Clinical Gynecology

Second Edition

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Preface

Since our prior edition in 2006, much has progressed in gynecology. Most notably as this book was going to press, the FDA in the US issued a black box warning on 11/24/2014 regarding the use of laparoscopic power morcellators. Please see the following statement released by the FDA and we recommend that the reader stay abreast of this evolving situation.

UPDATED Laparoscopic Uterine Power Morcellation in Hysterectomy and Myomectomy: FDA Safety Communication

The following information updates our April 17, 2014 communication.

Date Issued: Nov. 24, 2014

Audience:

- Health Care Providers
- Medical Professional Associations
- Cancer Advocacy Organizations
- Health Care Facilities/Hospitals
- Women with Symptomatic Uterine Fibroids who are Considering Surgical Options
- Manufacturers of Devices used for Minimally Invasive Surgeries

Medical Specialties: Pathology, Internal Medicine, Nursing, Obstetrics/Gynecology, Oncology, Obstetrics/Gynecological Surgery, General Surgery

Product:
Laparoscopic power morcellators are medical devices used during different types of laparoscopic (minimally invasive) surgeries. These can include certain procedures to treat uterine fibroids, such as removing the uterus (hysterectomy) or removing the uterine fibroids (myomectomy). Morcellation refers to the division of tissue into smaller pieces or fragments and is often used during laparoscopic surgeries to facilitate the removal of tissue through small incision sites.

Purpose
When used for hysterectomy or myomectomy in women with uterine fibroids, laparoscopic power morcellation poses a risk of spreading unsuspected cancerous tissue, notably uterine sarcomas, beyond the uterus. The FDA is warning against using laparoscopic power morcellators in the majority of women undergoing hysterectomy or myomectomy for uterine fibroids. Health care providers and patients should carefully consider available alternative treatment options for the removal of symptomatic uterine fibroids.

Summary of Problem and Scope
Uterine fibroids are non-cancerous growths that develop from the muscular tissue of the uterus. Most women will develop uterine fibroids (also called leiomyomas) at some point in their lives, although most cause no symptoms[1]. In some cases, however, fibroids can cause symptoms, including heavy or prolonged menstrual bleeding, pelvic pressure or pain, and/or frequent urination, requiring medical or surgical therapy.

Many women choose to undergo laparoscopic hysterectomy or myomectomy because these procedures are associated with benefits such as a shorter post-operative recovery time and a reduced risk of infection compared to abdominal hysterectomy and myomectomy[2]. Many of these laparoscopic procedures are performed using a power morcellator.

Based on an FDA analysis of currently available data, we estimate that approximately 1 in 350 women undergoing hysterectomy or myomectomy for the treatment of fibroids is found to have an unsuspected uterine sarcoma, a type of uterine cancer that includes leiomyosarcoma. At this time, there is no reliable method for predicting or testing whether a woman with fibroids may have a uterine sarcoma.

If laparoscopic power morcellation is performed in women with unsuspected uterine sarcoma, there is a risk that the procedure will spread the cancerous tissue within the abdomen and pelvis, significantly worsening the patient's long-term survival. While the specific estimate of this risk may not be known with certainty, the FDA believes that the risk is higher than previously understood.

Because of this risk and the availability of alternative surgical options for most women, **the FDA is warning against the use of laparoscopic power morcellators in the majority of women undergoing myomectomy or hysterectomy for treatment of fibroids**.

Limiting the patients for whom laparoscopic morcellators are indicated, the strong warning on the risk of spreading unsuspected cancer, and the recommendation that doctors share this information directly with their patients, are part of FDA guidance to manufacturers of morcellators. The guidance strongly urges these manufacturers to include this new information in their product labels.

