

surgical cases compared to robot-assisted laparoscopic surgery. Sixty-nine percent ($n = 33$) of fellows indicated that robot-assisted laparoscopy allows them to perform more challenging surgical cases compared to conventional laparoscopy. Fifty six percent ($n = 27$) of fellows agreed that the cost associated with robot-assisted laparoscopy is the greatest disadvantage of using robot-assisted laparoscopy. Seventy-nine percent ($n = 38$) of fellows plan to use conventional laparoscopy more than robot-assisted laparoscopy after fellowship completion. Ninety-six percent ($n = 46$) of fellows indicated that they plan to practice at a hospital that offers robotic surgery after fellowship completion.

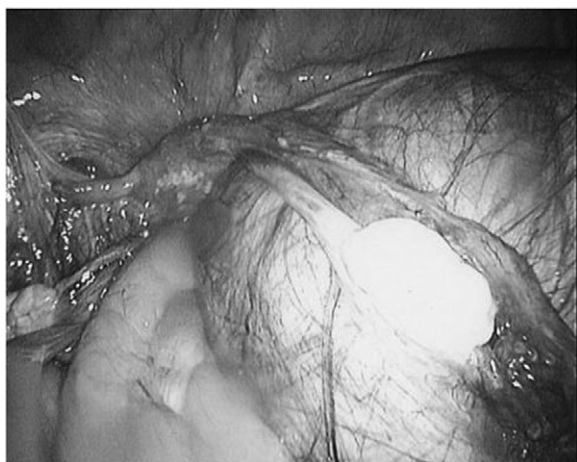
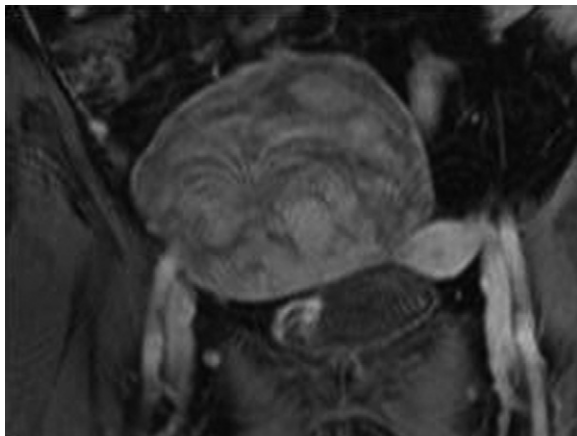
Conclusion: The majority of AAGL MIGS fellows desire to participate in robotic surgery. More research needs to be performed regarding the training needs of AAGL MIGS fellows.

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Minimally Invasive Approach to an 18cm Broad Ligament Myoma

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Study Objective: Large broad ligament myomas affect the quality of life of patients causing pelvic pain, dyspareunia, bleeding, urinary frequency and changes in bowel habits. Surgical approaches to removing leiomyomas can be done via laparotomy, laparoscopy or the daVinci robot. The route of surgery is influenced by location and size of leiomyomas, prior medical and surgical history, concomitant pathology, patient preference, desire for future fertility and the surgeon's experience. Length of hospital stay, post-operative pain, infection risk and anticipated blood loss are also considerations in determining the appropriate surgical approach. A literature search investigating the surgical management of large broad ligament myomas was done to determine to what extent the laparoscopic or robotic approach has been utilized.



Design: Case: A 66-year old female presented with pelvic pressure, pain and urinary frequency. Physical exam revealed a large adnexal mass confirmed by pelvic ultrasound. Pelvic MRI confirmed an approximately 18cm mass arising from the uterus, displacing the uterus towards the left pelvis.

Setting: Intra-operatively, using the daVinci robot, the visualized fibroid extended along the entire broad ligament, extending to the level of the cecum and was adherent along the right side of the pelvis.

Intervention: A robotic total hysterectomy, bilateral salpingo-oophorectomy, bilateral uterosacral ligament fixation, ureterolysis, cystostomy, and enterolysis of bowel adhesions was performed.

Measurements and Main Results: The patient was discharged home on POD #1 and 2 weeks later reported complete resolution of all pain and urinary symptoms.

