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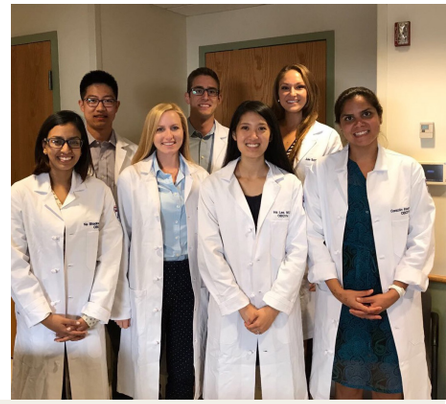
DEPARTMENT OF OBSTETRICS & GYNECOLOGY

16th Annual RESIDENT RESEARCH DAY & JOHN ROCK LECTURE



MAY 17, 2019

ARTHUR H. RUBENSTEIN AUDITORIUM
SMILOW CENTER FOR TRANSLATIONAL RESEARCH
PERELMAN SCHOOL OF MEDICINE
UNIVERSITY OF PENNSYLVANIA

Welcome

16TH ANNUAL RESIDENT RESEARCH DAY & JOHN ROCK LECTURE

Welcome to the 16th Annual John Rock Lecture and Department of Obstetrics and Gynecology Resident Research Day. Resident Research Day is an opportunity for our trainees to present their research projects to their colleagues with the goal of challenging current thinking to improve women's health care. We believe this experience will inspire our young physicians to explore basic science, translational and clinical research opportunities in their future careers in order to benefit patients and advance our specialty.

We are honored to welcome as our guest speaker Dr. Laurel W. Rice, Chair of the Department of Obstetrics and Gynecology and Professor in the Division of Gynecologic Oncology at the University of Wisconsin – Madison School of Medicine and Public Health. Dr. Rice will be presenting, "Intersection of Clinical Trials and Health Disparities."

A special thank you to the Women's Health Clinical Research Center, The Maternal and Child Health Research Center, The Penn Ovarian Cancer Research Center and The Center for Research on Reproduction and Women's Health.

We thank you all for coming today and hope you will join us in congratulating all of today's participants on their achievements.

RESEARCH LEADERSHIP TEAM

Deborah A. Driscoll, MD
Luigi Mastroianni Jr. Professor and Chair

Catherine R. Salva, MD
Director, Residency Program

Anuja Dokras, MD, PhD
Director, Resident Research Program

Mary D. Sammel, ScD
Associate Director,
Resident Research Program

JOHN ROCK LECTURER AND VISITING PROFESSOR

Laurel W. Rice, MD
Ben Miller Peckham, MD, PhD
Distinguished Professor and Chair

Dr. Rice attended college and medical school at the University of Colorado. She completed her residency in Obstetrics and Gynecology and fellowship in Gynecologic Oncology at the Brigham and Women's Hospital. After four years on the faculty of Massachusetts General Hospital, she joined the faculty at the University of Virginia (UVA). During her 14 years at UVA, Dr. Rice was appointed Division Chief of Gynecologic Oncology, established a Fellowship in Gynecologic Oncology, and served as Vice Chair of the Department of Obstetrics and Gynecology.

Nationally recognized as an expert in the care of women with gynecologic malignancies, Dr. Rice has published extensively in her field. Her research focuses on hormones and human malignancies, specifically endometrial carcinoma. She has lectured extensively throughout the United States.

Dr. Rice is President of the American Gynecological & Obstetrical Society, Immediate Past President of the Society of Gynecologic Oncology, Past President of the Council of University Chairs of Obstetrics and Gynecology, and Treasurer of the American Board of Obstetrics and Gynecology.

Dr. Rice also serves as Associate Editor of Gynecologic Oncology.