Recommendations for Health Care Providers

- Be aware of the following new contraindications recommended by the FDA:
  1. Laparoscopic power morcellators are contraindicated for removal of uterine tissue containing suspected fibroids in patients who are peri- or post-menopausal, or who are candidates for en bloc tissue removal, for example through the vagina or mini-laparotomy incision. (*Note*: These groups of women represent the majority of women with fibroids who undergo hysterectomy and myomectomy.)
  2. Laparoscopic power morcellators are contraindicated in gynecologic surgery in which the tissue to be morcellated is known or suspected to contain malignancy.
- Be aware of the following new boxed warning recommended by the FDA:
  The FDA warns that uterine tissue may contain unsuspected cancer. The use of laparoscopic power morcellators during fibroid surgery may spread cancer, and decrease the long-term survival of patients. This information should be shared with patients when considering surgery with the use of these devices.
- Carefully consider all the available treatment options for women with uterine fibroids.
- Thoroughly discuss the benefits and risks of all treatments with patients. Be certain to inform the small group of patients for whom laparoscopic power morcellation may be an acceptable therapeutic option that their fibroid(s) may contain unexpected cancerous tissue and that laparoscopic power morcellation may spread the cancer, significantly worsening their prognosis. This population might include some younger women who want to maintain their fertility or women not yet peri-menopausal who wish to keep their uterus after being informed of the risks.

Recommendations for Women

- Ask your health care provider to discuss all the options available to treat your condition. There are risks and benefits associated with all medical devices and procedures and you should be aware of them.
- If your doctor recommends laparoscopic hysterectomy or myomectomy, ask him/her if power morcellation will be performed during your procedure, and to explain why he or she believes it is an appropriate treatment option for you.
- If you have already undergone a hysterectomy or myomectomy for fibroids, tissue removed during the procedure is typically tested for the presence of cancer. If you were informed these tests were normal and you have no symptoms, routine follow-up with your physician is recommended. Patients with persistent or recurrent symptoms or questions should consult their health care provider.
- A number of additional surgical treatment options are available for women with symptomatic uterine fibroids including traditional surgical hysterectomy (performed either vaginally or abdominally) and myomectomy, laparoscopic hysterectomy and myomectomy without morcellation, and laparotomy using a smaller incision (minilaparotomy). All treatments carry risk, and you should discuss them thoroughly with your health care provider.

FDA Actions

The FDA has taken the following actions in light of scientific information that suggests that the use of laparoscopic power morcellators may contribute to the spread and upstaging of unsuspected uterine cancer in women undergoing hysterectomy and myomectomy for fibroids:

- The FDA conducted a review of published and unpublished scientific literature, including patients operated on from 1980 to 2011 to estimate the prevalence of unsuspected uterine sarcoma and uterine leiomyosarcoma in patients undergoing hysterectomy or myomectomy for presumed benign fibroids (leiomyoma). This analysis led us to believe that the prevalence of unsuspected uterine sarcoma in patients undergoing hysterectomy or myomectomy for presumed benign leiomyoma is 1 in 352 and the prevalence of unsuspected uterine leiomyosarcoma is 1 in 498. Both of these estimates are higher than the clinical community previously understood.
- Convened a meeting of the Obstetrics and Gynecological Medical Device Advisory Panel in July 2014. The panel discussed patient populations in which laparoscopic power morcellators should not be used, mentioning specifically patients with known or suspected malignancy. The panel also discussed mitigation strategies such as labeling, and suggested that a boxed warning related to the risk of disseminating unsuspected malignancy would be useful.
- Issued an Immediately In Effect (IIE) guidance that asks manufacturers of new and existing laparoscopic power morcellators to include two contraindications and a boxed warning in their product labeling. This information warns against using laparoscopic power morcellators in the majority of women undergoing myomectomy or hysterectomy and recommends doctors share this information with their patients.
- Published safety information related to these devices and alternative treatment options for the treatment of fibroids

available on its website to help people better understand the risks of laparoscopic power morcellators.

In addition to the most recent contraindications and boxed warning, the FDA continues to consider other steps that may further reduce such risk – such as encouraging innovative ways to better detect uterine cancer and containment systems designed specifically for gynecological surgery.

The FDA will continue to review adverse event reports, peer-reviewed scientific literature, and information from patients, health care providers, gynecologic and surgical professional societies, and medical device manufacturers.

Reporting Problems to the FDA

Prompt reporting of adverse events can help the FDA identify and better understand the risks associated with medical devices. If you suspect that a morcellator and/or specimen bag has malfunctioned or contributed to a serious injury or adverse outcome, the FDA encourages you to file a voluntary report through MedWatch, the FDA Safety Information and Adverse Event Reporting program.

Health care professionals employed by facilities that are subject to the FDA's user facility reporting requirements should follow the reporting procedures established by their facilities.

