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Mesh Migration and Vesicocutaneous Fistula Development Following Totally Extra-Peritoneal Hernia Repair

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Abstract

Totally extra-peritoneal inguinal hernia repair is a minimally invasive procedure that is safe and efficacious as open hernia repair. Despite advancements in technology, the presence of mesh inside the abdomen poses a risk for the development of complications during the post-operative period such as mesh migration, mesh infection, and abscess development. Rarely, this abscess can create a fistula tract between different structures such as the urinary bladder and the skin. An 86-year-old male patient with a 10-year history of laparoscopic bilateral totally extra-peritoneal hernia repair with mesh graft presented with symptoms of watery yellow discharge from the left inguinal region. A mesh-related complication was considered. The patient's swelling in the inguinal region was diagnosed as an abscess collection and drainage was performed. The computerized tomography of the abdomen revealed a fistula tract formation between the bladder and the skin. The totally extra-peritoneal hernia repair allows the surgical space to be limited to above the peritoneum and avoids entrance inside the abdomen. Although this approach was a breakthrough in the field of hernia surgery, it could lead to a few complications such as seroma development and mesh migration. Patients with complicated mesh infection may result in an abscess development, which can rarely create a fistula tract between different structures such as the urinary bladder and the skin. Any patient presenting with urinary tract infection symptoms with a history of a synthetic mesh should prompt clinicians to consider mesh-related complications in the differential diagnosis.

Keywords: Mesh infection, vesicocutaneous fistula, totally extra-peritoneal, hernia repair, laparoscopic surgery

Introduction

Laparoscopic totally extra-peritoneal (TEP) inguinal hernia repair is a treatment modality that allows the surgical space to be confined to the region above the peritoneum and avoids entrance inside the abdomen. This minimally invasive technique is preferred over open surgery as it is associated with decreased post-operative pain, decreased length of stay, and early discharge from the hospital.[1,2] This is significant since nearly 11% of patients with hernia repair surgery develop a reoccurrence of hernia and 10%-12% suffer from chronic pain after surgery.[3] Several complications develop following their use such as mesh infection, abdominal pain, recurrence of the hernia, and intestinal adhesions.[4] Very rarely, mesh migration can develop and may lead to unusual complications such as vesicocutaneous fistula development.[5,6] In this report, we present a patient with a history of mesh use that has become infected over time and developed into an abscess which has eventually resulted in a fistula tract between the urinary bladder and the skin.

Case Presentation

An 86-year-old male patient presented to our clinic with symptoms of odorless, watery yellow discharge from the left inguinal region. Five months before admission, the patient had symptoms of swelling in the left inguinal region that was diagnosed as an abscess collection on abdominal ultrasound, and abscess drainage was performed. The history of the patient included laparoscopic bilateral TEP hernia repair with a mesh graft 10 years ago. The physical examination was normal. The laboratory evaluation included a white blood cell count of 13 600 µL (normal range 4300–10 300 µL), C-reactive protein of 33.8 mg/L (normally less than 5 mg/L). Cystoscopic examination of the patient revealed an opening of the fistula tract on the left superior region of the trigone. The abdominal computerized tomography scans showed a liquid collection of 93 × 26 mm in size that was found to be continuous with the anterior wall of the urinary bladder (Figure 1). A fistula tract was also found between this collection and the skin region on the left groin area (Figure 2). The patient was operated on due to a vesicocutaneous fistula and the infected mesh was removed along with used tackers (Figure 3). The fistula tract was excised along with fibrotic tissues. The pathologic specimen was consistent with a fistula tract with chronic inflammation and granulation tissue. The participant has consented to the submission of the case report to the journal.

Discussion

Inguinal hernia repair is one of the most common surgical procedures performed in general surgery. This surgical technique involves the use of a synthetic mesh material that is placed inside the abdomen through an open or a laparoscopic approach. One type of laparoscopic approach is the TEP repair where the repair takes place without entering into the peritoneum.