Conclusion: In the literature, laparotomy, laparoscopy and robotic approaches have been used to remove broad ligament leiomyomas. The benefit of laparoscopic management of myomas over laparotomy has been reported in a few studies. We present a case report successfully treating a very large broad ligament leiomyoma using the robotic approach. This suggests that the robotic approach can allow more patients to avoid laparotomy, especially in cases where the laparoscopic approach would not be feasible.

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Fibroid Recurrences after Myomectomy: A Retrospective Cohort Study

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Study Objective: Recurrence and reoperation rates of laparoscopic (robotic and traditional laparoscopy) compared to abdominal myomectomy are described in relation to pre-operative and intra-operative factors.

Design: Retrospective cohort study.

Setting: Henry Ford Hospitals (Detroit and West Bloomfield, MI).

Patients: 225 women who underwent a myomectomy prior to May 2009.

Intervention: Myomectomy (any approach).

Measurements and Main Results: The electronic medical records of all women who were at least 1 year post-myomectomy were reviewed. Date of specific mention of fibroids in the medical record after the index myomectomy was also recorded as were any additional fibroid-related procedures: myomectomy, uterine artery embolization (UAE) or hysterectomy. Survival analysis techniques were employed to account for variable follow-up and loss to follow-up (censored) for the outcomes of time to recurrence or retreatment. Of the 225 women, 57 (25.3%) had some type of recurrence or retreatment. Of the 23 women who had retreatment, 9 had hysterectomy, 12 had myomectomy and 2 had UAE. Those who had a recurrence were more likely to have had multiple fibroids ($p = 0.006$) and an "open" surgical approach ($p = 0.029$); however, the statistically significant associations did not persist after adjusting for surgical approach, number of leiomyomas removed and size of largest leiomyoma diameter. Based on Cox regression, having an additional procedure was not associated with index surgical approach, number removed or size of largest diameter (all $p > 0.10$). No women who had a single leiomyoma removed had a subsequent procedure.

Conclusion: These data suggest no evidence of differences in recurrence and the rate of having a subsequent procedure by index surgical approach. This, coupled with prior evidence of shorter hospital stay, less blood loss and a quicker recovery suggest that a minimally invasive approach to myomectomy is preferable.

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Review of Hemostatic Agents Used in Robotic Assisted Laparoscopic Gynecological Surgeries

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Table 1
Hemostatic Agents Used in Robotic Assisted Laparoscopic Gynecological Surgeries

Hemostatic Agent	Manu- facturer	Mechanism of Action	Material	Benefits	Risks	Cost
SURGICEL® Fibrillar™	Ethicon	vasoconstriction, platelet plug formation	oxidized regenerated cellulose	bactericidal activity, plant derived	foreign body reaction	\$153
SURGICEL® SNOW™	Ethicon	vasoconstriction, platelet plug formation	oxidized regenerated cellulose	bactericidal activity, plant derived	foreign body reaction	\$153
SURGIFLO®	Ethicon	platelet plug formation, fibrin clot formation	flowable gelatin, thrombin	mixed with thrombin stops bleeding within 2 min	porcine gelatin	\$220
FLOSEAL®	Baxter	platelet plug formation, fibrin clot formation	flowable gelatin, thrombin	mixed with thrombin stops bleeding within 2 min	bovine gelatin-variant Creutzfeldt- Jacob disease (vCJD)	\$188 (5ml), \$344 (10ml)
VITAGEL™	Stryker	fibrin clot formation, fibrinolysis	fibrin sealant	human product, fibrinogen/ thrombin, mixed with patient blood	bovine gelatin-variant Creutzfeldt- Jacob disease (vCJD)	\$290 (2ml), \$550 (4.5ml)
EVICEL®	Ethicon	fibrin clot formation, fibrinolysis	fibrin sealant	fibrin clot independent of patient coagulation profile, human formulation	human plasma-Creutzfeldt- Jacob disease (CJD)	\$573 (10ml)
ARISTA™	Medafor	dehydrates blood, clots on contact, gel matrix	powder, absorbable hemostat	fibrin clot, absorbable, plant derived	glucose overload if>50gm used	\$253 (5mg)

Study Objective: To review characteristics and applications of various hemostatic agents in robotic assisted laparoscopic surgeries. Different hemostatic agents are used adjunctively in laparoscopic surgeries to achieve bleeding control. Proper selection of a hemostatic agent should depend on a thorough understanding of their mechanism of action and efficacy. The different characteristics of these hemostatic agents are highlighted and their mechanism of action, in relation to the coagulation cascade, is emphasized.

