Unusual Timing of Mesh Migration Following Inguinal Hernioplasty: A Case Report and Literature Review

İnguinal Herni Onarımı Sonrası Alışılmadık Zamanda Mesh Migrasyonu: Olgu Sunumu ve Literatür Gözden Geçirme

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ABSTRACT

Mesh migration to the bladder after inguinal hernioplasty is a rare but important complication. We report a rare case of mesh migration to the bladder three weeks after inguinal hernioplasty. We also present a literature review involving cases of mesh migration following hernioplasty.

Key Words: Mesh migration, inguinal hernioplasty, bladder

INTRODUCTION

Postoperative recurrence rates for inguinal hernioplasty have been significantly reduced since the synthetic mesh has been widely used (1). However, complications, such as seroma and hematoma (2), persistent groin pain (3), superficial wounds (4) and deep wound/mesh infection (5), and mesh migration (6-28) have been reported in the literature. Mesh migration is rarely seen during the late postoperative period, but when it occurs it can be seen in the bladder, the bowel, and the peritoneum (6-28). The treatment of mesh migration includes exploration of the affected organ and excision of the fistula tract with mesh. This article reports on a case of mesh migration to the bladder three weeks after inguinal hernioplasty.

CASE REPORT

A 73-year-old male patient with a diagnosis of right obstructed inguinal hernia with ileus was admitted to the emergency service. Abdominal exploration from the infraumbilical midline incision and right inguinal hernioplasty was conducted and a polypropylene (Prolene®) mesh was inserted preperitoneally from the right suprainguinal incision. A coronary stent was placed after coronary angiography due to angina pectoris in the postoperative period, and the patient underwent antiplatelet therapy. The patient was admitted to our clinic due to irritative lower urinary tract symptoms, including burning and difficulty during urination 15 days after being discharged from the hospital. There was no previous history of urological surgery.

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The incision site was clean, the physical examination was normal, and there was no evidence of fever and/or systemic infection. On urinalysis, many leukocytes and positive nitrites were seen in the patient’s urine, but erythrocytes were not detected. Bacterial growth was not found in the urine culture. The solid hyperechoic view in the bladder wall was observed on abdominal ultrasonography (USG), which was performed because the patient did not have a clinical response to the antibiotic treatment. Subsequently, abdominal/pelvic computerized tomography (CT) revealed some calcification and hemorrhage in the bladder lumen. Uncertain limited soft tissue structures and fistula from the bladder to the peritoneum were found (Fig. 1). Cystoscopy was performed and mesh with mucosal erosions was seen on the superior side of the right wall of the bladder. A decision was made to conduct a pelvic exploration via Pfannenstiel incision, and mesh, extending from the right inguinal region to the bladder, was seen (Fig. 2A). The bladder was opened at the dome. The mesh was extracted. The necrotic bladder wall and the fistula tract were excised (Fig. 2B). The bladder defect was repaired using the double-layer suture technique. A Jackson-Pratt drain was placed infrapubically. The drain was removed in three days. The urethral catheter was removed on the postoperative 10th day.

**DISCUSSION**

Mesh migration to the bladder after inguinal hernioplasty is a rare but important complication. In the literature, there are no randomized controlled studies on mesh migration or erosion after hernioplasty. A small number of case reports have been published (6-28). The pathophysiology of mesh migration after hernioplasty is still unclear. It was hypothesized that the migration with erosion of tissue is triggered by the inflammation around the mesh (18). Some authors have suggested that indolent infection, which can be caused by staphylococcus growth, as seen on the bacterial biofilms, occurs on the mesh (15). Agrawal et al. (7) assessed the inflammation around the mesh (18). Some authors have suggested that the migration with erosion of tissue is triggered by the infection around the mesh (18). Agrawal et al. (7) assessed the inflammation around the mesh (18). Some authors have suggested that the migration with erosion of tissue is triggered by the infection around the mesh (18).

In the TAPP approach, direct contact between the mesh and the intraabdominal organs, due to a peritoneal defect on the inguinal floor, may result in adhesions and fistula formation (6). It is believed that a peroperatively non-drained bladder could cause complications as an unnoticed bladder injury or a mesh fixation to the bladder, especially in laparoscopic surgery; this increases the risk of mesh contact with the bladder, postoperatively (10, 20).