Federal law requires hospitals to report some adverse events related to medical devices. Specifically, federal regulations require user facilities to report a suspected medical device-related death to both the FDA and the manufacturer. User facilities must also report a medical device-related serious injury to the manufacturer or to the FDA if the medical device manufacturer is unknown.

With regard to the spread of unsuspected cancer when using laparoscopic power morcellation for hysterectomy or myomectomy in women with symptomatic uterine fibroids, the FDA considers this to be reportable as a serious injury.

Other Resources

- FDA News Release: FDA warns against using laparoscopic power morcellators to treat uterine fibroids
- Recommended Labeling Statements for Laparoscopic Power Morcellators (PDF - 151KB)
- Immediately in Effect Guidance Document: Product Labeling for Laparoscopic Power Morcellators - Guidance for Industry and Food and Drug Administration Staff
- FDA Obstetrics and Gynecology Panel Meeting Materials-July 10 and 11, 2014
- Society of Gynecologic Oncology (SGO)'s position statement on morcellation published in December 2013
- American Congress of Obstetricians and Gynecologists (ACOG)'s Statement on Choosing the Route of Hysterectomy for Benign Disease November 2009 (Reaffirmed 2011)
- *American Association of Gynecologic Laparoscopists (AAGL)'s AAGL Member Update: Disseminated Leiomyosarcoma With Power Morcellation 2014*

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1. NIH Fact Sheet on Uterine Fibroids. March 2013. Available at http://report.nih.gov/nihfactsheets/viewfactsheet.aspx?csid=50
2. Nieboer TE, Johnson N, Lethaby A, et al. Surgical approach to hysterectomy for benign gynecological disease. Cochrane Database Syst Rev. 2009;(3):CD003677.
3. Ibid.

Contact Information

If you have questions about this communication, please contact the Division of Industry and Consumer Education (DICE) at DICE@FDA.HHS.GOV, 800-638-2041 or 301-796-7100.

http://www.fda.gov/MedicalDevices/Safety/AlertsandNotices/ucm424443.htm, (accessed 1/11/2015).

We have witnessed progress in every subspecialty. To highlight but a few accomplishments: in family planning, there has been an expansion of indications for long-acting reversible contraceptives; in genetics, preimplantation genetic diagnosis has extended genetic testing; in reproductive endocrinology and infertility, the pathophysiology associated with polycystic ovarian syndrome has become clearer and we are more aware of the importance of lifestyle and options with regard to ovulation induction, including the use of letrozole. A number of controlled randomized clinical trials have been published (e.g. the Kronos Early Estrogen Prevention [KEEPS] study) and cardiovascular studies have been greatly extended. Across all spectrums of society, the incidence and consequences of obesity, including in teenagers and children, are challenging.

The use of minimally invasive surgery has become extensive in many areas, including gynecologic oncology, urogynecology, reproductive endocrinology, and obstetrics. Less vaginal surgery is occurring, for example to manage problems such as abnormal vaginal bleeding, being replaced in part by minimally invasive surgical techniques and in part by non-surgical options. Robotics and the provision of three-dimensional approaches, with enhanced degrees of freedom of motion, have allowed new ways of accessing surgical problems. Ultrasonography with three- and four-dimensional approaches allows the provision of unprecedented detail in a more cost-effective scenario.

Research has evolved in areas such as stem cell therapy and ovarian, testicular, and oocyte cryopreservation to avoid infertility for patients with cancer. Cord blood banking continues to be a possibility for the future.

The stage is set, the textbook needed to be written and now to be read. In the planning stages, the editors continued to conceptualize a textbook that would be heavily illustrated with tables and figures and designed to facilitate learning. Our textbook stands apart from others, with a format that provides the reader with state of the art information packaged in a

succinct, ready to remember approach. It has been compiled by authorities in virtually every field of gynecology and conveys what is current and built upon a solid foundation. Each chapter is designed to be "stand alone," with authors carefully conveying a panoramic view of subject matter.

The depth and breadth of the current edition has been expanded in an attempt to provide the reader, whether student, resident, attending physician, or allied health professional, with "information pearls" at their finger tips. The editors hope you will reap the benefits of these efforts.

We wish to acknowledge our secretarial staff, including Mary Turner, as well as Dr. Meredith Snook for their assistance with the progression of the textbook. We are indebted for their time and dedication to completion of the textbook. We hope you enjoy the format and information provided.