Design: Review of four categories of hemostatic agents including seven examples used in robotic assisted laparoscopic gynecological surgeries.

Setting: Community based urban teaching hospital with advanced laparoscopic and robotic technology.

Patients: Seven patients undergoing robotic assisted gynecological surgery.

Intervention: Robotic assisted gynecologic procedures are presented where hemostatic agents are utilized to provide adequate bleeding control.

Measurements and Main Results: Seven commercially available hemostatic agents were utilized in patients undergoing robotic assisted benign gynecological procedures. Four different categories with some examples are provided. 1. Oxidized regenerated cellulose: Surgicel® Fibrillar™ and Surgicel® Snow™ 2. Flowable gelatins that provide a hemostatic matrix: SurgiFlo® and Floseal, 3. Fibrin sealants: Evicel® and Vitagel™, 4. Absorbable hemostat: Arista™. The choice of a specific hemostatic agent was dependent on the severity of bleeding, type of procedure and surgeon preference. Adequate hemostasis was achieved in all surgeries.

Conclusion: Hemostatic agents are very beneficial in optimizing bleeding control during gynecological surgery. A comprehensive knowledge of the product characteristics and mechanism of action will provide the gynecologic surgeon a clearer understanding on indication of use and encourages patient safety.

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Versatile Applications of the BeamPath® CO2 Laser in Robotic-Assisted Gynecologic Surgeries

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Study Objective: Although the benefits of CO2 lasers in gynecologic procedures are well- understood, the cumbersome nature of the traditional design has limited its applicability in robotic-assisted laparoscopic procedures. The recent availability of the BeamPath® CO2 laser fiber, however, may allow surgeons to precisely deliver the energy to the most intricate surgical areas. The objective of this study was to assess the utility of this instrument in robotic-assisted endometriosis procedures.

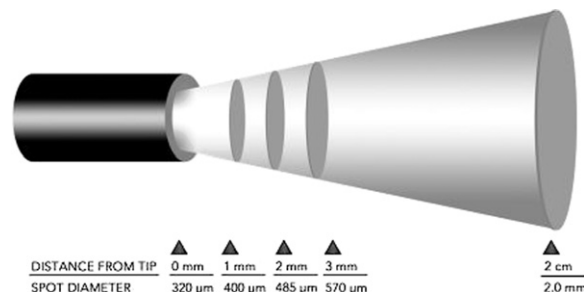


Figure 1. As the distance from the tissue increases, there is an increases in spot size and a corresponding decreases in powder density.

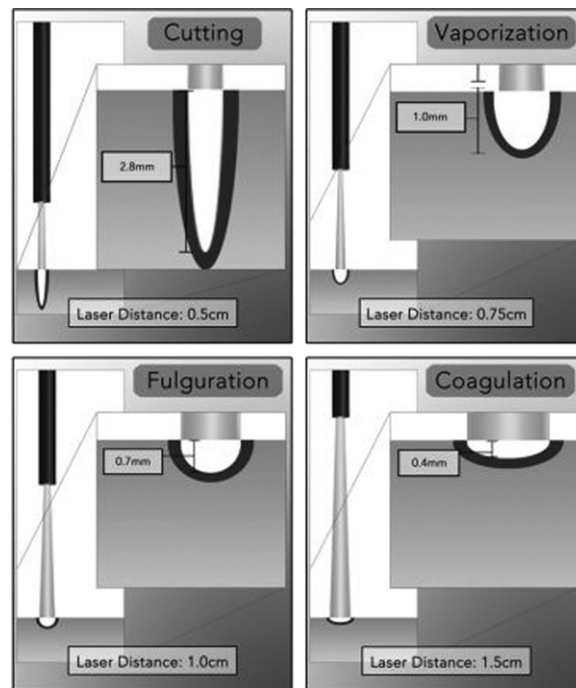


Figure 2. The divergent beam enables the surgeon to control tissue interaction by altering the distance from the tissue. Calculation based on 8W power setting and 1s dwell time (Mckenzie AL, Phys. Med. Biol., 1983; 28(8);905-12).