



Endourology

Laparoscopic Partial Cystectomy With Excision of Mesh Migration Into the Bladder Following Repair of Inguinal Hernia



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ARTICLE INFO

Article history:

Received 22 June 2016

Accepted 30 June 2016

Keywords:

Inguinal hernia

Mesh migration

Bladder

Laparoscopic cystectomy

ABSTRACT

Migration of hernia mesh into the bladder is a rare complication of inguinal hernioplasty. We present the case of an 85-year-old man who complained of hematuria and fever some 20 years after right hernioplasty. Cystoscopy and computed tomography revealed mesh migration into the right anterior wall of the bladder. Laparoscopic partial cystectomy with excision of the migrated mesh was performed successfully. To our knowledge, this is the first case of mesh migration into the bladder treated by laparoscopic partial cystectomy.

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Introduction

The repair of inguinal hernia with synthetic mesh has become widespread because of the consequent reduction in postoperative recurrence and pain. However, complications do exist, including local infection, hematoma, seroma, ileus, and bowel or bladder injury resulting from inguinal hernioplasty. Although mesh migration or erosion is also one of the well-established late complications of hernia mesh repair, mesh migration into the bladder is very rare. Here we report a case of migration of mesh into the bladder, which was treated by laparoscopic partial cystectomy.

Case presentation

An 85-year-old man who presented with hematuria and fever was first admitted to another hospital. He had undergone a right hernioplasty in his 60s. Physical examination revealed a solid mass in the right hypogastrium, urine tests showed hematuria and pyuria, and a blood test revealed a high inflammatory response. Ultrasonography identified a 30 mm high echogenic mass

in the anterior wall of the bladder. Contrast-enhanced computed tomography (CT) showed a thick and adhered stone at the anterior bladder wall (Fig. 1). He was diagnosed with bladder stone and urinary tract infection, and was treated with antibiotics. After admission to our center, cystoscopy demonstrated migrated mesh attached to the surface of the right anterior wall of the bladder (Fig. 2). After further treatment with antibiotics, laparoscopic partial cystectomy was carried out. The first 12 mm trocar was placed below and 3 cm medial to the umbilicus by open laparotomy. Since the adhesion on the right hypogastrium was very tight, 12 mm and 5 mm trocars were placed on the left hypogastrium (Fig. 3A). Bladder displacement was detected by air insufflation of the bladder via a urethral catheter (Fig. 3B). Disengaging the surrounding bladder wall revealed mesh on the right anterior wall. The bladder wall was incised around the mesh and the mesh excised (Fig. 3C). The bladder wall was closed with a 3/0 self-retaining barbed suture (V-Loc) (Fig. 3D). The patient resumed eating on the first day after surgery, and cystography performed 6 days later showed no leakage. He had an uneventful recovery and was discharged on postoperative day 11. Histological examination revealed chronic granulomatous inflammation and no malignancy.

Discussion

The number of mesh repairs for inguinal hernia has increased in Japan since the 1990s.¹ For reasons of reduced pain

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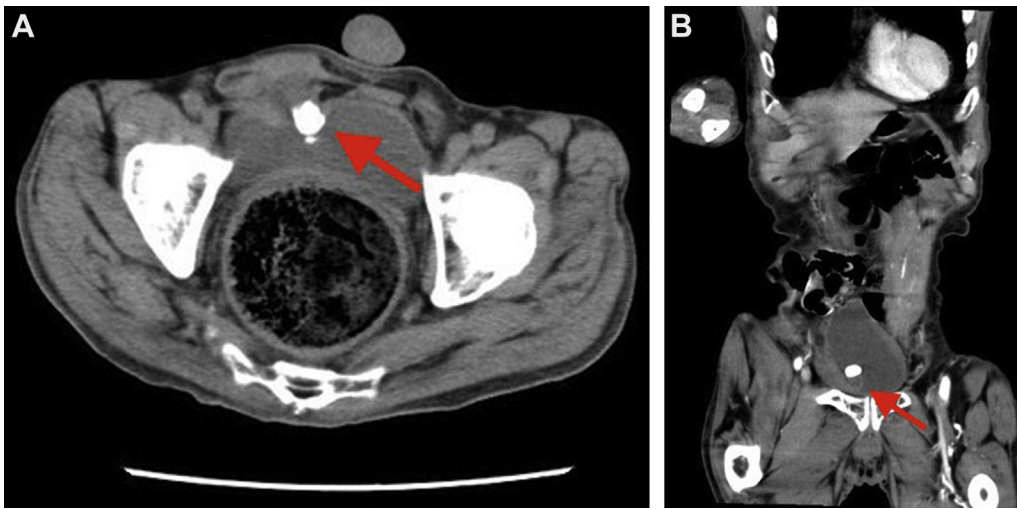


