Abdominal pseudocyst

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CLINICAL NARRATIVE

We report clinical details and imaging findings of a case of a giant pseudocyst occurring in the anterior abdominal wall of a 61-year-old female. This was a late complication following the repair of an incisional hernia with mesh. Surgical excision revealed a well-encapsulated pseudocyst with histopathology confirming absence of epithelial cells. We go on to discuss current treatment methods for incisional hernias, as well as prevalence, etiology, and management of pseudocysts complicating hernioplasty.

INTRODUCTION

Incisional hernia repair is a common surgical procedure. Over the past 50 years, the utilization of synthetic mesh has slowly replaced primary suture repair.¹ Mesh implantation allows for coverage of the defect, reinforcement of the abdominal wall, and prevention of recurrence.²

An underreported and rare complication of incisional hernia repair is giant pseudocyst formation, which was first described by Waldrep et al in 1993.³ The authors reported a mature fibrous cyst that formed as a complication of Marlex mesh hernioplasty. Here we report another case of giant pseudocyst formation post-incisional hernia repair with mesh.

CASE DESCRIPTION

A 61-year-old, non-diabetic, obese female presented to the emergency department (ED) with a 4-month history of progressive anterior abdominal pain with minimal distention. There were no other complaints. One year ago, she had undergone an umbilical hernia repair where a polypropylene mesh was implanted using a one-lay technique at another institution.

A computed tomography (CT) scan of the abdomen and pelvis noted a thick, irregular, mass-like lesion measuring at 8.1×4.0×7.1 cm (mediolateral × anteroposterior × superoinferior) in the anterior abdominal wall at the previous hernia repair site. Within the mass-like lesion, a fluid- and air-filled pocket was noted. There was no evidence to suggest extension into the peritoneal cavity.

The patient was taken to the operating room to have her anterior abdominal wall surgically explored. Surgical exploration of her anterior abdominal wall revealed a chronically-affected abdominal wall mesh appearing partially degraded around the edges. The mesh measured at about 12×6 cm and was removed with no evidence of fistula to hollow viscera.

Eight months after the procedure, a follow-up CT scan of the abdomen and pelvis denoted the presence of a 9.7×14.0-cm ventral incisional hernia located midline to the incisional scar from the previous hernia repair site. In addition, a 5.5×4.5-cm hernia

located superior to the incisional scar and extending through the aponeurosis above the level of the previous incision scar was identified. The patient was subsequently taken to the operating room for repair of both incisional hernias with Ultrapro mesh placement and transverse abdominis release.

Three months postoperatively the patient underwent a laparoscopic cholecystectomy due to symptomatic biliary colic pain. During evaluation, ultrasound findings incidentally noted a 13×6-cm (mediolateral × superoinferior) seroma or hematoma. Monitoring of the fluid collection was advised.

Unfortunately, the patient returned to the ED 4 months later with a history of progressive abdominal pain and palpable painful abdominal distention. She denied any associated symptoms.

Figure 1. Large fluid collection within ventral right lower abdominal /pelvic wall measuring at least 16 cm.

Subsequent ultrasound and CT scans of the abdomen showed the presence of an enlarged subcutaneous seroma. Comparison to the previous scan showed an increase in fluid collection to 16.0×7.7 cm (mediolateral × superoinferior), shown in Figure 1, with well-defined rim enhancement. A subcutaneous pseudocyst was palpated in the mid-portion of the abdomen. The patient was taken to the operating room and, under anesthesia, a large, well-encapsulated pseudocyst measuring 15×7 cm (mediolateral × superoinferior) was removed with no entrance into the peritoneal cavity noted. The intact cystic mass can be seen in Figure 2. The opened and drained cystic mass can be seen in Figure 3. Sections of the cyst showed a multiloculated structure lacking any epithelial tissue.

Figure 2. Intact large cystic mass measuring 16 x 12 x 6 cm with a thick red-yellow capsule.

Figure 3. Opened and drained cystic mass. The inner surface of the cyst was smooth with some attached fibrin, blood clots and several vacuoles of fluid.

DISCUSSION

Incisional hernia repair is a common surgical procedure, used to repair herniation of tissues or organs into an incompletely-healed surgical wound. Incisional hernias are common in abdominal incisions due to the prevalence of exploratory surgery. The incidence of incisional hernias following abdominal incisions varies between 2% to 20%.⁴ Repair is performed using either open or laparoscopic approach, with the option of using a mesh to reduce risk of recurrence. Of the 2 procedures, laparoscopic repair has been shown to have lower risk of recurrence compared to open repair (15.5% and 21.1% respectively).⁵ Furthermore, usage of a mesh is associated with a much lower recurrence rate (63% for suture repair; 32% for mesh repair) with no significant difference in the rate of complications.⁶

Common complications of hernioplasty include seromas, surgical site infections, pulmonary insufficiency, abdominal compartment syndrome, deep vein thrombosis, accidental enterotomy, and fistulas.⁷ However, pseudocyst formation is rare. A pseudocyst is defined as a collection of fluid not lined by epithelium; it may be classified as giant if it is greater than 10 cm in diameter. Due to its rarity, the overall incidence, etiology and appropriate management of pseudocysts are still uncertain, largely due to under-reporting. The estimated prevalence of pseudocyst formation in 2 different reviews were 0.45% and 0.88%.^{8,9} Pseudocysts have also been reported to form as a complication of inguinal hernia repair.¹⁰

Pseudocysts generally present as protrusions in the abdominal wall located at the site of former incision. The lesion is generally non-tender and develops over a period of months. Patients may report “heaviness” if the cyst is large. If left untreated, pseudocysts may become infected and rupture, causing sepsis.¹¹ Other symptoms of untreated abdominal pseudocysts include obstruction of the abdominal organs, tamponade, pain, and other various gastrointestinal symptoms.¹² The etiology of pseudocysts remains unknown. Some authors have suggested that they form due to disruption of lymphatic drainage and subsequent inflammatory formation of a capsule around the fluid,¹¹ while others have suggested that they are a result of seroma or hematoma formation.¹³

Treatment options for pseudocysts are currently limited to partial or total surgical excision. Simple drainage has been reported as ineffective, as the fluid tends to either re-accumulate or its viscosity prevents proper aspiration. For pseudocysts complicating incisional hernias, some authors have advocated for subtotal excision in order to allow the mesh to preserve the integrity of abdominal wall structures.¹³ However, in similar cases involving inguinal hernia repair, laparoscopic fenestration has been shown to be a successful and minimally invasive technique to prevent recurrence of pseudocyst formation.¹³ In the case of our patient, total excision was used to remove the pseudocyst, which has been associated with an excellent prognosis.¹⁰

CONCLUSION

We presented a case of giant pseudocyst formation complicating incisional hernia repair with synthetic mesh. Pseudocyst formation is a rare complication of incisional hernia repair, but if left untreated can lead to abdominal pain, infection, and other gastrointestinal symptoms. The pseudocyst was totally excised from our patient. Our case adds to the current literature on pseudocysts in incisional hernia repair in the hopes of bringing awareness to this complication.

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