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**Study Objective:** First, to introduce the use of Sensitive Firefly in robotic surgery. Second, to compare the efficacy of Firefly (currently in use) to Sensitive Firefly Fluorescence Imaging for ureter identification using the IS-001 (IND 124804) investigational contrast agent.

**Design:** Prospective, open-label, 2-stage dose escalation clinical trial design.

**Setting:** Multi-center; academic and academic affiliated community hospitals.

**Patients or Participants:** Women (n=30) between ages 18 and 75 scheduled to undergo robotic gynecological procedures using a da Vinci® Surgical System with Sensitive Firefly® Fluorescent Imaging.

**Interventions:** A single IV slow bolus injection of fluorescent dye IS-001 at 2 mg/mL was administered, with intra-operative identification of the ureter compared between white light endoscopy, Firefly®, and Sensitive Firefly Fluorescence Imaging modalities.

**Measurements and Main Results:** Visualization of the ureter was evaluated both quantitatively and based on a qualitative surgeon rating score using Firefly, Sensitive Firefly with IS-001 versus white light endoscopy. Ureter visibility was measured at the level of the pelvic brim (PB) with a tissue depth of ~ 0.5 mm, and at the level of the uterine artery (UA) with an estimated tissue depth of ~ 2-3 mm; both of which are common sites of ureteral injury during hysterectomy. Measurements were at time intervals of 10, 30, and 60 minutes after IS-001 injection using each modality. Early trial results indicate that Sensitive Firefly's boosted near-infrared sensitivity facilitated clear IS-001 fluorescent ureter detection at both shallow (PB) and deep (UA) locations. Sensitive Firefly offered a 5-fold improvement in ureter visibility at the deeper uterine artery location compared to white light endoscopy and a marked benefit compared to the existing Firefly Fluorescent Imaging system.

**Conclusion:** The use of Sensitive Firefly showed improved transperitoneal IS-001 fluorescent visualization and delineation of the ureter at greater tissue depths and for longer periods of time when compared to the current Firefly Fluorescent Imaging System.

### ERAS Implementation in Gynecologic Surgery in a Medically Underserved Publicly Insured and Uninsured Population

Brown M.L.,<sup>1,\*</sup> Moussavi V.,<sup>2</sup> Clark A.B.,<sup>1</sup> Matossian M.D.,<sup>3</sup> Holman S.,<sup>4</sup> Jernigan A.M.,<sup>5</sup> Scheib S.A.,<sup>6</sup> Shank J.,<sup>7</sup> Chapple A.G.,<sup>8</sup> Kelly E.,<sup>2</sup> Nair N.<sup>5</sup>. <sup>1</sup>Louisiana State University, New Orleans, LA; <sup>2</sup>Obstetrics and Gynecology, Tulane University, New Orleans, LA; <sup>3</sup>Tulane University, New Orleans, LA; <sup>4</sup>Obstetrics and Gynecology, Louisiana State University, New Orleans, LA; <sup>5</sup>Gynecologic Oncology, Louisiana State University, New Orleans, LA; <sup>6</sup>Obstetrics and Gynecology, Louisiana State University School of Medicine, New Orleans, LA; <sup>7</sup>Gynecologic Oncology, Tulane University, New Orleans, LA; <sup>8</sup>Biostatistics, Louisiana State University Health Sciences Center, New Orleans, LA

\*Corresponding author.

**Study Objective:** Enhanced recovery after surgery (ERAS) protocols have been shown to improve patient outcomes and reduce post-operative length of stay. In our underserved population, patients experience a high incidence of comorbid conditions, lack adequate insurance, and face many barriers to healthcare that adversely affect health outcomes. We investigated the impact of an ERAS protocol implementation in our publicly insured and uninsured high-risk patient population undergoing gynecologic surgery and assessed hospital length of stay (LOS), 30 day hospital readmission rates, and pain scores.

**Design:** IRB approval was obtained. Data was abstracted from medical records pre (1/1/18-2/28/19) and post (3/1/19-2/29/20) ERAS implementation. LOS, readmission <30 days, and pain scores were assessed.

**Setting:** The study took place in an urban hospital setting.

**Patients or Participants:** Patients undergoing gynecologic surgery during the study period with public insurance/free care were included (N=509).

**Interventions:** Implementation of ERAS protocol included pre-operative carbohydrate loading, intra-operative euvolemia, scheduled post-operative nausea and non-opioid pain medications, and early ambulation.

**Measurements and Main Results:** Implementation of ERAS led to decreased length of stay 1.8 vs 1.43 days (p-value = 0.006); however, when adjusted for potential confounders this was no longer statistically significant. Average pain scores significantly decreased with ERAS implementation 3.06 pre-ERAS vs 2.44 post-ERAS (p-value = 0.005) and this held true when adjusted for potential confounders. Hospital readmission rates did not change significantly with ERAS implementation 8% pre-ERAS vs 10% post-ERAS (p-value = 0.538).