The clinical presentation of mesh migration to the bladder after hernioplasty may vary according to the degree of migration and the organs that are involved. The conditions most frequently experienced by patients presenting with this type of mesh migration include hematuria (10, 13, 14, 16, 17, 19, 21, 24) and recurrent/persistent urinary tract infection (6-8, 12, 15, 21, 23). Hematuria may be painless, or it may also be present with irritative symptoms. Fever (11), inguinal pain (6, 18), discharge from the groin (8, 11), pneumaturia (12), and dysuria (9, 10, 20) have all been reported in the literature. Mesh erosion was observed incidentally on an asymptomatic patient during an endoscopic examination (22).

In patients who have a suspicion of mesh migration, radiographic examination begins with a pelvic X-ray. Depending on the clinical suspicion, additional tests may be ordered including intravenous urography (IVU), USG, CT, and magnetic resonance imaging (MRI). The appearance of a mass in the bladder (11, 17-19, 23, 24) and bladder stones (7, 8, 14, 15, 21) were most often reported in the literature. In addition, calcification of the bladder wall (20, 22), liquid in the Retzius space (16), and bladder wall thickening (6, 10, 13) were other identified radiological findings. Wall thickening in the bladder, calcifications, bladder stones and a tumor in the bladder or pelvis can be detected using USG. When a bladder tumor or a pelvic tumor is suspected, deep abscess, peritonitis, intestinal obstruction, fistula, and, for cases that are suggestive of migration, CT and MRI examination, play an important role; this affects the type of surgery that the patient will undergo. However, in the presence of a suspected malignancy, it is not possible to differentiate the tumor using CT; instead, a cystoscopic examination and biopsy are required.

The treatment approach varies according to the degree of the migration. This can be as easy as removing the mesh that can be seen with the cystoscopy, or as difficult as requiring a bowel resection. Agrawal et al. (7) saw mesh during cystoscopy and removed it transurethrally. However, the part of the mesh that is outside of the bladder may be related to genitourinary and the gastrointestinal tract. It should be noted that this kind of approach may causeiatrogenic injuries; therefore, radiological assessment should be performed prior to using that type of technique. For most cases, dense fibrous tissue around the mesh does not allow endoscopic excision; thus, the mesh must be removed along with the fibrotic tissue around the bladder (8, 10, 11, 13-21, 23, 24). In complicated cases, the structures and adjacent organs might require a more specific approach. Using a holmium laser endoscopically, Nikhil et al. (22) cut out the part of the mesh that protruded into the bladder lumen, and followed the patient as asymptomatic with cystoscopy.

The latent period between clinical presentation of mesh migration and hernioplasty varies from a few weeks to 13 years. In our case, the latent period was three weeks; that time period was the shortest reported in the literature. Chand et al. (10) reported mesh migration developing a few weeks after laparoscopic incisional hernioplasty, but they did not catheterized the bladder perioperatively, and, postoperatively, the patient developed acute urinary retention. On exploration, the mesh migration was seen moving from the superior portion of the bladder, intraoperatively, to the dome of bladder, which resulting in the need for the mesh excision; they observed the bladder returning to the anatomic location after the mesh was released. The authors thought that these findings might be related to acute urinary retention, which developed postoperatively, and not to the catheterized bladder, which occurred intraoperatively. We think the factors that can lead to complications, such as mesh fixation to the bladder and unnoticed bladder injury due to changing the location of the bladder, which also happened in our case and which have a short latent period, are primary causes for mesh migration.
CONCLUSION

Although it is rarely reported, mesh migration should be considered in cases with unexplained urinary symptoms in which patients have a history of hernioplasty with suspicious imaging of the urinary tract. Before surgery, a detailed radiological evaluation should be performed in order to detect any accompanying comorbid conditions. The type, shape, placement, and fixation of the mesh, and perioperative bladder drainage are very important factors to consider when trying to avoid complications that could lead to mesh migration after hernioplasty.

Conflict of interest

No conflict of interest was declared by the authors.

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