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Case Report

Case Series: Removal of Sacrocolpopexy Mesh

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Abstract

The abdominal sacrocolpopexy has long been the gold standard for repair of apical prolapse. With the evolution of minimally invasive surgery and the advent of the da Vinci® robotic system, many surgeons have transitioned to performing this procedure with robotic assistance. Due to the growing increase in the performance of this procedure, we have seen an increase in the need for mesh removal for various indications. We present a case series of three cases where sacrocolpopexy mesh was removed for three different indications (rectal discomfort, vaginal pain and infected vaginal mesh with associated erosion). We also describe our institutions method of sacrocolpopexy mesh removal with the use of the da Vinci® robotic system.

INTRODUCTION

The abdominal sacrocolpopexy has long been the gold standard for repair of apical prolapse [1]. With evolution to minimally invasive surgery and the advent of the da Vinci® (Intuitive Surgical, Sunnyvale, CA) robotic system, many surgeons have transitioned to performing this procedure with robotic assistance.

The transition has been widely accepted by surgeons because of a decrease in morbidity, rate of infection, blood loss, length of hospital stay and pain; all leading to a faster recovery course for the patient [2]. With this in mind, it would only seem advantageous to use this same technology in the rare event when sacrocolpopexy mesh needs to be removed.

The complete removal of sacrocolpopexy mesh is only performed when conservative management has failed, leading to the actual rate of occurrence of this procedure being scarcely documented in the literature. However, the rate of partial mesh removal ranges from 5-23% [3]. Indications for mesh removal include pelvic pain, dyspareunia, infection, mesh erosion and bowel dysfunction [1].

CASE PRESENTATIONS

Case presentation 1

Indication for mesh removal: Rectal discomfort without mesh erosion

Clinical presentation: 72 year old G3P3003, BMI 28.3 kg/m^2 with a history of laparascopic sacrocopopexy in 2010. Six months post-operatively patient complained of increased vaginal and rectal pressure.

Intervention: In 2011, due to these symptoms, she had a posterior repair performed at another institution. She presented to our office in 2015 with continued complaints of rectal and vaginal pressure, which did not resolve with the previous surgical intervention. During this time period, she was seen by a gastroenterologist and placed on multiple bowel medications and supplements to include fiber to assist with rectal pressure. Colonoscopy and sigmoidoscopy was also performed and noted to be normal. Due to continued symptoms, patient was consented for sacrocolpopexy mesh removal. Intraoperatively there were no complications. Estimated blood loss of 50ml. Total procedure time was 143 minutes. During the patients hospital stay pain was controlled with oral Ibuprofen and hydrocodone/acetaminophen as needed. No parenteral pain medications were administered.

Outcome: Post-operatively, pelvic pressure and rectal discomfort improved 75%. No postoperative complications occurred. Overall, she was very happy with the outcome of the procedure.

Case presentation 2

Indication for mesh removal: Vaginal pain without mesh erosion.

Clinical presentation: 37 year old female G3P3003, BMI 31.3 kg/m^2 with a history of laparoscopic sacrocolpopexy in 2007. Eight months post-operatively, patient started complaining of chronic vaginal pain, described as sharp and radiating through the vaginal area. She also complained of new onset dyspareunia and lower back pain. Physical exam elicited sharp right lower quadrant pain, cervical motion tenderness and tenderness in the posterior fourchette.

Intervention: Patient was counseled that the sacrocolpopexy mesh may be too tight and a revision was recommended. She

declined revision and opted for pelvic floor physical therapy as an alternative. She underwent 6 months of physical therapy with noted improvement in symptoms. She represented to our office in 2015 with similar symptoms. At this time, a pelvic ultrasound and abdominal and pelvic CT scan were all within normal limits. She repeated pelvic floor physical therapy, however, symptoms did not resolve. At this point we proceeded with robotic mesh removal.