AGENDA

7:00 am — **Continental Breakfast**

7:30 - 7:35 am — **Welcome Remarks**
by **Deborah A. Driscoll, MD**

7:35 - 7:40 am — **Introduction**
by **Anuja Dokras, MD, PhD**

7:40 - 9:45 am — **RESIDENT RESEARCH PRESENTATIONS**

Resident Knowledge of PCOS: Identifying Gaps and Educational Opportunities ..... Page 4
by **Anat Chemerinski, MD**

Compliance with the Enhanced Recovery after Surgery (ERAS) Protocol and Patient Outcomes after Gynecologic Surgery ..... Page 5
by **Mary DeAgostino-Kelly, MD, MPH**

Unintended Pregnancy and Contraception in Women with Resolved Pregnancy of Unknown Location ..... Page 6
by **Anne Flynn, MD**

Is There a "July Effect" in Oncologic and Benign Gynecologic Surgery? ..... Page 7
by **Spyridon Mastroyannis, MD**

Effect of Obesity on Maternal and Neonatal Penicillin Levels in Women with Group B Streptococcus ..... Page 8
by **Jennifer McCoy, MD**

The Patient Experience with Miscarriage Management in Emergency and Ambulatory Settings ..... Page 9
by **Carolyn Miller, MD**

Late Third Trimester Ultrasound Improves Accuracy of Predicted Birthweight in Women with Class III Obesity ..... Page 10
by **Liberty Reforma, MD**

9:45 - 10:00 am — **BREAK**

10:00 - 11:15 am — **RESIDENT (PGY2) RESEARCH PROPOSALS**

Methods for Improving Post-operative Pain Control and Reducing Opioid Use
by **Madhura Bhadra, MD**

Surgical Video Recording: A Powerful Tool for Improving Quality and Performance
by **Leigh Ann Humphries, MD**

Risk of Subsequent Pregnancies in Peripartum Cardiomyopathy
by **Corazon Irizarry, MD**

Resolved Previa, Resolved Risk?
by **Sun Woo Kim, MD**

Postpartum Weight Retention Among Women with Polycystic Ovary Syndrome
by **Iris Lee, MD**

Impact of Statin use on the Survival of Patients with Epithelial Ovarian Carcinoma
by **Dimitrios Nasioudis, MD**

Comparison of Cognitive Function in Women with and without Nocturia
by **Julie Suyama, MD, PhD**

11:15 - 12:15 pm — **JOHN ROCK LECTURE**

Intersection of Clinical Trials and Health Disparities
by **Laurel W. Rice, MD,** Visiting Professor

RESIDENT KNOWLEDGE OF PCOS: IDENTIFYING GAPS AND EDUCATIONAL OPPORTUNITIES

Authors

Anat Chemerinski, MD, Laura Cooney, MD, MSCE, Melanie Gibson-Helm, PhD, Anuja Dokras, MD, PhD

Objective

To identify gaps in resident knowledge of PCOS in response to international surveys showing dissatisfaction among patients and gaps in knowledge among health care providers.

Methods

Cross-sectional, survey of obstetrics and gynecology (ObGyn) residents. The primary outcomes were identification of at least one component of each of the three Rotterdam criteria ("Rot-3": 1. Oligomenorrhea/amenorrhea, 2. Clinical or biochemical hyperandrogenism ("hirsutism" or "acne", and "serum testosterone"), 3. Ovarian morphology ("antral follicle count" or "ovarian volume") and identification of all 5 components ("Rot-5"). Secondary outcomes were identification of associated comorbidities and management of PCOS. Multivariable logistic regression was used to calculate odds of knowing Rot-3 and Rot-5 in junior versus senior residents controlling for gender, seniority status, program type, completion of an REI rotation, and number of PCOS patients seen.

Results

347 residents completed the survey. Overall 85.4% reported using Rotterdam criteria to diagnose PCOS. However, only 55% identified Rot-3 and less than 10% identified Rot-5. Odds of knowing Rot-3 was higher in senior residents compared to PGY-1s. (PGY 3: OR: 2.4; 95% CI: 1.3. 4.5; P=0.005; PGY4: 2.2; 95% CI: 1.2, 4.1; P=0.01). As expected, there was also an increase in odds of knowing Rot-5 for each increase in PG year (OR: 1.54; 95% CI: 1.1, 2.1; P=0.008). While 85% of senior residents identified the association with Type 2 diabetes and obesity only 43% identified the association with depression, and 23% identified the association with anxiety. Residents who completed an REI rotation used letrozole for fertility treatment (aOR: 1.8, 95% CI: 1.1-3.1, P=0.025) even after adjusting for seniority status.