Though the laparoscopic hernia repair was a breakthrough in hernia history, it still has some complications. In a study performed by Krishna et al,[7] the most common complication after

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Figure 1. Delayed intravenous contrast-enhanced axial computerized tomography shows a contrast leak from the bladder toward the soft tissue resulting in a liquid collection, suggesting a fistula tract formation.

TEP operation was the development of seroma. McCormack et al[8] have shown less pain and numbness, quicker return to daily activities, a longer operation time, and a higher risk of complications such as bladder and vascular injuries during the laparoscopic TEP approach. The migration of the mesh may occur and can be regarded as a complication. This can be due to a mesh fixation problem although it is more commonly seen in the transabdominal preperitoneal approach when compared to TEP.[6]

Although infection, pain, hernia recurrence, or adhesions seem to occur commonly following mesh use, mesh migration is an unusual complication. The mesh used during laparoscopic surgery has been shown to migrate toward the bowel and bladder in only a few cases in the literature.[9] Common reasons for mesh migration were noted as nonfixation and preperitoneal placement.[10,11,12] Other possible reasons include the movement of the mesh through anatomical structures due to foreign body reaction or that the use of tackers themselves may cause injury to the nearby anatomical structures.[9]

In our study, the mesh resulted in migration and infection resulted in an abscess formation which, over time, has resulted in a fistulization between the bladder and the skin. Although this can be regarded as a rare complication, clinicians should be suspicious of a patient with urinary tract symptoms with a history of laparoscopic TEP hernia repair.

Figure 2. The fistula formation in the left lower groin area.

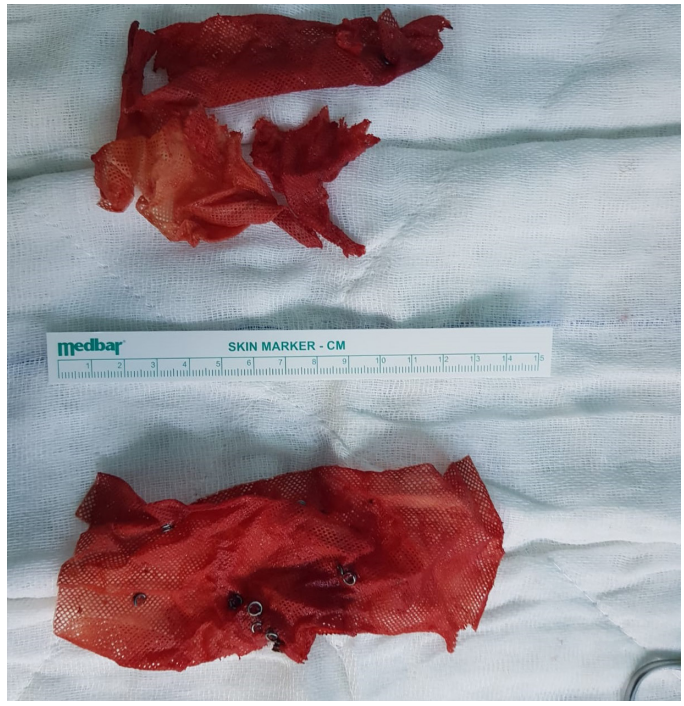

Figure 3. The infected mesh material is shown together with used tackers after removal from the patient.

Conclusion

Minimally invasive procedures such as TEP hernia repair are being increasingly performed worldwide. Despite advances in such surgical technology, complications still occur. Mesh can migrate to adjacent anatomical spaces and lead to abscess formation, which may result in a fistula formation. The presence of symptoms of urinary tract infection following a complicated mesh hernia repair must raise suspicion towards mesh migration. Such patients should undergo further imaging and this specific complication should be considered in the differential diagnosis in a minority of the patients.

Informed Consent: Written informed consent was obtained from the patient who agreed to take part in the study.

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