

A Curious Case of Migrated Mesh into the Urinary Bladder Following Laparoscopic Totally Extra-Peritoneal Inguinal Hernia Repair

Mohamad Safwan A, Shafy Ali Khan, KN Vijayan, Vikraman and Akash S

Department of General Surgery, Kerala Institute of Medical Sciences, Thiruvananthapuram, Kerala, India

Correspondence should be addressed to Mohamad Safwan A, mdsafwanmbbs@gmail.com

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ABSTRACT

Minimal invasive surgery for hernia repair has a variety of complications, a delayed one being mesh erosion into the urinary bladder, which is fortunately very rare. We report a case of a 48-years-old male who underwent total extra-peritoneal mesh repair for bilateral inguinal hernia 6 years ago. Clinical history revealed that he had been investigated extensively and managed as a case of recurrent urinary tract infection for 3 years. He presented to us with complaints of troublesome urinary frequency occurring every 30 minutes. CECT abdomen and pelvis showed a densely calcified conical structure between the dome of the bladder and rectus sheath. On cystoscopy showed probable mesh erosion. At subsequent exploration, the two polypropylene hernia meshes were found to erode into the bladder, Removal of meshes with bladder repair was done. During follow up, his symptoms resolved completely. Persistent and intractable urinary symptoms post laparoscopic inguinal hernia mesh repair should alert the clinician towards such a possibility of mesh erosion into the bladder.

KEYWORDS

Laparoscopic TEP repair; Recurrent urinary tract infection; Mesh erosion/migration; Inguinal hernia

INTRODUCTION

Tension-free hernia repair using prosthetic mesh is the established treatment for groin hernia. Polypropylene or Polytetrafluoroethylene (PTFE) are commonly used prosthesis for laparoscopic hernia repair in which mesh is being placed in the pre-peritoneal space behind the defect covering the myopectineal orifice [1]. The anatomic approach to the preperitoneal space is either by a trans-abdominal pre-peritoneal (TAPP) or by a total extra-peritoneal (TEP) route [1].

Such minimally invasive techniques have a variety of complications, a delayed one being mesh erosion into the urinary bladder, which is very rare and unusual.

Here, we report a case of a 48-years-old diabetic male who underwent a laparoscopic TEP mesh repair for bilateral inguinal hernia 6 years ago. While reviewing the literature, a total of 15 cases of mesh erosion into the urinary bladder have been reported following laparoscopic inguinal hernia repairs in the world since 1994 [2]. The aim of reporting this case is for its rarity and to contribute in part to the better understanding and awareness of this delayed

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complication for its early recognition, management and prevention.

CASE PRESENTATION

A 48-years-old obese gentleman with type 2 diabetes mellitus, who underwent Total extra-peritoneal repair of bilateral inguinal hernia in 2014 at another center.

Three years later, he developed recurrent dysuria, which was evaluated elsewhere and managed as UTI. His urine microscopy and culture, renal function tests, and uroflowmetry did not yield any abnormal findings. Ultrasound abdomen and pelvis showed features of cystitis. Computed Tomography (CT) urogram was suggestive of a probable urachal cyst. Cystoscopy revealed inflamed red velvety appearance near the fundus, and a villous projection from the roof of the bladder. The cystoscopic biopsy was reported as non-specific cystitis, but no malignancy. He had been kept on empirical antitubercular drugs for one year.

One year later, he presented to our institution in a miserable condition, with troublesome frequent micturition occurring every 30 minutes, associated with dribbling and a sense of incomplete voiding. Clinical examinations were unremarkable and there was no hernia recurrence.

On evaluation - Urine routine examination showed plenty of pus cells, but his urine culture showed no bacteriuria. Contrast-enhanced CT abdomen and pelvis showed features of chronic cystitis with incomplete bladder distension and thickened anterior superior vesical wall showing a diverticulation. Densely calcified conical structure /tissue straddling the diverticular ostium measuring 3.6 cm × 4 cm × 2 cm. The thickened part of the vesical wall showing mild enhancement with contrast, but the calcified lesion was non-enhancing. Peri vesicular fat stranding was seen, more at the anterior aspect between

the bladder and right rectus abdominis muscle (Figure 1A & Figure 1B).

