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Case Report

Colocutaneous fistula with recurrent urinary tract infection – a delayed complication following laparoscopic transabdominal pre-peritoneal repair

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ABSTRACT

There has been an increase in incidence of delayed complications following transabdominal pre-peritoneal repair (TAPP) for inguinal hernia in the last two decades. Mesh related visceral complications (MRVCs) are difficult to diagnose and treat. Colocutaneous and colovesical fistualas are rare yet devastating delayed complications caused by mesh migration. We present the case of a 40-year-old man who presented to us after numerous hospital visits with urinary symptoms and a recurring fistula on the left abdominal wall at a previously operated site. Computed tomography revealed an ill-defined collection in left loin region abutting the sigmoid colon and urinary bladder. Owing to acute angulation, the colonoscope could not be passed beyond 30 cm. The patient was managed with cystoscopy, laparotomy, mesh explantation, and sigmoid colon resection.

Keywords: Complications, Mesh migration, Urinary bladder, Colo-cutaneous fistula

INTRODUCTION

The advent of tension free repair using mesh has revolutionized the field of hernia surgery. Mesh hernioplasty is considered as the standard of care for the management of inguinal hernia. The migration or erosion of the mesh may lead to the development of an enterocutaneous or enterovesical fistulas.[1] Mesh migration is more common in repairs performed without mesh fixation techniques such as the plug or patch technique.[2] The literature on Mesh-related visceral consequences (MRVCs) is sparse. Reports of migration of the inguinal mesh into the bladder, colon, and scrotum exist, of which erosion into the bladder is most common.[3-5] The erosion of the mesh into the colon may lead to the formation of persistent colocutaneous fistula.[4,6] We present a complex case of mesh erosion into many viscera from an Indian tertiary health care center.

CASE REPORT

A 40-year-old male presented to the out-patient department with complaints of pus discharge from the left groin for the past 3 years. He underwent laparoscopic TAPP in 2014 and was asymptomatic for 3 years. In 2017, he began to experience dysuria, discomfort, and swelling in the left loin region, with episodic fever. Magnetic resonance imaging taken during the period revealed the presence of abdominopelvic collection involving the left iliopsoas muscle with mild thickening of the wall of urinary bladder. In 2018, the patient underwent laparoscopic adhesiolysis, retroperitoneal exploration and drainage of abscess. He was additionally placed on anti-

tuberculous treatment (ATT) on the basis of doubtful tuberculosis of the spine presenting as retroperitoneal/ abdominal wall abscess which is common in developing countries. He later presented to another hospital with pain, swelling and discharge from the previous drain site. A bulky iliopsoas with fluid collection extending through the left paracolic gutter and inferiorly to the left lateral wall of the bladder, with questionable connectivity with the sigmoid colon and bladder was observed on evaluation and cross section imaging. The patient underwent drainage and debridement of loin region. Culture sensitivity and Gene Xpert results were negative for tuberculosis, hence ATT was discontinued. During the same period, the patient had multiple urinary tract infections, as well as one episode of hematuria for which he consulted a urologist, and was advised antibiotic therapy. Figure 2a, demonstrates the presence of a sinus.

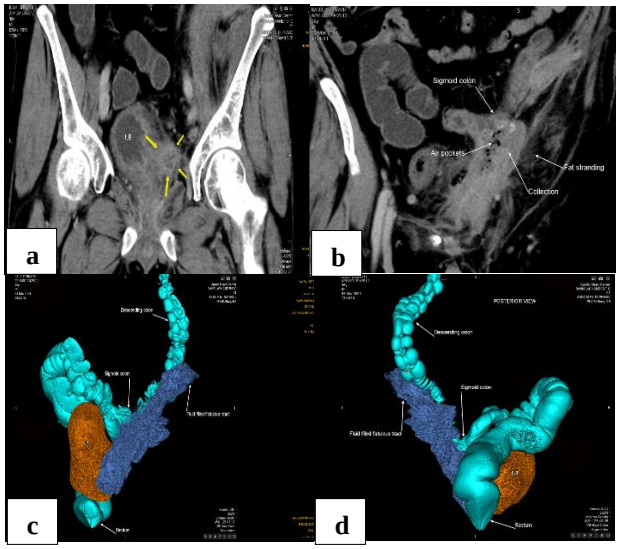

Figure 1: CT images including 3D reconstruction showing collection, which is abutting sigmoid colon and urinary bladder (a) yellow arrow showing collection abutting the urinary bladder; (b) fluid filled collection on the lateral aspect of sigmoid colon; (c) and (d) three-dimension reconstruction images of the collection and its relation to colon and bladder.

A thorough evaluation was performed at our center. Contrast enhanced CT showed an ill-defined collection in left loin region abutting the sigmoid colon and bladder (Figure 1a-d). Colonoscopy revealed no obvious fistulous openings, but as a result of acute angulation, the scope could not be advanced beyond 30 cm. The decision to perform cystoscopy and laparotomy was arrived at by the multidisciplinary team. Cystoscopy demonstrated an edematous mucosa of the urinary bladder with features of chronic inflammation but no evident fistulous opening. On surgical exploration we found a portion of the mesh was protruding from the left retropubic space and eroding into the sigmoid colon causing contained perforation (Figure 1b), while another portion was lying in the retropubic space (Figure 1c). Except for the collection abutting the bladder, the mesh was not eroding the bladder wall. Explantation of the mesh was performed along with segmental resection of the affected sigmoid colon (Figure 1d). Primary stapled anastomosis was performed. Postoperative course was uneventful, except for a minor surgical site infection. The patient was discharged on post-operative day 7.