Intra operatively there were no complications. Estimated blood loss of 50ml. Total procedure time was 127 minutes. During the patients hospital stay pain was controlled with a combination of IV Ketorolac, oral Ibuprofen and hydrocodone/acetaminophen as needed.

Outcome: Post-operatively, pelvic pain improved 90%.No postoperative complications occurred. Symptoms of dyspareunia resolved and she has no symptoms of re-prolapse to date (6 months).

Case presentation 3

Indication for mesh removal: Infected mesh with erosion.

Clinical Presentation: 72 year old female G2P1011, BMI 35.6 kg/m^2 with a history of laparoscopic assisted robotic sacrocolpopexy in 2012. In 2015, patient developed an acute episode of diverticulitis of the sigmoid colon, which was complicated by a diverticular abscess and subsequent colovaginal fistula and vaginal mesh erosion. She initially presented to the office with complaints of vaginal flatus and dark brown vaginal discharge.

Intervention: A CT scan of the abdomen and pelvis was performed showing an abscess at the vaginal cuff and possible colovaginal fistula. A colorectal surgeon was consulted and she was started on antibiotic therapy. She was taken to the operating room for partial transvaginal mesh excision. Post-operatively, she continued to have symptoms of vaginal discharge secondary to vaginal mesh erosion. Two months later, she was taken back to the operating room with the assistance of colorectal surgery for the robotic assisted removal of sacrocolpopexy mesh and bowel resection with concurrent re-anastomosis.

Intra-operatively there were no complications. Estimated blood loss of 125ml. Total procedure time was 193 minutes. During the patients hospital stay pain was controlled with a combination of IV morphine, oral Ibuprofen and hydrocodone/acetaminophen as needed.

Outcome: Post-operatively, symptoms of vaginal flatus, vaginal discharge and mesh erosion resolved to date (4 months). Postoperative complications included infection of the umbilical port site. This resolved with the assistance of PO antibiotics for a total of fourteen days.

SURGICAL TECHNIQUE AND VIDEO

Video of the procedure with narrative of the operative technique can be found at: https://youtu.be/HHebFm-MBk0

Patient positioning and setup

All patients are placed in the dorsal lithotomy position in Allen stirrups. The da VinciSi® (Intuitive Surgical, Sunnyvale, CA) Robot system is used with parallel docking of the patient side cart.

A 12mm umbilical trocar is inserted and intra-peritoneal positioning confirmed with the scope. Next, under direct visualization, robotic 8mm trocars are inserted in the right lower quadrant and left lower quadrants. A 5mm assistant port is placed in the right upper quadrant.

After the robot is docked, monopolar scissors, PK dissector and double fenestrated grasper are inserted under direct visualization.

Dissection

Using cautery and sharp dissection, the bladder is dissected off the mesh anteriorly until the distal edge of the mesh is exposed. Next, using a similar dissection technique, the lateral edges of the mesh are exposed. As patients still have their cervix in place, a V-Care® (ConMed Corp., Utica, NY) uterine manipulator is inserted to assist with traction of the cervix.

The mesh is then peeled off the vagina starting from the distal edge and retrogrades up to the cervix. Attention is then turned to the sacral arm of the mesh. The tail of the mesh is followed from the cervix to the sacral attachment. An incision is made in the peritoneum and continued downward to the cervix. The mesh is then sharply dissected off the retroperitoneal tissue, all the way to the cervix. At this time, with good visualization of the rectum, we are able to sharply dissect the remainder of the mesh off the posterior vaginal wall.

The cervix is then amputated with the assistance of the colpotomy cup attached to the V-Care®. The mesh and the cervix are removed through the vaginal cuff.

Closure

The vaginal cuff is closed in 2 layers with #0 Polyglactin suture. The umbilical fascia is closed using #0 polydioxanone suture in a figure of eight fashion. All skin incisions are closed in a sub cuticular fashion using 4-0 poliglecaprone and Dermabond® (Ethicon, Cincinnati, OH).

