Case Report

A Stuck to Non Coated Mesh Appendix as a Caused of Small Bowel Occlusion after Robotic Sacrocolpopexy

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Abstract

The case that has been presented describes small bowel obstruction caused by adhesed appendix to non-coated mesh a week after robotic vaginal vault pexy which is the treatment method of vaginal vault prolapse.

One of the indications for robotic system using in gynecology is apical vaginal vault prolapse which is treated by vaginal vault pexy.

The use of meshes has become the first option for the treatment of soft tissue disorders as hernias and stress urinary incontinence and widely used in vaginal prolapse’s treatment.

The main argument for using a mesh in the repair procedure would be its superior efficacy and durability in treating the signs and symptoms of prolapse, compared to native tissue repairs with fewer recurrences and reoperations.

Mesh implants are probably an important tool in pelvic reconstructive surgery, but an ideal implant has yet to be found. Use of mesh during vaginal vault pexy may lead to unique complications for inserted intraabdominal mesh, such as adhesions between some organs. It’s very important to remember to use the appropriate mesh that would lead to reduced adhesion formation, and accordingly, less bowel obstruction.

INTRODUCTION

Minimal invasive surgery is a surgical approach that minimizes surgical incisions to reduce trauma to the body. Laparoscopic surgery is associated with shorter hospital stays than open surgery, as well, as with less postoperative pain and scarring and lower risks of infection and need for blood transfusion. Compared with conventional laparoscopic surgery, robotic surgery’s advantages have a potential to translate into reduce perioperative complications, blood loss, postoperative pain and hospital stay [1].

The use of robotic technology in laparoscopy is slowly becoming popular because this technology has enabled surgeons to overcome difficulties of conventional laparoscopy while allowing patients to benefit from minimally invasive surgery [2].

One of the indications for robotic system using in gynecology is apical vaginal vault prolapse which is treated by vaginal vault pexy. Robot-assisted vaginal vault pexy is believed to facilitate this technically difficult procedure and allow more surgeons to offer a minimally invasive approach [3]. Robotic surgery may provide the medium necessary to overcome the limitations of laparoscopic vaginal vault pexy. Elliot and colleagues described a technique of robotic assisted laparoscopic vaginal vault pexy using a polypropylene graft. The graft is sutured to the vagina and sacrum [4].

According to available literature there are also robotic surgery complications, including hematomas or internal bleeding, sepsis or infections following surgery, fistulas or abnormal connections created between organs and others. Use of mesh during robotic assisted surgeries may lead to unique complications for inserted intraabdominal mesh, such as adhesions between some organs, usually a bowel, on one hand and prosthetic graft on the other.

In this article we present a case of small bowel strangulation caused by adhesed appendix to non-coated mesh a week after robotic vaginal vault pexy (sacrocolpopexy).

CASE REPORT

The 62 years old woman had undergone robotic assisted laparoscopic vaginal vault pexy (sacrocolpopexy) with Vypro mesh use in another hospital 10 days previously to her admission in our emergency department.

According to the documents, there is no information about immediate intraoperative or postoperative complications, and the patient was discharged on postoperative day 3.

The patient had a history of previously vaginal vault pexy 3 years before, by the laparoscopic approach.

After discharge from the hospital, the patient began to complain of abdominal discomfort, decreased appetite and...
low gas transit. Stool was only once, and after local per rectum laxative using.

One day before the admission to the emergency room of our hospital nausea, vomiting and abdominal pain were intensified.

The patient was hemodynamically stable. The abdomen was sensitive to touch, but soft and without signs of peritonitis. There was increased peristaltic, especially on the left. The blood tests were within normal limits.

The investigation of this patient included abdomen and chest X-Ray, and CT of abdomen which demonstrated low small bowel obstruction with ileum transitional zone, near the mesh (which was defined by the metal tackers location), and a small amount of free fluids in the abdominal cavity and in the pelvis (Figure 1).

After a failed attempt of conservative treatment during two and half days and including NPO with nasogastric tube and intravenous fluids administration, the patient underwent laparoscopy.