Eric J. Bieber
Joseph S. Sanfilippo
Ira R. Horowitz
Mahmood I. Shafi

Video Components

Coordinated by: Nicole M. Donnellan, MD in association with Ted Lee, MD and Suketu Mansuria, MD

1. Male Infertility

1.1. Microsurgical Vasectomy Reversal: Vasovasostomy and Vasoepididymostomy

Matthew G. McIntyre, MD and Larry I. Lipshultz, MD

Vasectomy is one of the most common procedures performed by urologists. Up to 6% of men after vasectomy will request reversal. This video describes the two procedures for vasectomy reversal, the indications for each and outcomes currently in the literature. The cost effectiveness of vasectomy reversal is also discussed.

1.2. The Inguinal Varicocele Repair

Matthew G. McIntyre, MD and Larry I. Lipshultz, MD

Varicoceles are present in up to 40% of infertile men. Here we present a brief overview of varicoceles and then a show an operative case of an inguinal varicocelectomy. Varicocelectomy outcomes for fertility are also addressed.

1.3. Combined Laparoscopic and Microsurgical Technique for Vasovasostomy of the Obstructed Inguinal Vas Deferens

Matthew G. McIntyre, MD, Richard E. Link, MD, and Larry I. Lipshultz, MD

The use of mesh for inguinal hernia repairs can result in obstruction of the inguinal vas deferens. This requires mobilization of the intra-abdominal portion of the vas for reconstruction. This video details such a case and includes the surgical technique for both the laparoscopic and microsurgical portions.

2. Domestic Violence

Domestic Violence (associated with Chapter 7) Video Vignettes—Understanding Domestic Violence from Survivor's Stories

Women's Center and Shelter of Greater Pittsburgh (For additional information on the Women's Center and Shelter of Greater Pittsburgh and additional vignettes please visit this website address: http://www.wcspittsburgh.org)

2.1. Survivor Story - Andrea
2.2. Survivor Story – Alyce
2.3. Survivor Story – Barbara
2.4. Survivor Story – Dave

It is estimated that 25-30% of women in the United States experience intimate partner violence (IPV). Obstetricians and gynecologists have a unique opportunity to identify, address and assist in patients suffering from IPV. While upwards of 1.5million women experience physical or sexual violence from a current or former intimate partner each year in the U.S., it is important to understand the many more family members that can be affected by IPV. The Women's Center and Shelter of Greater Pittsburgh is a non-profit, community based, victims' advocacy program in Western Pennsylvania. The Women's Center and Shelter not only helps victims but also promotes broader awareness and understanding of IPV in the community and offers educational and support services to law enforcement, medical providers, employers and schools. Here, the shelter shares personal vignettes of victims in hopes of increasing awareness and understanding of the far-reaching consequences of IPV.

3. Laparoscopic Procedures for Endometriosis

3.1. Laparoscopic Excision of Peritoneal Endometriosis and Oophoropexy

Nicole M. Donnellan, MD and Ted Lee, MD

This video illustrates laparoscopic excision of peritoneal endometriosis utilizing traditional monopolar as well as advance bipolar technology. Laparoscopic oophoropexy is also demonstrated, a technique used to minimize recurrent ovarian adhesions when aggressive dissection of the underlying ovarian fossa is performed.

3.2. Laparoscopic Presacral Neurectomy

Linda Yang, MD and Suketu Mansuria, MD
AAGL SurgeryU (www.surgeryu.com)

Randomized controlled trials have demonstrated presacral neurectomy to be an effective adjuvant procedure for pelvic pain associated with endometriosis. Presacral neurectomy can be performed safely and efficiently via the laparoscopic approach. The presacral nerve, or superior hypogastric plexus, typically resides in the midline, or left of midline, as demonstrated in cadaveric dissections. The traditional approach to presacral neurectomy, as reported throughout the literature, utilizes a transverse incision over the sacral promontory. Here an alternate approach utilizing a vertical peritoneal incision is demonstrated, which proves to be a safe, alternative method for complete transection and removal of the nerve.

