Mesh erosion into urinary bladder with calculi formation after inguinal hernioplasty: A rare case report

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1. Introduction

The versical calculus is a relatively common disease which induces urinary tract infection. Most of bladder stones are found in lower urinary tract obstructive diseases, such as prostate hyperplasia. With the extension of life expectancy and increasing incidence of prostate hyperplasia, more and more elderly men have bladder stone. Foreign bodies in the bladder are also one of the important causes of the stones formation. We report a rare case of hernia mesh erosion into the urinary bladder which presented as a bladder calculus and persistent urinary tract infection.

2. Case report

An 83-year-old man was presented with a persistent urinary tract infection. He complained of nocturia 7–8 times a night, dysuria and occasional gross hematuria. He had undergone bilateral inguinal hernioplasty in 2009. At 3 months previously, he had undergone transurethral resection of the prostate (TURP). After admission into our hospital, we conducted a thorough examination for him. Urine tests showed hematuria and pyuria, but urine culture revealed no growth of bacteria or fungus. KUB (Fig. 1A) and ultrasound both disclosed a bladder calculus. It was initially thought that a bladder diverticula with stone was the etiology for infection. Further contrast-enhanced computed tomography demonstrated an adhered 17 × 14 × 10 mm vesical calculus attached to the anterior bladder wall with multiple metallic nails in the pelvis suspicious of tackers used for mesh immobilization (Fig. 1B). Three dimensional computed tomography reconstruction indicated the mesh erosion into the urinary bladder and the stone was closely adhered to mesh (Fig. 2). Cystoscopic evaluation confirmed the existence of a bladder stone but the mesh was not found. Cystoscopy also demonstrated an erythematous lesion around the stone. Biopsies taken from the lesion showed inflammatory reaction, with no malignancy. Combining the symptoms, medical history and examination results, we finally made the diagnosis of mesh erosion and bladder stone formation on a nidus of mesh.

After treatment with antibiotics and malignancy was ruled out, a partial cystectomy and excision of mesh with stone were performed (Fig. 3). We performed a partial cystectomy and only removed the erosion mesh (not the entire one) and stone. The defect in the bladder was then closed and both supra-pubic drainage strip and urethral catheter were inserted. The patient had an uneventful recovery and was discharged from hospital eight days after the operation. At later follow-up the patient is doing well without long-term complication.

3. Discussion

The cause of mesh erosion has not yet been elucidated. There are some theories about this phenomenon. Chowbey1 suggested the sharp edges of the mesh may injure the viscera and induces inflammatory response which cause erosion. Agrawal and Avill2 presented two different mechanisms. The primary mechanical migrations are induced by either inadequate or probably external forces. The secondary migrations are slow and gradual movement induced by foreign body reaction. In our case, since the patient had nine years of medical history, the second mechanisms should play a major role.

For patients with a history of inguinal hernioplasty and
recurrent urinary tract infections, the presence of mesh erosion is a possibility. In addition to medical history and physical examination, laboratory tests can also help with a clear diagnosis. First, urine tests and urine culture can determine whether the urinary tract...
infection or pathogens exist, thus guiding the use of antibiotics. KUB may reveal bladder stones or calcified deposits on mesh. CT urography and cystoscopy are important for definitive diagnosis. CT can clearly show the spatial relationship among bladder, stone and mesh, especially 3D CT reconstruction. Cystoscopy can detect stones or mesh erosion to the urinary bladder with direct vision. Sometimes, however, mesh may not be visualised directly because of the cover of stones. In our case, we also conducted bladder mucosa biopsy to exclude malignancy. Long-term foreign body stimulation may lead to malignant change of the bladder mucosa, so it is necessary to exclude bladder tumor before surgery.5,4

There are three types of surgical procedures for these patients: cystoscopic surgery, laparoscopic surgery and open surgery. Only Agrewal2 extracted the mesh perurethrally on repeat cystoscopy. Funada4 underwent laparoscopic partial cystectomy with removal of the mesh and repair of the bladder wall. Like most cases,1,3,5 open partial cystectomy was performed and the migrated mesh was removed at the same time in our case. However, we only performed partial excision of mesh. In this way, it not only reduced the difficulty of operation and the probability of injury to the intestine, but also reduced the possibility of hernia recurrence. If the adhesion is not serious, it is feasible to remove the mesh perurethrally. However, in our opinion, this approach is risky. In the process, the bladder cracks cannot be addressed which may get worse and lead to urine leak and fistula. Most of the adhesions between the mesh and the bladder wall are extensive, thus it seems more reasonable to remove the eroded mesh by partial cystectomy. Compared with open surgery, laparoscopic surgery has its own advantages, such as expanding vision, less hemorrhaging, faster recovery, shorter postoperative hospital stay and so on. Because of the inguinal hernioplasty, the positional relationship of the organs and anatomy has changed, which makes laparoscopic surgery more difficult. Once the mesh is fixed and the adhesions are severe, laparoscopic surgery may not be able to remove the mesh completely. Therefore, the success of laparoscopic surgery depends on the surgeon’s experience, skills and the right patient selection. Considering the majority of patients with a long postoperative history and extensive adhesions, open surgery is required.

4. Conclusion

Although there are few cases report about mesh erosion into urinary bladder, a high degree of suspicion is necessary when patients with a history of inguinal hernioplasty with recurrent urinary tract symptoms. After a thorough examination and definite diagnosis, early intervention should be performed to reduce the patient’s suffering and block the progress of disease. The modus operandi should be determined according to the patient’s condition.

Conflicts of interest

None.

Appendix A. Supplementary data

Supplementary data related to this article can be found at https://doi.org/10.1016/j.eucr.2018.01.013.

References

1. Chowbey Pradeep K, Bagchi Nabanita, Goel Amit, et al. Mesh migration into the bladder after TEP repair: a rare case report. Surg Laparosc Endosc Percutan Tech. 2006;16(1):52–53.
2. Agrawal A, Avill R. Mesh migration following repair of inguinal hernia: a case report and review of literature. Hernia. 2006;10(1):79–82.
3. Kurukahvecioglu Osman, Ege Bahadir, Yazicioglu Omer, et al. Polytetrafluoroethylene prosthesis migration into the bladder after laparoscopic hernia repair: a case report. Surg Laparosc Endosc Percutan Tech. 2007;17(5):474–476.
4. Funada Satoshi, Kanno Toru, Otsuka Kazuo, et al. Laparoscopic partial cystectomy with excision of mesh migration into the bladder following repair of inguinal hernia. Urol Case Rep. 2016;8:52–54.
5. Kocot A, Gerharz EW, Riedmüller H. Urological complications of laparoscopic inguinal hernia repair: a case series. Hernia. 2011;15(5):583–586.