The operation started by Hassan trocar (10 mm) insertion near the umbilicus, and after abdominal cavity screening with 30 degrees cam, two 5mm trocars were inserted under vision to the left lower and middle abdomen through the previous surgery scars.

During this procedure dilated proximal loops and strangulated by appendix distal part of small bowel were founded. The strangulated small bowel was viable, without signs of ischemia. Later it turned out as appendix that was stuck to the new mesh. In addition, adhesions were found between the loops of small bowel and the new mesh (Figure 2).

Gentle release of occluded terminal ileum and appendectomy have been performed during our procedure.

There were no complications during the postoperative period and the patient was discharged on the 5-th day, after the normalization of the bowel movement and good food digestibility.

DISCUSSION

Pelvic organ prolapse is the sign of descent of one or more of the following: the anterior vaginal wall, the posterior vaginal wall, the uterus (cervix) or the apex of the vagina. Its prevalence is currently estimated to be approximately 40% in women 45-85 years old, and around 30% of these women are symptomatic. Symptomatic patients may complain of urinary, bowel, or sexual symptoms as well as symptoms of vaginal pressure, heaviness or pain. These symptoms have a major impact on patients’ physical and emotional well-being. The treatment of pelvic organ prolapse is commonly surgical. The surgical prolapse repair aims primarily at restoring the anatomy of the structures supporting the pelvic organs [5].

Pelvic organ prolapse’s pathophysiology remains unclear. The strength of pelvic floor depends on interplay of properly innervated muscles, ligaments and connective tissue. The etiology of prolapse is likely multifactorial, developing of obstetric trauma and denervation to the pelvic floor, as well as altered collagen and connective tissue metabolism in pelvic floor tissues [6].

Pelvic organ prolapse is a non-threatening condition that has a wide variety of symptoms. Vaginal vault pexy has been the “gold standard” management of apical pelvic organ prolapse with reported high success rates for anatomic correction [7].

The main argument for using a mesh in the repair procedure would be its superior efficacy and durability in treating the signs and symptoms of prolapse, compared to native tissue repairs with fewer recurrences and reoperations.

The main reason for not using the mesh is mesh related complications including, apparently increased rates of de novo stress urinary incontinence with mesh repair in the anterior compartment. The increased rate of intraoperative bladder injury is another reason against using a mesh [7].

Mesh related complications include also infection and exposure of the prosthesis. Many of adverse effects are related to poor integration of the materials at the implantation site resulting in marked inflammation and ischemic phenomena, which delays healing process [8].

Another mesh complication of pelvic reconstructive surgery is retraction of tissues surrounding the mesh, which is usual with a reduction in the size of the mesh. Therefore, many surgeons use large implants to cover defects, and anticipate scarring, shrinkage and puckering [9].
The use of meshes has become the first option for the treatment of soft tissue disorders as hernias and stress urinary incontinence and widely used in vaginal prolapse treatment. However, complications related to mesh issues cannot be neglected. Various strategies have been used to improve tissue integration of prosthetic meshes and reduce related complications [6].

Polypropylene (PP) materials became one of the most popular meshes implanted for soft tissues repair due to flexibility, cellular growth and inflammatory response patterns, easy manipulation and low price. Despite its popularity, complications related to mesh issues cannot be neglected, including infection and exposure of the prosthesis or erosion of vaginal wall. Many of adverse effects are related to poor integration of the materials at the implantation site resulting in marked inflammation and ischemic phenomena, which delays the healing process. Thus, there are various strategies that have been used to optimize tissue integration of prosthetic meshes in order to reduce complications [6].

The principle of using graft in reconstructive surgery is to reinforce existing tissue. The material must be safe, biologically compatible, and must provide both anatomic and functional results, especially in pelvic floor surgery. The ideal material should be chemically and physically inert, non-carcinogenic, mechanically strong while remaining flexible, non-allergenic, non-inflammatory, and non-modifiable by body tissue. It must be sterile, convenient to use and affordable, with minimal risk of subsequent infection or rejection. Currently, no graft has all these properties. Moreover, in pelvic organ prolapse surgery, the optimal implant should restore normal anatomy and function to the vagina and surrounding pelvic organs and have longer longevity than autologous tissue. Once implanted, it should not result in adhesion formation on the visceral surfaces [10].