3.3. Laparoscopic Excision of Bowel Endometrioma

Camran Nezhat, MD

The video demonstrates a patient who presented with pelvic pain and bowel symptoms of alternating diarrhea and constipation. Pelvic ultrasound revealed a pelvic mass. At time of laparoscopy, the pelvic mass was found to be arising from the anterior wall of the rectosigmoid colon. Combination of plasma jet and CO_2 laser are used to safely excise the endometrioma of the bowel. Proctoscopy is performed to check the integrity of the bowel.

3.4. Laparoscopic Excision and Repair of Diaphragm Endometriosis

Camran Nezhat, MD

Video thoracoscopy shows a diaphragmatic defect in a patient with recurrent catamenial pneumothorax. The edges of the defect are re-approximated with clips and permanent Ethibond sutures on an Endoknot are used to repair the defect. Endo GIA Staplers are also used to excise endometriosis of the right hemidiaphragm.

3.5. Laparoscopic Excision of Endometriosis Necessitating Ureterolysis

Camran Nezhat, MD

This video demonstrates excision of endometriosis over the serosa of the right ureter. The CO_2 laser is used with hydrodissection to allow for safe excision of the endometriotic lesion, as the CO_2 laser does not penetrate water.

3.6. Use of Advanced Bipolar Energy and Barbed Suture in Laparoscopic Excision of Bladder Endometriosis

Nicole M. Donnellan, MD and Ted Lee, MD
AAGL SurgeryU (www.surgeryu.com)

Endometriosis of the urinary tract is a rare entity, affecting less than 1% of all women with endometriosis, with bladder endometriosis representing 85% of theses cases. Surgical resection has been shown to be effective in eliminating symptoms, although recurrence rates are higher in transurethral procedures as compared to traditional laparotomy. More recently, the laparoscopic approach to excision, in skilled hands, has proven safe and effective. While often done with traditional monopolar and bipolar instruments, excision in these tissue planes is often bloody, leading to an obscured surgical field. Here we demonstrate a safe and effective technique incorporating the use of the advanced bipolar Enseal TRIO and a barbed suture in 2 cases of bladder endometriosis. Through the use of this advanced technology in bladder nodule enucleation, we are able to improve hemostasis and visualization as well as maximize efficiency.

3.7. Systematic Approach to the Obliterated Cul De Sac and Excision of Rectovaginal Endometriosis

Jay Hudgens, MD and Resad P. Pasic, MD, PhD
AAGL SurgeryU (www.surgeryu.com)

The purpose of this video is to present a systematic approach to the obliterated cul de sac and rectovaginal endometriosis. This approach is based on the understanding of fundamental anatomic principles. An emphasis is placed on the surgeon's ability to perform ureterolysis and utilize the avascular spaces in the pelvis in order to safely resect deeply infiltrative disease. Three cases are presented in this video. The first case shows the approach to the dissection of the obliterated cul de sac. The second case demonstrates the excision of a large rectovaginal nodule. The third case shows an incidental entry into the posterior vagina and subsequent repair. By following the systematic approach presented and applying the anatomic principles highlighted, a more efficient dissection and safe resection of rectovaginal endometriosis can be performed.

4. Laparoscopic Gynecologic Procedures

4.1. Difficult Bladder Flaps: Tips and Tricks at Time of Total Laparoscopic Hysterectomy

Nicole M. Donnellan, MD and Suketu Mansuria, MD

Surgeon reluctance to perform a hysterectomy via the laparoscopic approach is often due to a patient's surgical history. Cesarean sections are one such surgery that can create pathology, such as severe adhesive disease and scarred bladder flaps, making the minimally invasive approach more difficult. With a nationwide increase in the rate of cesarean sections, such pathology will become encountered more frequently. In this video we describe tips and techniques to assist in performing a difficult laparoscopic bladder flap in women with prior cesarean sections to assist minimally invasive surgeons in completing even the most advanced of procedures with minimal complications.

4.2. Basic Pearls of Laparoscopic Hysterectomy

Resad P. Pasic, MD, PhD and Michael Traynor, MD, MPH
AAGL SurgeryU (www.surgeryu.com)

More and more gynecologic surgeons are performing laparoscopic hysterectomy despite a lack of formal training. The purpose of this video is to provide a series of basic pearls recognizing key aspects of a laparoscopic approach to hysterectomy. Techniques in port placement, identification of anatomy, exposure, bladder flap dissection, securing the uterine artery, creation of colpotomy and specimen retrieval are all emphasized and reviewed.