Cystoscopy is performed at the completion of the case.

DISCUSSION

While abdominal removal of sacrocolpopexy mesh is performed on a regular basis, it is not well documented in the literature. Few studies have been performed approximating the prevalence of sacrocolpopexy mesh removal to range from 1.2-13.1% [4-5]. At present, there is no consensus on which approach is best for patients who have an indication for mesh removal. We describe a novel approach to removing sacrocolpoxey mesh with robotic assistance in patients who have failed conservative management.

With the recent transition from heavyweight, high density mesh to ultra-lightweight, colorless, low density mesh, it has become an increasingly difficult task for a surgeon to adequately visualize, and remove whole portions of mesh via the vaginal route, especially if mesh is removed for an indication other than infection or erosion. Due to this, many surgeons prefer to remove sacrocolpopexy mesh via the abdominal route. This allows for

better visualization of the whole mesh and gives the surgeon the ability to remove the whole segment of mesh in one procedure. However with a laparotomy incision there is an inherent risk of infection, wound dehiscence, pain and slow transition to recovery.

These morbidities can be greatly decreased when the surgeon approached mesh removal in a minimally invasive route. The robotic approach provides the surgeon with increased exposure to the area in question and allows for a more precise dissection planes to be completed. By achieving this, the patient has reduced blood loss, decreased post-operative pain and decreased hospital stay.

The disadvantage to the procedure is that there is a steep learning curve associated with robotic surgery, and this technology may not be readily available at all institutions. Potential complications and difficulties that a surgeon may encounter with our institution's approach include bowel injury if extensive enterolysis is needed due to adhesion from prior surgeries, the risk of entering the rectum or vagina if the correct dissection plane is not identified, inability to remove the entire mesh if the surgeon is inexperienced or extensive adhesions are present.

Many studies have been reported on the indications and complications associated with vaginal mesh removal. One such study was performed by Miklos et al., which compared the indication of mesh removal originally placed for SUI, or pelvic organ prolapse. In this study 445 patients underwent mesh removal laparoscopically predominately for the indication of pelvic pain. Of these patients the prevalence of sacrocolpopexy mesh removal was 13.1%. Complication encountered during surgery included the need for blood transfusion, ureteral injuries and rectal injuries [4].

Dandolu et al., performed a retrospective study comparing mesh complications and failure rates for mesh used to repair apical prolapse by use of various surgical techniques. Data was gathered from the Truven CCAE and Medicare Supplemental databases from 2008-2013. They found mesh removal rates to be the following, transvaginal approach (5.1%), laparoscopic sacrocolpopexy (1.7%) and abdominal sacrocolpopexy (1.2%). The highest indication for mesh removal in all three groups was mesh exposure, pelvic pain and dyspareunia [5]. These indications are the same as those described in our case presentations.

South et al performed a retrospective study comparing surgical techniques for mesh removal after vaginal mesh erosion from sacrococolpopexy in 31 patients [6]. Techniques included transvaginal excision, endoscopic-assisted transvaginal excision and laparotomy. They concluded that both the transvaginal approach with and without the assistance of endoscopy was safe, and less invasive then laparotomy. However, the patient could need up to three attempts at the procedure to remove all mesh.

Another study reviewing surgical management of mesh related complications associated with prior pelvic floor reconstructive surgery demonstrated removing sacrocolpopexy mesh by performing a vertical abdominal incision/ laparotomy on all patients. Through this approach, they were able to remove whole segments with one procedure. For each procedure, prophylactic ureteral stenting were also placed and a Foley catheter was left in place for 7-14days [7]. Post-operative complications included hematoma formation, hemorrhage, urinary tract infections, urinary retention, wound infections and ureteral injury.

We believe that by using our institutions approach, mesh can be removed in a minimally invasive fashion that is safe for the patient and decreases the morbidity associated with a laparotomy incision and the multiple trips to the operating room associated with a transvaginal approach.

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