An ideal synthetic mesh should consist of monofilamentous large-pore structure with anisotropic mechanical properties that are similar to the native properties of the healthy host tissue and composed of a highly biocompatible raw material with long-term stability. An optimal mesh for intraperitoneal use must resist visceral adhesions to limit the risk of bowel obstruction and intestinal fistula [11].

The mesh with low weight and large pores such as Vypro was adapted to the physiology of the human abdominal wall and proved to reduce chronic inflammatory processes [12]. It was hypothesized by Zieren et al., (2002) that the reduced inflammatory response to a Vypro mesh would lead to reduced adhesion formation following intraperitoneal implantation in comparison with a Prolene mesh. It was found that Prolene and Vypro meshes, both of them cannot be recommended for intraperitoneal mesh placement because of their adhesion formation potential and risk of bowel obstruction.

Mesh complications can be reduced by using the natural barrier afforded by the peritoneum. Traditionally, intraperitoneal mesh placement has been used for its ease, but the approach has associated risk. Newer meshes have antiadhesive barriers to prevent postoperative infections and adhesions. Despite this improvement, there have been reports of mesh erosions to the bowel, as well as mesh-related infection. An alternative is to dissect and establish the preperitoneal space in which to place mesh and avoid exposure to intraabdominal structures [13].

The main rule is that the visceral side of the selected mesh must have anti-adhesive properties (titanium, collagen, ePTFE, cellulose) in order to reduce the risk of small bowel adhesions and potentially, delayed complications such as enteric fistula formation [14].

Pelvic organ prolapse is an important cause for morbidity in women and more women are increasingly opting for surgical relief than to live with inconvenience and indignity. The optimal treatment depends on the surgeon’s experience. The patient’s suitability for surgery, age at presentation, her grade of prolapse and expectation from surgery also determines the procedure offered to her.

Abdominal vaginal vault pexy with mesh has shown highest long term success rates. Robotic assisted laparoscopy offers quick recovery in otherwise healthy patients who suffer from pelvic organ prolapse [16]. Robotic vaginal vault pexy was first described in 2004. This kind of surgical technique in vaginal vault pexy has grown exponentially. The benefits of robotic assistance are reduced blood loss and short hospital stay. Also sexual function and improvement of pelvic support tend to be better under robotic manipulation. The main advantages cited in the robotic approach are increased visualization and dexterity especially during the dissection of the pre-sacral space, positioning of the mesh and intracorporeal suturing [15]. Among the complications of robotic assisted approach of vaginal vault pexy, vaginal extrusion of the mesh and recurrence of prolapse were reported. Similar to operative time and blood loss, complication rates may vary based on factors such as surgeon experience, patient BMI, and previous pelvic surgery.

The use of robotic assisted surgery has been shown to have significant value in the field of gynecology and urology and this is now being translated to female pelvic medicine and reconstructive surgery, for example it concerns to the treatment of post hysterectomy vaginal vault prolapse with vaginal vault pexy [4].

CONCLUSION

Pelvic organs prolapse surgery is very common among the women. Robotic vaginal vault pexy offers quick recovery in otherwise healthy patients who suffer from pelvic organ prolapse.

The case that has been presented describes small bowel strangulation caused by adhered appendix to non-coated mesh a week after robotic vaginal vault pexy (sacrocolpopexy).

Mesh implants are probably an important tool in pelvic reconstructive surgery, but an ideal implant has yet to be found.

Use of mesh during robotic assisted surgeries may lead to unique complications for inserted intraabdominal mesh, such as adhesions between some organs, usually a bowel, on one hand and prosthetic graft on the other. So, the complications of this procedure include small bowel obstruction. Retropertitonealization of the mesh is needed to prevent bowel complications. It’s also important to remember to use the appropriate mesh that would lead to reduced adhesion formation, and accordingly, less bowel obstruction.
REFERENCES