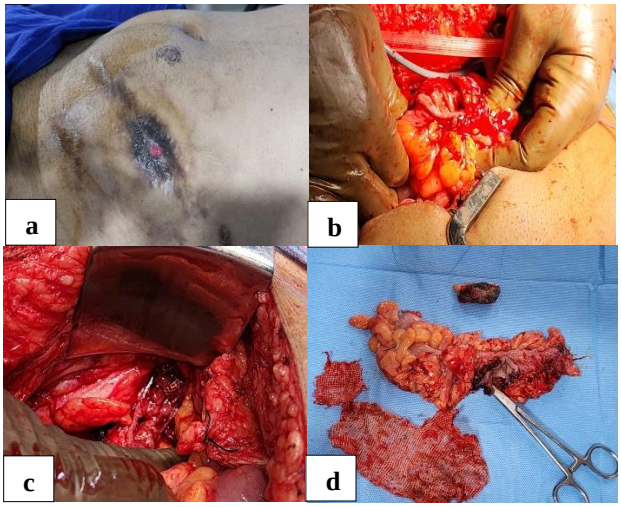

Figure 2: Picture showing fistula in left lower quadrant. And intraoperative pictures (a) sinus seen in the left lower quadrant of abdomen (black arrow); (b) sigmoid colon being adherent at the region of sinus (black arrow); (c) mesh in the abscess cavity which was eroding into sigmoid colon (yellow arrow); and (d) resected sigmoid colon with explanted mesh.

DISCUSSION

Chronic pain and surgical site infection are well-known complications associated with prosthetic mesh placements. Serious complications such as mesh migration, erosion, and perforation of adjacent organs are uncommon. Patients may present with such symptoms at different time intervals following inguinal hernia repair. Factors that contributed to increased risk of mesh migration include “plug-in” repair, use of small onlay patches, inherent characteristics of the mesh including its shrinkage and increased tensile forces.[7] The exact incidence of mesh erosion into adjacent visceral organs is unclear because only few case reports are available on this topic. However, such instances have tripled in last few years.[5] Although mesh-induced foreign body reaction along with characteristics such as pore size, material structure, and fiber type contribute to mesh-related complications, direct contact with the structure is considered the basis for MRVCs.[5]

When compared to open or totally extraperitoneal repair, TAPP repair is associated with a different set of challenges. Inadequate closure of the peritoneum may expose the mesh to intraperitoneal organs, thereby increasing the risk of erosion and fistula formation. TAPP is linked with a higher incidence of mesh migration-related complications than TEP.[8] According to the available evidence, urinary bladder is the most commonly affected

organ. Colonic erosion caused by mesh migration typically manifests as colocutaneous fistula, colonic mass, or acute abdomen with fecal peritonitis.[9-11] Our patient developed delayed complications 3 years after primary TAPP repair.

The majority of previously reported cases were diagnosed via a laparotomy. Preoperative CECT has improved diagnosis of MRVCs and has great significance with regard to management. Surgical management entails complete removal of the mesh. Depending on the level of involvement, therapeutic options for bladder involvement include cystoscopy, cystotomy, and partial cystectomy. Management of the bowel depends on the site, extent of involvement, and the hemodynamic status of the patient. Therapeutic options are resection of involved bowel, suture repair, hemicolectomy, and anterior resection. The extent of bowel resection we performed was based on clinical, and imaging findings. The patient was initially managed with cystoscopy. We had planned for preoperative left ureteric stenting since we expected the surgery to be challenging and there would be a substantial risk of ureteric damage. However, stenting was not possible because of extensive edema of the bladder mucosa caused by inflammation. Cystoscopy did not reveal any obvious fistulous communication. Hence, we went ahead with laparotomy and explanatation of the mesh with sigmoid colectomy. Anastomosis was performed in a side-to-side manner with a linear stapler after mobilizing the left colon up to the splenic flexure. Prevention of MRVCs is an emerging topic, with numerous studies published on mesh-related complications. Macroporous, monofilament, or semi-absorbable materials are preferred over heavy polypropylene or microporous meshe.[5] Moorman and Price et al demonstrated the significance of mesh fixing in minimizing MRVCs.[12] D'Amore et al emphasized procedure-related changes such as avoiding sac excision, identifying and repairing perforations in the peritoneal sac, using preshaped devices, and mesh selection to reduce MRVCs.[13] Complete closure of well-vascularized peritoneal flaps (TAPP), repair of peritoneal gaps (TEP), and use of fibrin sealants for mesh fixations may help reduce MRVCs.

CONCLUSION

Mesh erosion into the sigmoid colon, and the wall of urinary bladder, following TAPP is extremely rare. Fistulas that are caused by implanted prostheses lead to deep infections that are difficult to manage. Total mesh removal is often necessary. However, several procedures may be required to achieve this goal. The surgeon should be aware of such complication, when patient presents with symptoms such as pain and swelling in loin or groin, urinary symptoms and fever with the history of laparoscopic inguinal hernia mesh repair.

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