Conclusion

Our study identified significant gaps in knowledge regarding PCOS diagnostic criteria and management in ObGyn residents irrespective of year of training suggesting an urgent need for improving resident education in order to improve the patient experience and provide comprehensive care.

COMPLIANCE WITH THE ENHANCED RECOVERY AFTER SURGERY (ERAS) PROTOCOL AND PATIENT OUTCOMES AFTER GYNECOLOGIC SURGERY

Authors

Mary DeAgostino-Kelly, MD, MPH, Alexandra Sperry, Ashley Haggerty, MD, MSCE

Background

Enhanced recovery after surgery (ERAS) encompasses an evidence-based peri-operative care protocol that improves postoperative outcomes via reduction of physiological stress and maintenance of normal physiologic function. Multiple studies in the colorectal and gynecologic surgery literature have consistently demonstrated benefits of ERAS including decreased length of hospital stay, decreased complication rates, and cost savings. In this retrospective and prospective cohort study, we measured compliance to a recently implemented Enhanced Recovery After Surgery pathway within the gynecology practices at an academic institution, clinical outcomes, and patient experience. Our aim was to determine compliance to protocol elements and effect on postoperative outcomes.

Methods

All postoperative patients on the benign gynecology and gynecologic oncology services undergoing hysterectomy at the Hospital of the University of Pennsylvania during the calendar years of 2017 and 2018 were included in this study. The ERAS pathway for gynecologic surgery was first implemented in December of 2016. Starting at the end of 2018, patients included in the study were also offered to complete a short, voluntary survey to assess patient experience with the ERAS pathway. All patients were treated according to usual care at the institution, with a standardized ERAS pathway for postoperative care. This study focused on several integral components common to all gynecologic surgery ERAS pathways. Clinical data was obtained via chart review and included postoperative narcotic usage and length of hospital stay. Postoperative readmissions and mortality within 30 days were also recorded.

Results

One thousand and seven patients were identified on the benign gynecology and gynecologic oncology services undergoing hysterectomy at the Hospital of the University of Pennsylvania during the calendar years of 2017 and 2018. There was variable compliance with different elements of the ERAS pathway, with 47% of hysterectomy patients receiving ketorolac, 97% receiving ondansetron, and only 2% receiving promethazine. Fifty-six percent of patients had a foley catheter removed on post-operative day # 0 or 1. The average length of stay for post-operative patients was 2.68 days, with a median length of stay of 2 days. A total of 51 post-operative patients completed the patient satisfaction survey, and 92% of these patients rated their overall care and service peri-operatively as "excellent" or "very good."

Conclusion

Compliance to different elements of the gynecologic ERAS pathways was variable by element. Median length of stay for patients undergoing hysterectomy in 2017 and 2018 was 2 days post-operatively. Overall, patients were satisfied with their peri-operative care.

UNINTENDED PREGNANCY AND CONTRACEPTION IN WOMEN WITH RESOLVED PREGNANCY OF UNKNOWN LOCATION

Authors

Anne Flynn, MD, Nathanael Koelper, MPH, Mary Sammel, ScD, Courtney Schreiber, MD, MPH, Sarita Sonalkar, MD, MPH

Background

Reducing the unintended pregnancy rate is a national public health goal. Women who present to the emergency department with pregnancies of unknown anatomic location are a vulnerable population whose care is often fragmented and largely takes place through telephone encounters. The purpose of this study is to 1) determine the proportion of women with pregnancies of unknown location who classify their pregnancy as unintended, in order to assess the unmet need for contraception in this population and 2) to assess the penetration and effectiveness of an electronic medical record (EMR) prompt to improve providers' contraceptive counseling at the time of pregnancy resolution.

Methods

We performed a retrospective pre-post study of an implementation strategy to improve contraceptive counseling for women with resolved pregnancy of unknown location. We reviewed documentation of index pregnancy intendedness, and desire for contraception after resolution of pregnancy, 12 months before (Cohort 1) and 12 months after (Cohort 2) implementation of a new electronic medical record telephone template that prompted providers to inquire about desire for contraception after resolution of the index pregnancy.