Figure 1. (A) axial and (B) coronal section of CT. Contrast-enhanced CT showing a thick stone adhered to the anterior bladder wall (arrow).

and postoperative recurrence, mesh repair has become the most common type of surgical repair of inguinal hernia. The Japanese national survey revealed that the percentage of mesh repairs for inguinal hernioplasty reached beyond 90% in 2013.¹ However, complications related to mesh repair still exist. Local infection, hematoma, seroma, ileus, and bowel or bladder injury are common, although mesh migration into the bladder is rare.

Although the etiology of mesh migration is unknown, two different hypotheses have been proposed.² One posits a primary mesh migration induced by either inadequate fixation or external forces, while the other suggests a secondary mesh migration caused by a foreign body reaction, which is slower and with gradual

movement. In our case, since this episode occurred more than 20 years after the initial inguinal hernioplasty, the latter hypothesis appears more appropriate.

The clinical presentation of mesh that migrates into the bladder is similar to that of a foreign body in the bladder, which is often associated with hematuria, urinary frequency, and recurrent urinary tract infection. Cystoscopy and CT are useful for the correct diagnosis of mesh migration. Cystoscopy can reveal its presence, while CT can show intravesical foreign body calcification on the anterior bladder wall. In addition, since the clinical presentation and imaging findings are sometimes similar to those of pelvic malignancy,³ it is important to be aware of this rare complication and correctly distinguish mesh migration from malignancy.

Surgical procedures should be decided according to the stage of migration. If the adhesion is not extensive, transurethral removal of the migrated mesh is a reasonable option²; however, the adhesion is usually very extensive and partial cystectomy will be needed to remove the migrated mesh. Most previous literature has reported laparotomy for surgical removal of migrated mesh.^{3,4} Although Feliu et al reported laparoscopic partial cystectomy for removal of a mesh protrusion after incisional hernia repair,⁵ as yet there are no reports of laparoscopic partial cystectomy to remove migrated mesh after inguinal hernioplasty. In the present case, tight adhesion on the right hypogastrium and displacement of the bladder made a laparoscopic approach difficult. The placement of trocars on the left hypogastrium facilitated maintenance of the surgical field, and air insufflation of the bladder via a urethral catheter was helpful in identifying accurately the location of the bladder. It is important to recognize the uncommon anatomy and confirm the positional relationship between the organs. The laparoscopic approach has many advantages in this case. First, the laparoscopic camera displayed an expanding view and clarified the boundary between the organs. Second, since reduced hemorrhaging, a smaller incision, and less pain accompanied the laparoscopic procedure, the time to recovery and the hospital stay were shorter. While there are many advantages, the success of a laparoscopic approach depends on appropriate patient selection; if the adhesion is severe, open conversion is required.

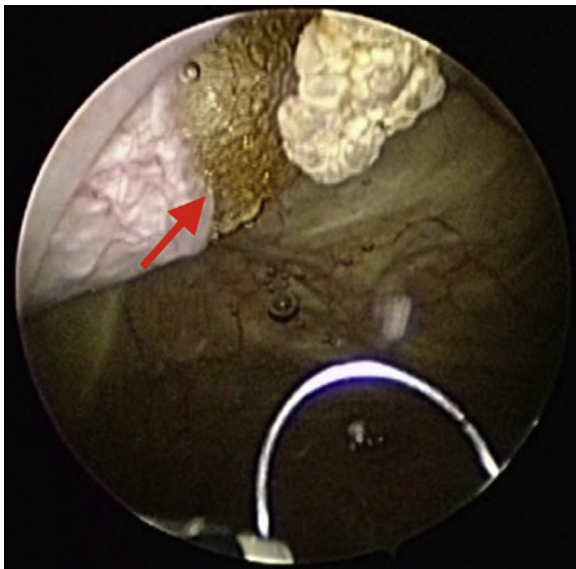


Figure 2. Cystoscopy showing mesh migration (arrow) with calcification on the right anterior bladder wall.