**Conclusion:** This is the first study to assess the impact of ERAS on our patient population, a diverse and medically underserved population of women undergoing gynecologic surgery. ERAS improved pain scores without adversely affecting hospital length of stay in this population. Our next steps are to better understand the impact of ERAS on opioid use among this patient population as well as assessing its impact on patient satisfaction in this population.

### Analysis of Endometriosis Related Hashtags on Instagram

Carlson S.,<sup>1,\*</sup> Coyne K.,<sup>1</sup> El-Nashar S.,<sup>1</sup> Billow M.<sup>2</sup>. <sup>1</sup>University Hospitals Cleveland Medical Center, Cleveland, OH; <sup>2</sup>Minimally Invasive Gynecology Surgery, University Hospitals Cleveland Medical Center, Cleveland, OH

\*Corresponding author.

**Study Objective:** Instagram is a social media platform that provides education and support for endometriosis patients. The objective of our study was to analyze the authorship and content of Instagram posts utilizing endometriosis related hashtags.

**Design:** 15 hashtags were identified utilizing the ACOG Endometriosis FAQ and a hashtag finder program. Hashtags included: endometriosis, endo, endowarrior, endometriosisawareness, endosisters, endometriosiswarrior, pelvicpain, chronicpelvicpain, painfulperiod, painfulsex, invisibleillness, fatigue, uterus, hysterectomy, and laparoscopy. The authorship and content of the "top 9" and most recent 30 posts were evaluated for each hashtag and categorized by authorship and content. We also analyzed groups of hashtags. Non-English posts were excluded.

**Setting:** NA

**Patients or Participants:** NA

**Interventions:** NA

**Measurements and Main Results:** 585 posts were analyzed. Authorship: patients (54.2%), health professional (16.2%), for-profit group (9.6%), holistic provider (8.7%), and non-profit group (4.6%). Regarding content: support (33.5%), personal post (21.2%), advertisement (17.8%) and education (13.5%).

Endometriosis specific group: patient (74.8%), for-profit commercial group (6%), holistic provider (5.1%), health professional (3.8%), support (40.6%), personal post related to endometriosis (23.5%), personal post unrelated to endometriosis (20.9%), education (6.4%).

General symptoms group: patient (47.4%), holistic provider (14.1%), for-profit commercial group (12.8%), health professional (2.6%), support (34.6%), advertisement (21.8%), personal post related to diagnosis (20.5%), personal post unrelated to diagnosis (15.4%), education (7.7%).

Pain group: health professional (34%), patient (32.7%), for-profit commercial group (15.4%), holistic provider (12.8%), non-profit organization (4.5%), support (27.6%), education (25.6%), personal post related to diagnosis (10.9%), personal post unrelated to diagnosis (7.1%).

Procedure group: patient (59%), health professional (29.5%), non-profit organization (3.8%), personal post related to diagnosis (42.3%), support

(20.5%), education (14.1%), personal post unrelated to diagnosis (10.3%).

**Conclusion:** When analyzing the hashtags, endometriosis specific and general symptoms groups, the majority of posts were authored by patients with education being the least represented content. When grouping into pain and procedure, more posts were authored by health professionals with more educational content.

#### Impact of COVID-19 on Outcomes and Productivity in a Gynecologic Oncology and Minimally Invasive Surgery Practice

Palvia V.,<sup>1,\*</sup> Kossel K.,<sup>2</sup> Rosen L.,<sup>2</sup> Khalil S.,<sup>3</sup> Gretz H.F.III.<sup>2</sup> <sup>1</sup>Minimally Invasive Gynecologic Surgery, Mount Sinai Hospital, New York City, NY; <sup>2</sup>Mount Sinai Hospital, New York, NY; <sup>3</sup>Minimally Invasive Gynecologic Surgery, Mount Sinai West, New York, NY

\*Corresponding author.

**Study Objective:** To determine the impact of COVID-19 on patients undergoing surgery.

**Design:** Retrospective review.

**Setting:** Community hospital and ambulatory practice in New York near the epicenter of the COVID-19 pandemic.

**Patients or Participants:** Surgical volumes were reviewed for years 2019-2020.

**Interventions:** Seventy-three charts were assessed for COVID-19 related outcomes during a 14-week period, beginning February 17<sup>th</sup>, 2020.

**Measurements and Main Results:** During the study period, gynecologic oncology and minimally invasive surgery activity decreased by 50%. This resulted in economic and clinical disruption. Other surgical divisions showed similar case decreases (34 – 64%) except for otolaryngology which increased by 48%.

Seventy-one surgeries were completed in our practice during the study period. Elective cases were restricted on March 7<sup>th</sup>. Afterward, indications for surgery were malignancy (43.2%), rule out malignancy (27.0%), heavy bleeding (21.6%), and pain (8.1%). All patients were asymptomatic for COVID-19 associated symptoms during preoperative evaluations.