4.3. Suturing in Parallel and Perpendicular Planes: A Systematic and Geometric Approach to Laparoscopic Suturing and Intracorporeal Knot Tying

Jay Hudgens, MD and Resad P. Pasic, MD, PhD
AAGL SurgeryU (www.surgeryu.com)

Laparoscopic suturing is a complex task that requires many hours of practice and experience to perform proficiently. The main obstacle in learning to suture laparoscopically is overcoming the perception of a three dimensional operative field presented on a 2 dimensional monitor. The purpose of this video is to present a systematic approach to laparoscopic suturing based on geometric principles. This system highlights the importance of understanding and utilizing perpendicular and parallel planes and can be applied regardless of port configuration. We also highlight visual cues that experienced surgeons utilize to aid in depth perception, which help improve surgical accuracy and efficiency.

4.4. Laparoscopic Supracervical Hysterectomy

Steven McCarus, MD

This sequence of videos demonstrates a 39 year old with a symptomatic fibroid uterus and right hydroureter who elected to undergo laparoscopic supracervical hysterectomy for definitive surgical management.

Video 1: Using the advanced bipolar EnSeal, the anterior board to the uterine vessel on the left side are coagulated and cut.

Video 2: This clip commences with the completion of the right side of the hysterectomy. It also demonstrates the Harmonic Ace reverse cone drilling technique, revealing how the uterus should be transected at the level of the uterosacral cardinal ligaments.

4.5. Laparoscopic Uterine Artery Ligation: An Essential Technique in Advanced Gynecologic Surgery

Nicole M. Donnellan, MD and Ted Lee, MD

Laparoscopic ligation of the uterine artery at its origin is necessary when traditional approaches to securing the ascending uterine are unsafe or impossible. Execution of this technique improves safety and minimizes conversion. In this video, two lateral, retroperitoneal approaches are demonstrated, both of which are an essential part of the advanced laparoscopic surgeon's armamentarium.

4.6. Laparoscopic Excision of Ovarian Remnant: Two Cases Demonstrating Ligation of the Uterine Artery at Its Origin

Deborah Arden, MD and Ted Lee, MD
AAGL SurgeryU (www.surgeryu.com)

Excision of an ovarian remnant often requires an extensive retroperitoneal dissection. This video presents two cases of laparoscopic excision of ovarian remnants that required ligation of the uterine artery at its origin. These cases clearly demonstrate the retroperitoneal pelvic anatomy, including the internal iliac artery giving rise to the uterine artery, the ureter, and the pararectal and paravesical spaces. This video is intended to review the pertinent anatomy that is vital to successfully completing the retroperitoneal dissection, and to demonstrate the techniques necessary for laparoscopic excision of an ovarian remnant.

4.7. Laparoscopic Repair of an Omental Hernia

Camran Nezhat, MD

This is a video presentation of an omental hernia repair in a morbidly obese patient. The patient underwent a laparoscopic right salpingo-oophorectomy and presented with persisent right-sided pain for 1 week after her surgery. Here we demonstrate the omental herniated sac being removed from the subcutaneous space and the fascial defect closed using a Carter-Thomason device.

5. Robotic Gynecologic Procedures

5.1. Robotic Sacrocolpopexy

Tiffany Jackson, MD and Arnold Advincula, MD, FACOG, FACS

This is a case of a fifty-nine year old gravida two para two with grade three vaginal vault prolapse and cystocle after a previous total abdominal hysterectomy and bilateral salpingoophorectomy. A Coloplast Restorelle Y mesh is used to perform a robot assisted laparoscopic sacrocolpopexy. A four Da Vinci robotic arm technique is used. The Cooper Surgical Sacrocolpopexy tip is placed in the vagina on the uterine positioning system to facilitate suturing to the vagina. The anterior and posterior arms of the mesh are sutured with 2-0 gortex suture and the sacral arm of the mesh is sutured to the anterior longitudinal ligament using 2-0 ethibond suture. The total operating time was approximately three hours. The patient was admitted for twenty-three hour observation. The blood loss was minimal. There were no postoperative or intraoperative complications.

