CASE REPORT
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Complex Urological Reconstruction in a Case of Bladder Mesh Erosion Following Inguinal Hernioplasty with Genitourinary Tuberculosis and Small Capacity Bladder

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Abstract

Mesh migration into the urinary bladder is an uncommon complication after inguinal hernia repair. Studies have shown that mesh erosion commonly affects the urinary bladder. This report presents a 49-year-old patient with mesh erosion into the urinary bladder following an inguinal hernioplasty, alongside genitourinary tuberculosis (GUTB) and a small bladder capacity. The successful outcome of complex reconstruction highlights the importance of a tailored, multidisciplinary approach in managing rare complications like bladder mesh erosion. This case is unique due to the coexistence of GUTB and mesh erosion, which has been unreported in literature.

Keywords: Bladder mesh erosion, genitourinary tuberculosis, mesh migration

Introduction

Mesh erosion into the urinary bladder is a rare but serious complication of hernia repair surgeries, typically occurring several years later. While prosthetic mesh has reduced recurrence rates, its increased use has led to complications like mesh migration and erosion into adjacent organs (1). Symptoms include recurrent urinary tract infections, hematuria, and lower urinary tract issues, sometimes mimicking malignancy (2). In severe cases, it may cause fistula formation and bladder stones. This case report describes a patient with genitourinary tuberculosis (GUTB) and small bladder capacity, who experienced mesh erosion years after inguinal hernioplasty, highlighting delayed presentation and surgical challenges.

Case Presentation

A 49-year-old patient presented with complaints of lower urinary tract symptoms (LUTS), including increased daytime frequency, nocturia, urgency, straining, poor urinary flow, and a persistent sense of incomplete voiding. He reported experiencing multiple episodes of gross painful hematuria over the past two years, each episode resolving within 2-3 days.

The patient's medical history includes a laparoscopic right inguinal hernioplasty performed in 2013, though relevant records were not available. There was no history suggestive of pulmonary tuberculosis or contact with infected individuals. He was further evaluated for GUTB, after urine samples tested positive for acid-fast bacilli. He completed a nine-month course of antitubercular therapy in 2021.

Further diagnostic workup included an ultrasound, which showed normal bilateral upper tracts, a partially distended urinary bladder, and an echogenic focus measuring approximately 3 cm. Computed tomography urography confirmed normal bilateral upper tracts and revealed a contracted bladder with fibrotic wall thickening measuring 8.4 mm. A dystrophic bladder calculus measuring 3.7 x 2.2 cm was noted within the bladder lumen (Figure 1A).

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A retrograde urethrogram indicated subtle irregularities in the penile and bulbar urethra, while a micturating urethrogram could not be properly performed due to the patient's inability to hold urine during the filling phase, attributed to a reduced bladder capacity (Figure 1B).

The patient was scheduled for cystoscopy and subsequent intervention. Intraoperative findings revealed a normal external urethral meatus, an unhealthy anterior urethra, and a healthy posterior urethra. The urinary bladder mucosa appeared inflamed; mesh erosion with encrustations was observed on the anterior bladder wall. Bladder capacity was estimated at approximately 80 mL. The procedure concluded with a Johansson stage I urethroplasty.

The patient was further planned for laparoscopic mesh removal with Augmentation Ileocystoplasty and bilateral ureteric reimplantation after 3 months. Intraoperatively, the mesh was found eroding through the anterior bladder wall, into the bladder lumen. Mesh was dissected and removed (Figure 2). The procedure required conversion to open surgery due to dense adhesions surrounding adjacent structures. An infraumbilical incision was made, and the fibrotic bladder wall was excised and augmented using 20 cm of ileum. Bilateral Lich-Gregoir ureteric reimplantation was subsequently performed.

Discussion

Mesh erosion into the urinary bladder is an infrequent but severe complication following hernia repair, most commonly associated with laparoscopic procedures such as transabdominal preperitoneal (TAPP) and totally extraperitoneal (TEP), repairs (3). In a review of published reports on mesh erosion into the urinary bladder, 21 cases were identified. Of these, 11 cases occurred after laparoscopic procedures (either TEP or TAPP), while in four cases, the specific laparoscopic method was not specified. Additionally, only one documented case was associated with the Liechtenstein repair technique (4). The mechanisms behind this phenomenon are still debated, but are generally categorized into two pathways: mechanical migration and erosion due to chronic inflammation. Mechanical migration occurs when the mesh is inadequately fixed during surgery or experiences displacement due to external forces. Erosion, on the other hand, is a slower, more insidious process where chronic inflammation from the body's reaction to the foreign material gradually wears away tissue, leading to mesh penetration into the bladder (4).

The latency period for the manifestation of mesh erosion can vary significantly, from a few months to over 20 years after the initial surgery (3). The patient in this case presented with symptoms four years after the original hernia repair, aligning with literature that suggests long-term inflammation or low-grade infection could precipitate such complications. In cases where recurrent urinary tract infections are accompanied by symptoms like dysuria or hematuria, mesh erosion should be a differential diagnosis, especially in patients with a history of hernia repair.