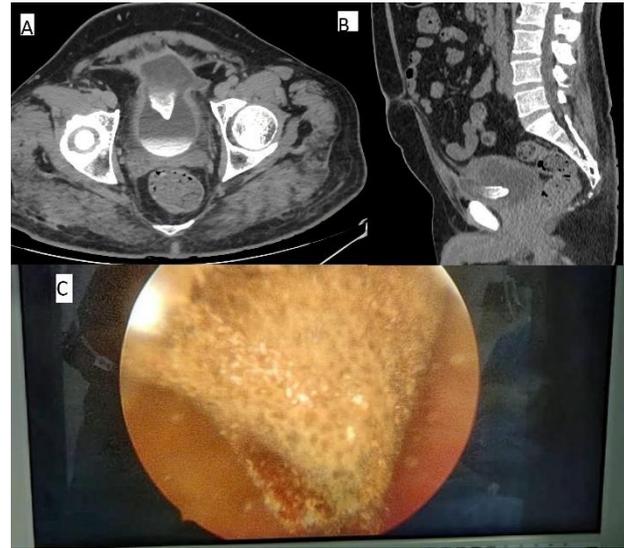


Figure 1: (A) CECT abdomen and pelvis (Cross-sectional view): showing densely calcified conical structure. The thickened part of the vesical wall showing mild enhancement with contrast, but the calcified lesion was non-enhancing. (B) CECT abdomen and pelvis (parasagittal view): showing calcified structure entering into the urinary bladder from pre-peritoneal plane. (C) Cystoscopy image showing a calcified conical 'honey-comb' lesion protruding from the dome of the bladder.

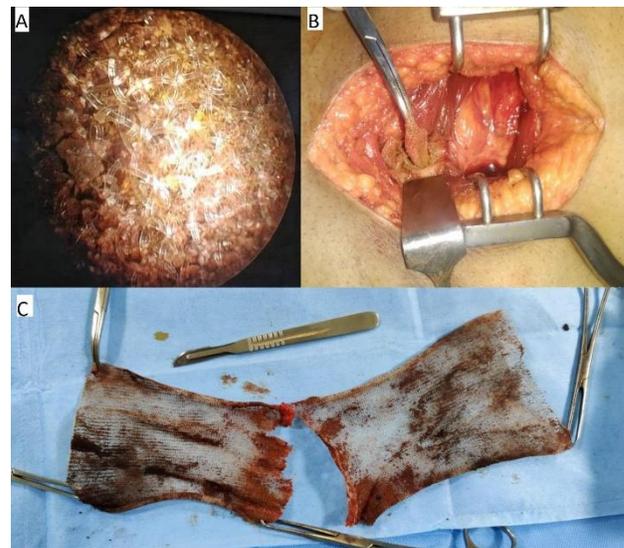


Figure 2: (A) Cystoscopy image showing Net like foreign body probably mesh after breaking the calcified honeycomb lesion using lithoclast. (B) Intra-operative picture showing mesh erosion into the bladder with peri-vesical inflammation and adherence to rectus sheath and pubic symphysis. (C) Showing two extracted polypropylene meshes.

Cystoscopy revealed a calcified conical 'honey-comb' lesion protruding from the dome of the bladder (Figure-

1C) measuring 5 cm × 5 cm in size with grossly thickened and erythematous bladder mucosa. Using lithoclast, the calcified lesion was tried to broke-up which revealed two foreign bodies probably mesh, measuring 5 cm × 5 cm in size (Figure 2A).

After malignancy was ruled out by biopsy and frozen section, the abdomen was explored via a midline vertical infra-umbilical incision. Two 10 cm × 15 cm sized polypropylene meshes which had been implanted 6 years ago for laparoscopic hernia repair, were found to erode into the bladder, with peri-vesical inflammation and adherence to rectus sheath and pubic symphysis (Figure 2B). Removal of both meshes (Figure 2C) and excision of fibrotic tissue with bladder repair in two layers was done. The bladder was drained with a supra-pubic and per-urethral catheter. Histopathology of the specimen showed degenerated muscle tissue with necrosis and suppuration due to mesh erosion. At later follow-up, the catheters were removed and his urinary symptoms had resolved with no signs of inguinal hernia.