Mandatory day-of-surgery COVID-19 PCR testing commenced on April 6<sup>th</sup>. Prior to this, 49 surgeries were completed. Afterward, 4 of the remaining 21 cases (18%) were cancelled due to positive testing. Of these, 3 tested positive on day of surgery, 1 self-tested positive due to community exposure. All 4 patients remained asymptomatic.

Of the 71 patients, 83% were discharged on the same day or on postoperative day one (POD). Postoperatively, 6 patients reported mild COVID-19 symptoms (cough, fever, shortness of breath). Of these, 1 patient tested negative and 5 were not tested. Additionally, 1 patient tested positive remote from surgery (POD #30). Surgeons tested negative for COVID-19 antibodies, and all office staff were asymptomatic.

**Conclusion:** Asymptomatic COVID-19 patients were encountered in the preoperative setting. No symptomatic cases of nosocomial COVID-19 infection were identified. Clinical care and surgery appear safe provided there is appropriate utilization of personal protective equipment (PPE). Gynecologic surgical services may be safely performed during a pandemic with appropriate PPE and safety measures.

#### Effectiveness of Hysteroscopic Morcellation of Endometrial Polyps Compared to Traditional Technique: A Comparison of Disease Recurrence

Chan C.W.,<sup>1,\*</sup> Eisenstein D.I.,<sup>1</sup> Abood J.,<sup>1</sup> Chavali N.,<sup>2</sup> Arun J.,<sup>2</sup> Gonte M.<sup>3</sup> <sup>1</sup>Henry Ford Health Systems, West Bloomfield, MI; <sup>2</sup>Henry Ford Health Systems, Detroit, MI; <sup>3</sup>Wayne State University School of Medicine, Detroit, MI

\*Corresponding author.

**Study Objective:** To compare the outcomes between hysteroscopic morcellation of endometrial polyps and traditional techniques such as hysteroscopic resection with monopolar or bipolar radiofrequency energy, scissors and graspers or mechanical resection with polyp forceps.

**Design:** Retrospective chart review.

**Setting:** Academic tertiary referral center.

**Patients or Participants:** 193 patients who underwent operative hysteroscopic polypectomy between January 2015 and May 2016.

**Interventions:** Hysteroscopic polypectomy with intrauterine morcellation, monopolar or bipolar radiofrequency energy, scissors and graspers or mechanical resection with polyp forceps with evaluation and/or treatment of recurrent abnormal uterine bleeding (AUB) after operative polypectomy.

**Measurements and Main Results:** There were 9 patients who underwent hysteroscopic polypectomy with monopolar radiofrequency energy, 3 patients with bipolar radiofrequency energy, 91 patients with intrauterine morcellation, 67 patients with polyp forceps and 12 patients with scissors and graspers. The recurrence rate for AUB for monopolar was 1.89%, bipolar was 1.67%, intrauterine morcellation was 1.93%, polyp forceps was 1.84% and hysteroscopic scissors and/or graspers was 1.83%. Among the recurrences the average time until recurrence was 1162 days for monopolar, 207 days for bipolar, 749.5 days for intrauterine morcellation, 477.6 days for polyp forceps and 341.5 days for hysteroscopic scissors and graspers.

**Conclusion:** There was no significant difference in terms of recurrence of AUB following the different modalities of operative hysteroscopy. Among the patients with recurrence in order of shortest time until recurrence: bipolar, hysteroscopic scissors and graspers, polyp forceps, intrauterine morcellation and monopolar.

#### Essential Gynecologic Surgery during the COVID-19 Pandemic: New York Institutional Experience

Kossl K.,<sup>\*</sup> Tran A., Ascher-Walsh C.J., Khalil S. Mount Sinai Hospital, New York, NY

\*Corresponding author.

**Study Objective:** To report on the continuance of gynecologic surgery during the COVID-19 pandemic.

**Design:** Case series.

**Setting:** New York City Academic Medical Center.

**Patients or Participants:** In Mid-March of 2020 there was a moratorium on elective services due to the COVID-19 pandemic. 105 surgeries were completed from March 15-April 30, and those that were emergent and urgent were identified. Essential gynecologic surgical procedures were provided during the COVID-19 pandemic.

**Interventions:** Peri-operative data were collected retrospectively.

**Measurements and Main Results:** A total of 45 cases were identified that were emergent and urgent gynecologic surgical procedures during the COVID-19 pandemic in New York City. Average age was 34 years (range 24-68). In our health system, there were 23 emergency gynecologic cases, the most common were ectopic (14), torsion (3), retained products of conception causing hemorrhage (3) or sepsis (1), exploratory laparotomy for post-operative small bowel obstruction (1), and vaginal myomectomy for hemorrhage (1). Pre-operative PCR testing for COVID-19 was available March 31, but emergency cases were not delayed to await test results. Of the emergency cases, 21 (91.3%) were performed with general and 2 (8.7%) with neuraxial anesthesia. There were 21 urgent gynecologic surgical procedures. All surgical procedures recovered in the operating room during this time frame.

**Conclusion:** Essential gynecologic surgery can feasibly continue during peak pandemic crisis in high prevalence areas, with appropriate safety measures.