Management of mesh erosion into the bladder typically involves surgical intervention. Minimally invasive techniques such as laparoscopy have emerged, offering the advantages of reduced

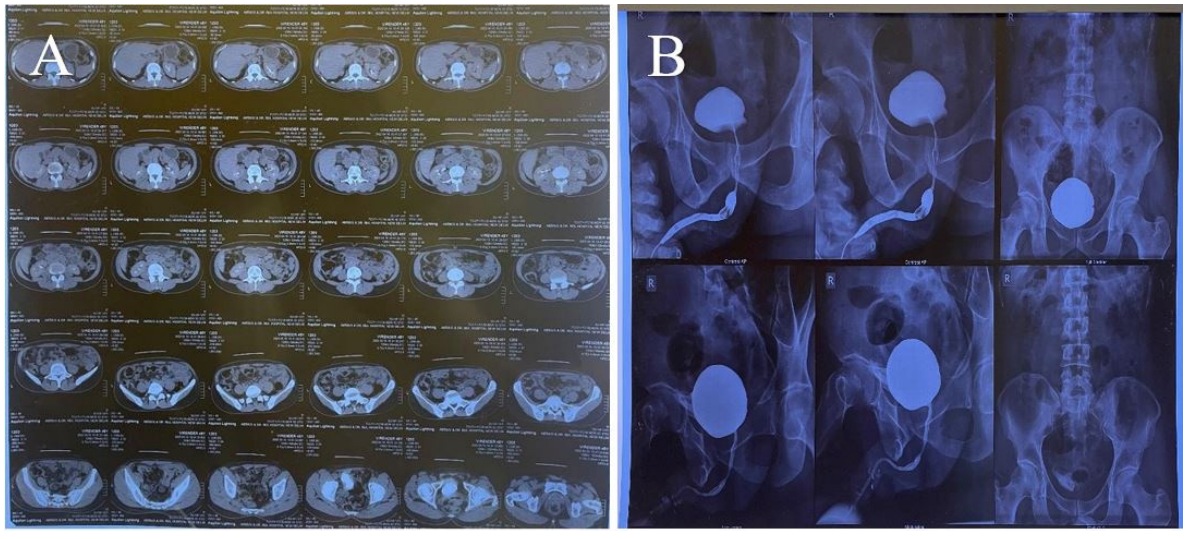

Figure 1. A. CT urography showing a reduced capacity urinary bladder with a dystrophic calcification inside the lumen. **B.** Retrograde urethrogram indicated subtle irregularities in the penile and bulbar urethra

CT: Computed tomography

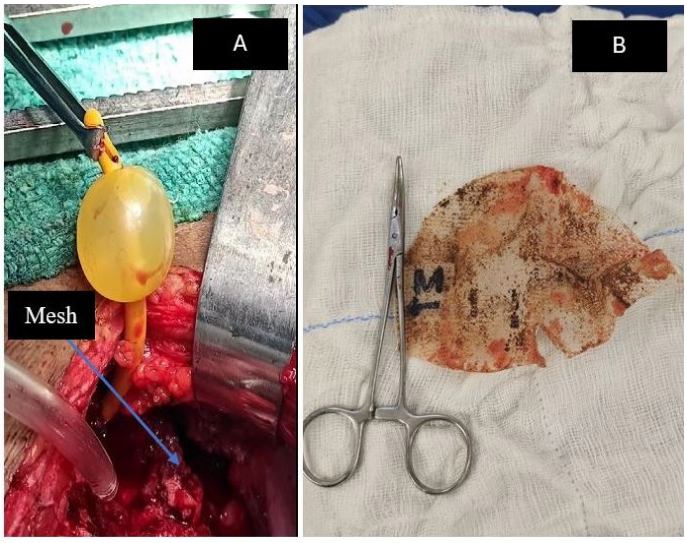

Figure 2. Intraoperative view. **A.** Depicting an intraoperative mesh following cystostomy. **B.** Display of the mesh post removal

post-operative pain, faster recovery and shorter hospital stays. However, laparoscopic management is often complicated by the extent of adhesions and the precise location of the mesh. In cases where the mesh has deeply eroded into the bladder, complete removal may be challenging (5).

In this case, the patient was diagnosed with GUTB and he underwent stage I urethroplasty first due to urethral stricture. He experienced Storage LUTS and was found to have a small capacity bladder, which could have two possible explanations, either due to GUTB or chronic inflammation due to mesh erosion. Later removal of the eroded mesh, along with augmentation ileocystoplasty and bilateral ureteric reimplantation, was performed successfully. The patient recovered without complications, highlighting the efficacy of this unique reconstructive approach when performed by experienced surgeons.

Conclusion

Mesh erosion into the urinary bladder is a serious complication that requires careful diagnosis and timely surgical intervention. While minimally invasive techniques such as laparoscopic removal offer significant benefits, the complexity of each case must be assessed individually to determine the most appropriate management strategy. This case was unique and complex as the patient was diagnosed with GUTB having small bladder capacity and a stricture in the urethra. The patient was systematically investigated and managed. No such case is present in the literature of a patient diagnosed with GUTB and stricture urethra, who concomitantly has mesh erosion into the urinary bladder, further requiring a complex reconstructive procedure. Highlighting the importance of such a case is necessary to have a systematic approach to management.

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Written informed consent was obtained from the patient and his parents for the publication of this case report and any accompanying images.

Ethics

Informed Consent: Written informed consent was obtained from the patient and his parents for the publication of this case report and any accompanying images.

Footnotes

Authorship Contributions

Surgical and Medical Practices: A.S., N.M.P., Concept: A.S., U.S., Design: A.S., U.S., N.M.P., Analysis or Interpretation: N.M.P., Literature Search: A.S., N.M.P., Writing: A.S., N.M.P.

Conflict of Interest: No conflict of interest was declared by the authors.

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