part of the routine pelvic exam to identify pelvic floor spasm which may be dramatically improved by physical therapy and other interventions.

## ABSTRACTS

### Antenatal Sexually Transmitted Infection Screening in Private and Indigent Clinics in a Community Hospital System

Joel B. Yancey, MD; Albert Franco, MD; Marcy Nussbaum, MS; Susan Kullstam; Mollie Elliot, RN, BSN

**OBJECTIVE:** To determine if clinics which primarily serve indigent patients demonstrate equal compliance with sexually transmitted infection testing guidelines when compared to private clinics.

**METHODS:** 183 women were divided into cohorts based on whether they received prenatal care at a private or indigent clinic. Timing of required antenatal sexually transmitted infection screening was collected for 8 tests and compliance scores were calculated. Secondary outcome variables included disease-specific compliance and percent of perfect compliance at different office types.

**RESULTS:** Median compliance was the same between clinic types. Indigent clinics had higher mean compliance scores (7.1 vs. 6.9,  $p=0.023$ ) and a greater percentage of patients demonstrating perfect testing compliance (42% vs. 14%,  $p<0.001$ ).

**CONCLUSION:** Average compliance with required testing was similar between the two groups; however obstetrics practices had better compliance than did family practice groups. HIV testing in the third trimester remains the greatest need for improvement for all practice types.

## Influenza Vaccine for Pregnant Women: Compliance with CDC Guidelines Following Implementation of a Simple Documentation System

Jona Bandyopadhyay, MD; Carmen Peden, MD;  
Nithya Nagella, MD; Patrick Duff, MD; John Davis, MD;  
Shireen Madani Sims, MD

**Background:** Influenza is a serious cause of morbidity and mortality in pregnant women. The CDC recommends yearly vaccination; using a checklist can improve compliance.

**Objectives:** This study evaluated our compliance administering the influenza vaccine to pregnant women before and after adding a checklist reminder to prenatal charts.

**Methods:** We performed a chart review of prenatal patients during the 2006-2007 and 2007-2008 influenza seasons to document vaccine administration. We then added a checklist reminder to charts for the 2009-2010 influenza season. Chart review documented presence of the checklist and administration of the vaccine.

**Results:** We reviewed 1613 charts for the 2006-2007 and 2007-2008 influenza seasons. Overall, 10.6% received the vaccine. We reviewed 875 charts for the 2009-2010 season. When the checklist was present, 67.6% of patients received the H1N1 vaccine and 33.3% received the seasonal flu vaccine.

**Conclusion:** Including a checklist reminder in prenatal charts improved adherence to CDC guidelines.

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## Primary Amenorrhea in A 17 Year Old

Callie Carroll MS3, Judith T. Burgis, MD

**Background:** Primary amenorrhea offers physicians a vast list of differential diagnoses. Physical exam and laboratory evaluation of gonadotropins and androgens are vital in determining a diagnosis. The differential diagnosis includes androgen insensitivity syndrome, Mullerian anomalies, ovarian insufficiency, polycystic ovary syndrome, and Turner Syndrome.

**Case:** A 17 year old was referred by her pediatrician for primary amenorrhea. Physical exam revealed Tanner IV breasts, normal female external genitalia with a vaginal depth of 1 to 2 cms. Pelvic exam could not be performed. Labs revealed normal estrogen, prolactin, TSH, androgens and premenopausal FSH and LH. MRI revealed vaginal and cervical agenesis with a functional rudimentary right uterine horn, normal ovaries, and congenital absence of left kidney. Laparoscopic resection of the functional rudimentary horn was performed. Endometriosis was noted. Her post-operative course was uncomplicated.

**Conclusion:** Mullerian anomalies must be considered in the differential diagnosis when evaluating primary amenorrhea.

## An Investigation into the Timing of Unplanned Cesarean Sections

Nick Gilbert, MD

**Introduction:** This study investigates unplanned cesarean sections within one institution to assess a novel idea regarding the timing of this mode of delivery and factors that may create temporal clusters around the 24-hour clock.

**Methods:** Delivery logs and medical records from 2006 through 2009 were examined to identify unplanned primary c-sections in singleton pregnancies. Data analysis employing a circular statistical method was used to represent the 24-hour clock around which these procedures were performed.

**Results:** 1511 patients who had unplanned c-sections with singleton pregnancies were included. C-sections appear to occur with greatest frequency between 17:15 and 18:25 with a mean time of 17:50.

**Conclusion:** Recognizing the times when these procedures are most frequently performed will help with logistical issues but also brings to mind questions concerning both the labor process and how we make our decisions to proceed to c-section.

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## Optimal Timing of Prophylactic Antibiotics for Preventing Postcesarean Infectious Morbidity

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On September 1, 2010, the University of Florida/Shands – Jacksonville underwent a policy change requiring that all prophylactic antibiotics for cesarean delivery be administered prior to incision. We undertook a retrospective cohort study of all cesarean deliveries for 3 months prior to and subsequent to the policy change to compare the rates of: composite post-cesarean infectious morbidity, endometritis, wound infection, suspected neonatal sepsis, proven neonatal sepsis, and NICU admission. The study population included 374 women and 392 neonates. There were no significant differences noted in the rates of endometritis, wound infection, or composite post-cesarean infectious morbidity between the groups. There was an increase in the rate of sepsis workups in neonates delivered to women receiving antibiotics prior to skin incision that approached significance, but there were no significant differences noted between the groups in rates of NICU admission or proven sepsis. Thus, at our institution, a change in policy to administer prophylactic antibiotics for cesarean delivery preoperatively, did not result in a significant change in the rates of maternal post-cesarean infections, but produced a trend toward a higher rate of neonatal evaluations for sepsis.

This study has been extended for a total study period of 12 months. Extended data and new outcomes will be presented.