5.2. Robotic Myomectomy for an Eleven Centimeter Uterine Fibroid

Tiffany Jackson, MD and Arnold Advincula, MD, FACOG, FACS

This is a case of a 29 year old gravida zero with a symptomatic uterine fibroid. The patient experienced heavy menstrual bleeding resulting in anemia and urinary frequency. Pelvic MRI revealed an 11 x 7.5 x 8.5-centimeter fibroid in the posterior aspect of the uterus. A four arm Da Vinci robotic technique is used. The uterus is injected with diluted vasopressin. The fibroid is debulked and enucleated. The hysterotomy is closed with V-Loc suture. Interceed is placed over the hysterotomy. The estimated blood loss was 100 cc. Pathology revealed three hundred ninety grams of uterine leiomyoma. The operating time was approximately three hours. The patient was discharged to home on the same day of the surgery and experienced no complications.

5.3. Three Arm Robotic Hysterectomy for a 24 Week Size Uterus

Tiffany Jackson, MD and Arnold Advincula, MD, FACOG, FACS

AAGL SurgeryU (www.surgeryu.com)

The large uterus presents a challenge to performing a hysterectomy laparoscopically. This video demonstrates a robot-assisted total laparoscopic hysterectomy for a 24 week size fibroid uterus. Three Da Vinci robotic arms and a 5mm accessory port were used to complete the procedure on a 1200 gram fibroid uterus. An Advincula Arch uterine manipulator is used with a KOH efficient colpotomizer. The operating time was approximately 90 minutes. The estimated blood loss was 75mL and there were no intraoperative or postoperative complications.

6. Hysteroscopy

6.1. Hysteroscopic Adhesiolysis with an Intrauterine Morcellator and Bipolar Loop

Shruti Malik, MD and Joseph S. Sanfilippo, MD

This patient presented after a previous myomectomy with dense intrauterine adhesions. We initiate resection of the adhesions with the intrauterine morcellator. First, we line up the inner rotating barrel with the outer portion of the morcellator. Then we begin to thin out the adhesive bands in the uterine cavity as well as a moderate amount of proliferative endometrium obscuring adequate visualization. We do this by lining up the black lines again the intended area of resection and applying light pressure against the tissue. When the morcellator is activated, the rotating inner barrel acts to morcellate the tissue as well as pull it out with light suction. In the second portion of the video, the bipolar cautery loop is then utilized to continue the adhesiolysis. In a similar fashion to resecting a uterine septum, light pressure is applied at the base of the adhesion and small bursts of electrocautery are used to help separate the tissue. The loop can then be used to gradually shave down the excess tissue and even out the uterine contour. This hysteroscopy is paired with laparoscopy to aid in prevention and recognition of uterine perforation as well as retraction of the small bowel. At the end of the surgery, the uterine cavity appears within normal limits and the tubal ostia are flush with one another.

6.2. Hysteroscopic Metroplasty

Shruti Malik, MD and Joseph S. Sanfilippo, MD

This patient presented with a complete uterovaginal septum. The vaginal septum was previously resected. At this time, we complete resection of the cervical and uterine portions of the septum. Here you can see the cervical portion of the septum which was dissected under direct visualization with heavy scissors. Once the cervical septum was transected, the hysteroscopic scissors were then used to continue the dissection at the uterocervical junction and lower uterine segment. As you can see, due to the vascularity of this septum, the visualization is suboptimal and the procedure is then continued with a bipolar cautery loop. The loop can be applied at the base of the septum and small burst of electrocautery are used to separate the tissue. This procedure is continued gradually sweeping from side to side along the width of the septum as dissection continues towards the uterine fundus. At the thickest portions of the septum, you can see that the loop is used to gradually shave down the tissue and aid in hemostasis. As we near the end of the procedure, we zoom in to note the appearance of the myometrial fibers indicating that we have reached an endpoint. We use the loop to even out the residual tissue protruding into the uterine cavity and complete the procedure. This hysteroscopy is paired with laparoscopy to aid in prevention and recognition of uterine perforation as well as retraction of the small bowel.

6.3. Hysteroscopic Septolasty

Camran Nezhat, MD

This video demonstrates hysteroscopic septoplasty using hysteroscopic scissors. Simultaneous laparoscopy is performed to help minimize the risk of uterine perforation. An intrauterine catheter and estrogen are used post-operatively to minimize the risk of intrauterine adhesion formation.