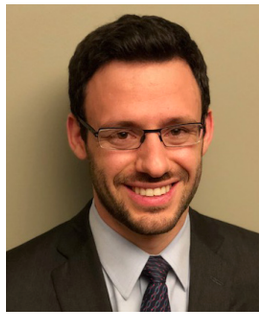
Results

The proportion of pregnancies classified as unintended was 59% in our study population. Contraceptive counseling was provided to 27/100 women in Cohort 1 (27%; 95% CI 19.1-36.7%) and 17/90 (18.9%; 95% CI 12.0-28.5%) received a method. Contraceptive counseling was provided to 94/120 women in Cohort 2 (78%, 95% CI 69.9-84.9%) and 38.6% (32/83; 95% CI 28.5-49.6%) received a method. After our intervention, incidence of contraception counseling increased by 51% (RR 2.9, CI 95% 2.07-4.06, p<0.001) and contraceptive initiation increased by 20% (RR 2.0, 95% CI 1.23-3.39, p=0.004).

Conclusion

Women with pregnancy of unknown location report high rates of unintended pregnancy. With the implementation of an electronic medical record intervention, incidence of contraception counseling at the time of pregnancy resolution tripled, and contraception initiation doubled. Penetration of this intervention by providers over the follow up period was high, but additional strategies are required to improve prescriptions and referrals for contraceptive services in this population.

IS THERE A "JULY EFFECT" IN ONCOLOGIC AND BENIGN GYNECOLOGIC SURGERY?



Authors

Spyridon Mastroyannis, MD, Lindsey Buckingham, MD, Colleen Brensinger, MS, Nawar Latif, MD, MPH, Ashley Haggerty, MD, MSCE, Emily Ko, MD, MSCR

Background

The "July Effect" is a phenomenon previously described as increased complication rates during times of trainee transition. This study aimed to evaluate the effect of academic quarter on perioperative outcomes for gynecologic surgery patients.

Methods

Patients who underwent gynecologic surgery with trainee involvement were identified in the National Surgery Quality Improvement Program (NSQIP) database between July 1, 2006 and June 30, 2012. Benign and oncologic cases were collected. Academic quarters of the year were defined as Q1: Jul-Sep, Q2: Oct-Dec, Q3: Jan-Mar and Q4: Apr-Jun. Major complications included surgical site infection (SSI), myocardial infarction, pulmonary embolism, stroke, deep vein thrombosis (DVT), and re-intubation. Kruskal-Wallis and Chi square tests were performed. Two-sided alpha with $p<0.05$ was designated as significant.

Results

Of 104,012 gynecologic surgeries, 25,290 (21,086 benign; 4204 oncologic) had confirmed resident involvement. In benign cases, re-operation rate was highest in Q1 vs Q2-4 (1.8% vs 1.1-1.6%; P=0.043); length of stay (LOS) in days was also increased in Q1 (2.0 vs 1.6-1.8, p=0.0149). In Q3, higher rates of organ space SSI and emergent cases were observed: (1.0% vs 0.5-0.6%, P=0.0197 and 4.3% vs 3.4-3.9%, p=0.0321 respectively). For oncology patients, only LOS was increased for Q1 (4.8 vs 3.8-4.1, p<0.0001).

Conclusion

In this national sample, first academic quarter was associated with increased LOS and re-operation, but not overall severe complication rate in benign gynecologic surgeries. In oncology, LOS was increased, but overall complications, re-operation and readmissions were not. The "July Effect" did not hold true for gynecologic surgery with trainee involvement.

EFFECT OF OBESITY ON MATERNAL AND NEONATAL PENICILLIN LEVELS IN WOMEN WITH GROUP B STREPTOCOCCUS

Authors

Jennifer McCoy, MD, Michal Elovitz, MD, Nathanael Koelper, MPH, Mary Sammel, ScD, Lisa Levine, MD, MSCE

Background

Group B streptococcal (GBS) disease is the leading cause of early onset neonatal sepsis in the United States. Despite intrapartum penicillin prophylaxis, infants born to obese women are at 70-80% increased risk of developing early onset GBS disease. The objective of this study was to determine whether the recommended penicillin dosing achieves adequate antibiotic levels in obese women.