DISCUSSION

Although minimal access hernia surgeries are increasingly popular for its reduced post-operative pain and fast recovery, abdominal visceral and vascular injuries are more common in laparoscopic techniques [3]. One peculiar complication is mesh migration and erosion into the urinary bladder which is seldom reported in the literature. TAPP repair was the most reported procedure. In our case mesh migration has occurred following a TEP repair [2].

The interval to laparoscopic hernia repair and presentation ranged from 3 months to 16 years. And the majority being over 5 years [2]. Mesh eroded bladder manifest as recurrent UTI, frank haematuria, bladder stone, vesico-cutaneous fistula, sepsis, groin pain or abdominal pain [2]. Our patient manifested with Recurrent UTI, Pyuria and intractable urinary frequency.

Mechanism of mesh migration or erosion into the urinary bladder may be either due to primary or secondary migration [2].

Primary mechanical migration occurs into neighboring tissue spaces along paths of least resistance due to inadequate mesh fixation or external displacing forces [4]. Secondary migration occurs due to chronic foreign body induced reaction leading to erosion via the trans- anatomic planes. Foreign body reactions are more reported with polypropylene meshes [2]. In our case, we suspect mesh erosion probably due to chronic foreign body reaction which was evident intra-operatively.

The diagnosis mainly depends on the clinician's suspicion from any urinary tract symptoms after a laparoscopic inguinal hernia repair. Cystoscopy and CT urogram help in clinching the diagnosis of bladder involvement [2].

Treatment aims at extra-peritoneal mesh extraction with bladder edge debridement and repair in two layers with the placement of the supra-pubic catheter and per-urethral catheterization [5].

Prevention of primary mesh migration by meticulous pre-peritoneal plane creation, prevention of inadvertent visceral injury, proper mesh placement, tailoring and fixation using fibrin glue, adequate closure of the peritoneal window to reduce adhesion formation to adjacent viscera, avoid strenuous bending and hip flexion in the immediate post-op period [2,6]. Secondary mesh migration may be prevented by using composite mesh and choosing an appropriately sized mesh [2,6].

CONCLUSION

1. A strong clinical suspicion should arise from patients with recurrent urinary tract infections, pyuria, intractable urinary frequency following laparoscopic inguinal hernia repair to reduce morbidity.

2. Cystoscopy evaluation under anaesthesia should be done in such cases, even if other investigations are normal.
3. Preventive measures against mesh migration or erosion should be undertaken while operating.
4. The patient should be educated about long-term prosthetic mesh-related complications and need for the early review if any.

REFERENCES

1. Simons MP, Aufenacker T, Bay-Nielsen M, et al. (2009) European Hernia Society guidelines on the treatment of inguinal hernia in adult patients. *Hernia: The Journal of Hernias and Abdominal Wall Surgery* 13(4): 343-403.
2. Li J, Cheng T (2019) Mesh erosion into urinary bladder, rare condition but important to know. *Hernia: The Journal of Hernias and Abdominal Wall Surgery* 23(4): 709-716.
3. McCormack K, Scott NW, Go PM, et al. (2003) Laparoscopic techniques versus open techniques for inguinal hernia repair. *Cochrane Database of Systematic Reviews* 1: CD001785.
4. Agrawal A, Avill R (2006) Mesh migration following repair of inguinal hernia: A case report and review of literature. *Hernia: The Journal of Hernias and Abdominal Wall Surgery* 10(1): 79-82.
5. Sharma R, Fadaee N, Zarrinkhoo E, et al. (2018) Why we remove mesh. *Hernia: The Journal of Hernias and Abdominal Wall Surgery* 22(6): 953-959.
6. Goswami R, Babor M, Ojo A (2007) Mesh erosion into caecum following laparoscopic repair of inguinal hernia (TAPP): A case report and literature review. *Journal of Laparoendoscopic & Advanced Surgical Techniques* 17(5): 669-672.