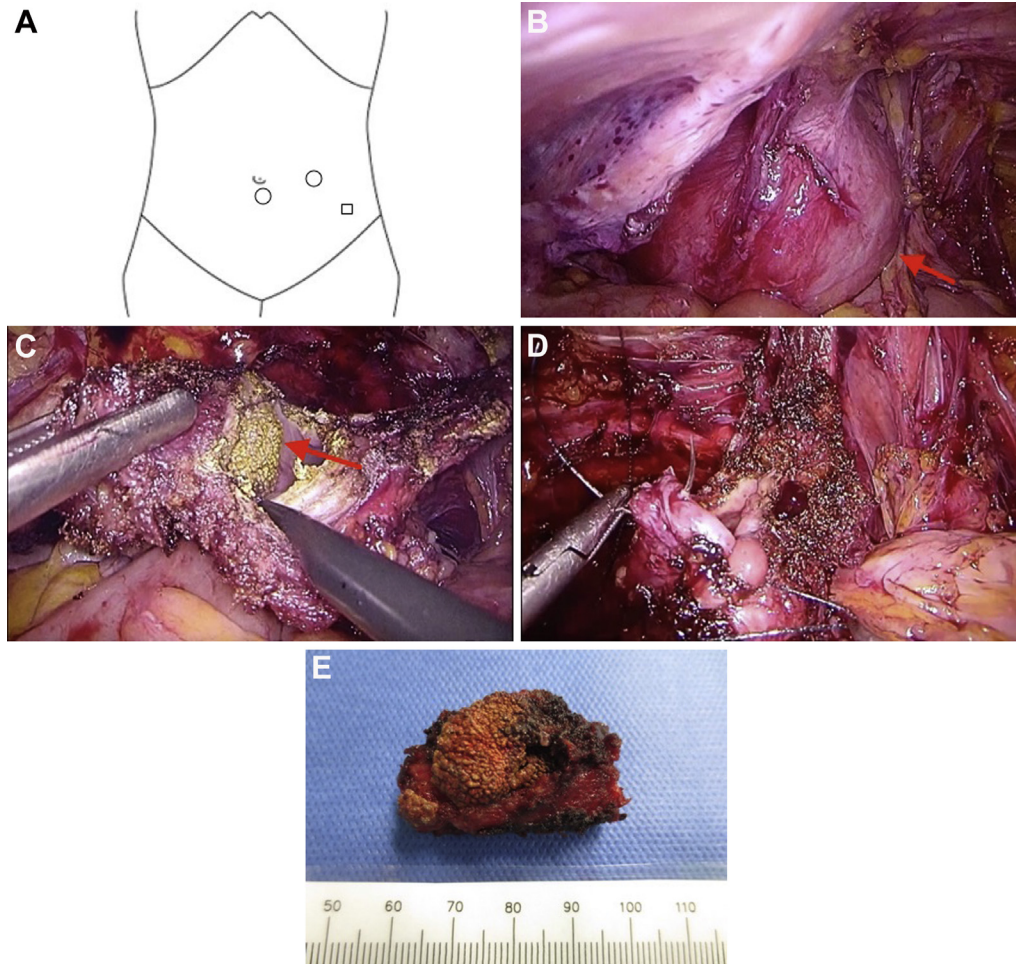


Figure 3. Trocar placement (A), intraoperative findings (B–D), and gross findings (E). (A) Trocar placement: circles, 12 mm; square, 5 mm. (B) The bladder insufflated with air via a urethral catheter. The arrow shows the insufflated bladder. (C) Incision of the bladder wall around the migrated mesh (arrow). (D) Suturing of the opened bladder wall with 3/0 V-Loc. (E) Gross findings showing the migrated mesh with calcification.

Conclusion

Using laparoscopic partial cystectomy, we successfully excised mesh that had migrated into the bladder many years after repair of inguinal hernia. It is important to be aware of this rare complication and to select the appropriate approach depending on the patient's circumstances.

Conflict of interest

None.

Sources of funding

This research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors.

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