Methods

We performed a prospective cohort study from February 2018 through January 2019 of term GBS positive (by rectovaginal culture) women who were ≥18 years old and receiving penicillin for intrapartum prophylaxis. We compared outcomes between obese women (BMI ≥35 kg/m2) and non-obese women (BMI ≤30 kg/m2). We compared the following outcomes: GBS colonization at time of admission and after 2 completed penicillin doses (via vaginal swab), serum penicillin concentration in maternal blood (after 2 completed penicillin doses) and umbilical cord blood, and neonatal GBS colonization (via post-natal ear swab). Assuming a mean cord blood penicillin concentration of 6.88 mcg/mL (SD ±3.67), we needed to enroll 28 women in each group to have 80% power to detect a 1 standard deviation difference, with an alpha of 0.05.

Results

During the study period, 56 women were enrolled and had all specimens collected; 51 completed data for analysis (non-obese n=26, obese n=25). The average BMI for the non-obese group was 26.7 kg/m2 (SD ±2.4) and the obese group was 43.1 kg/m2 (SD ±6.0). There was no difference between the non-obese and obese groups in the prevalence of GBS positive cultures at the time of admission (61% vs. 62%, p=0.96) or after two doses of penicillin (36% vs. 25%, p=0.4) There was no difference in the median maternal serum penicillin levels between the non-obese and obese groups (4.0 mcg/mL (IQR 3.0-5.6) vs. 4.2 mcg/mL (IQR 3.1-6.7), p=0.52). There was, however, a significant difference in median cord blood serum penicillin level between the non-obese and obese groups (6.7 mcg/mL (IQR 5.3-14.1) vs. 2.8 mcg/mL (IQR 1.0-5.1), p<0.001). Post-natally, 8% of neonates born to women in both groups were GBS positive by ear swab with no difference between groups.

Conclusion

Rates of maternal colonization and maternal serum penicillin levels were not different between obese and non-obese women however there was a significant difference in the cord blood levels of penicillin after delivery. This difference could potentially explain the higher rate of neonatal early onset GBS disease in infants born to obese women.

THE PATIENT EXPERIENCE WITH MISCARRIAGE MANAGEMENT IN EMERGENCY AND AMBULATORY SETTINGS

Authors

Carolyn Miller, MD, Andrea Roe, MD, MPH, Arden McAllister, MPH, Nathanael Koelper MPH, Mary Sammel, ScD, Courtney Schreiber, MD, MPH

Background

Miscarriage is a common experience, and women with early pregnancy concerns will present for care via ambulatory clinics and emergency departments. We sought to investigate the relationship between the location of miscarriage care and the patient experience, focusing on the timeline to miscarriage resolution and patient satisfaction. We hypothesized that women cared for in the emergency department would have shorter time from presentation to miscarriage resolution, with associated improved satisfaction.

Methods

This study is a secondary analysis of the Miscarriage Management Choice Study, a convergent parallel mixed-methods study that examined factors influencing miscarriage treatment decision-making among clinically stable women. A study sample of 55 patients was divided into two groups based on location of care: emergency department (ED) and ambulatory setting (ambulatory-only), and quantitative outcomes included: the number of health system interactions each patient experienced, the number of separate provider care teams to whom each patient was exposed, and timeline to miscarriage resolution (days). Demographic and psychosocial scales were collected. Qualitative analysis was completed across the cohort using previously coded nodes around patient satisfaction, which were further stratified into ED and ambulatory-only groups.

Results

ED patients and ambulatory-only patients had a similar number of health care system interactions (10.4 [range 1-23] vs 10.5 [range 1-19]; p=0.97), though ED patients were exposed to a higher number of provider care teams (4.4 + 1.4 vs 3.0 + 1.2; p=0.01). Timeline difference between groups was not statistically significant (median number of days 11 [ED] vs 8 [ambulatory-only]; p=0.08). Women seeking care in the ED were younger, more likely to be of Black race, uninsured or insured via Medicaid, and more likely to meet criteria for PTSD when compared to women who did not seek care in the ED (p=0.01, p=0.04, p=0.01, and p=0.01). Qualitative themes around satisfaction included diagnostic clarity, timeliness, and individualized care, with ambulatory-only patients noting increased clarity around and sensitivity toward the miscarriage experience.