7. Vaginoplasty

7.1. Davydov Vaginoplasty

Shweta Nayak, MD, Richard Guido, MD and Joseph Sanfilippo, MD

This video depicts a Davydov vaginoplasty in a 17-year-old, 46, XX female with a history of vaginal agenesis and hypoplastic mullerian structures. The patient herself had no significant

past medical history or family history of mullerian anomalies, and additionally had a notably normal genitourinary tract with the exception of her mullerian anomaly and vaginal agenesis.

Case/Procedure details:

Operative findings included a 3-centimeter vaginal opening, normal bilateral ovaries, and rudimentary hypoplastic uterine horns that crossed the midline and fused to form a dense fibrotic band. The procedure began with mobilizing the bladder off the hypoplastic mullerian structures and fibrous midline band to the location of where the uterosacral ligaments would have inserted. A large Hegar dilator was inserted from below to identify the midline location of the vagina, and the bladder was mobilized well off this region, so that there was not only separation of the raphe over the residual rudimentary fibrous band but also separation between the endoplevic fascia and the bladder itself. In addition, a rectal probe was inserted into the rectum to ensure clear delineation of surrounding structures. The surrounding (anterior) peritoneum was then further mobilized off of the bladder.

Next, an incision was made over the midline location of the vagina, as delineated by the Hegar dilator, which had been inserted into the vaginal opening from below. Attention was then turned below, where this incision was further opened to approximately 3cm in diameter. The four corners of this opening were then tagged at the edge of the vaginal mucosa. Laparoscopically, the vaginal mucosa, as tagged from below, was then re-approximated to the peritoneum using 2-0 PDS and horizontal mattress sutures. Following this re-approximation, a 130mL vaginal mold was placed through the vagina, which allowed for proper identification of the apex of closure of the peritoneum. The peritonem of the pelvic brim was then closed in a purse-string fashion using 0- Prolene suture over the aforementioned vaginal mold, creating the new vagina, and a second pursetring stitch, which incorporated the bilateral rudimentary uteri, was placed in a similar manner for reinforcement. Finally, a cystoscopy was performed which revealed bilateral ureteral jets and no evidence of bladder injury. The patient returned to the operating room 7 days post-operatively, where an exam under anesthesia revealed adequate but not complete vaginal re-epithelialization. Thus, the stent was finally removed 2 weeks post-operatively, and the patient continued to ensure patency with the use of dilators.

7.2. Laparoscopic Vecchietti

Sara Brucker, MD

The laparoscopic Vecchietti Procedure was developed in Italy for vaginal reconstruction with a blind ending short segment vagina as encountered with Mayer-Rokitansky-Küster-Hauser syndrome; the prevalence of which is 1:4000. The basic premise includes use of a traction device placed on the abdomen in association with a solid Lucite olive introduced at the blind vagainal pouch-introitus. Attached to the olive device are two (2) Ethibond (Ethicon Inc., Somerville, NJ) sutures brought in through the blind vaginal pouch, up through the Space of Reiteus and attached to the Vecchietti traction device.

As the video demonstrates, the sutures are inserted into the abdomen between the rectum and the bladder. An extraperitoneal tunnel is created with use of the Vecchietti instrument set which includes a suture carrier which is inserted into the peritoneal cavity adjacent to a port on each side of the lower abdomen. The traction device/procedure is not very painful, oral nonsteroidal analgesics are rarely required when increased tension is placed on the sutures as outlined below.

Upon completion of the surgical procedure, a 9-10cm depth of invagination along the initially blind vaginal pouch can be achieved within 7 days of traction; on a daily basis, increased tension is placed on the sutures at 1-1.5cm/day. Overall once the Vecchietti device is removed, vaginal dilation must be addressed, as with daily use of a vaginal dilator over the course of a month. Then the patient should achieve adequate length of the vagina for sexual intercourse.

The most tedious part of the laparoscopic Vecchietti is threading the suture through the eye of the suture carrier. A guidewire is frequently used once the tip of the suture carrier is in the peritoneal cavity. The guidewire is pushed forward to form a large loop and the suture is placed into the loop, facilitating placement of the suture through the carrier.

These videos are available at http://www.cambridge.org/academic/subjects/medicine/obstetrics-and-gynecology-reproductive-medicine/clinical-gynecology-2nd-edition?format=HB#resources