Conclusion

Women seeking miscarriage care in the ED did not have a shorter time to pregnancy resolution, saw a higher number of provider teams, and did not have increased care satisfaction as compared with women seen in the ambulatory setting alone. Further study is warranted to investigate possible interventions in care provision to optimize the patient experience of miscarriage within our health system.

LATE THIRD TRIMESTER ULTRASOUND IMPROVES ACCURACY OF PREDICTED BIRTHWEIGHT IN WOMEN WITH CLASS III OBESITY

Authors

Liberty Reforma, MD, Christina Paidas-Teefey, MD, Celeste Durnwald, MD, Sindhu Srinivas, MD, MSCE, Eileen Wang, MD

Background

Estimating fetal weight in obese women is challenging. Third trimester (3rd tri) ultrasound is used to detect fetal growth disturbance, but optimal timing is unclear. Later scans may be technically difficult and thus limit estimated fetal weight (EFW) while earlier scans may not reflect clinical changes close to term. We sought to compare the accuracy of early versus late 3rd tri ultrasounds in predicting actual neonatal birthweight (BW) in women with class III obesity.

Methods

A retrospective chart review of women with a BMI>40kg/m2 who delivered at two urban tertiary care centers from May 2013-February 2017 was performed. Women with both an early (280- 346wks) and late 3rd tri scan (≥350wks), separated by at least 3 weeks, were included. EFW percentiles were based on the Hadlock curve. The gestation-adjusted projection method calculated a predicted BW (pBW) using the ultrasound EFW to allow for comparison with BW. McNemar's test was used to compare the proportion within 15% and 10% of BW between scans. The primary outcome was percent error, which was compared using paired t-tests. Power was calculated for an effect size of 0.2 SD between scans.

Results

250 women were included. When comparing pBW to BW, 76.0% of women had a pBW within 15% of BW at the late 3rd tri scan compared to 73.2% at the early 3rd tri scan (p-value=0.345). 60.4% of women had a pBW within 10% of BW at the late 3rd tri scan compared to 52.4% at the early 3rd tri scan (p-value=0.027).

The difference between pBW and BW was similar with 94.3g (SD 417) for the late scans versus 50.5g (SD 475) for the early scans (p=0.072). There were 26 infants <10th percentile at delivery. Nine (35%) were identified sonographically. Two cases (7.6%) were identified only by the early scan and called resolved at the late scan. The late scan detected 7 new cases of fetal growth restriction (27%, p=0.096) not detected at the early scan.

Conclusion

Predicted BW from the late 3rd tri scan was more accurate than that from the early 3rd tri scan among women with class III obesity. The late scan also identified additional cases of fetal growth disturbances not previously detected. A standard late 3rd tri growth scan in these women should be considered. Further exploration of the clinical impact is needed.

RESIDENT AWARDS & ACCOMPLISHMENTS

Benjamin Albright, MD
Society of Gynecologic Oncologists Outstanding Resident in Gynecologic Oncology

Mary DeAgostino-Kelly, MD, MPH
Recognition of Excellence in Minimally Invasive Gynecology,
American Association of Gynecologic Laparoscopists

Neha Deshpande, MD
Forum Conference for Family Planning Top Poster Award
ACOG U.S. Delegate to the Japan Society of Obstetrics & Gynecology
Best House Staff Abstract Penn Medicine Health Equity Week

Sarah Gutman, MD, MSPH
CPUP Trainee of the Year

Leigh Ann Humphries, MD
Penn Pearls Teaching Award, Perelman School of Medicine
Resident Inductee, Gold Humanism Honor Society, Perelman School of Medicine

Corazon Irizarry, MD
Resident Inductee, Gold Humanism Honor Society, Perelman School of Medicine

Jessica Peterson, MD
Society of Maternal Fetal Medicine Resident Award

Stephanie Sansone, MD
Award for Excellence in Female Pelvic Medicine and Reconstructive Surgery

Notes