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A Case of Inguinal Bladder Hernia Treated with Laparoscopic Transabdominal Preperitoneal Repair

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ABSTRACT: Inguinal bladder hernia (IBH) is a rare condition, and only a few reports have performed laparoscopic surgery. In this study, a 58-year-old man with a right inguinal bulge for 5 years was diagnosed with right inguinal hernia by a local doctor. He presented to our emergency department with right inguinal hernia incarceration. Computed tomography scan revealed a right inguinal hernia containing a portion of the urinary bladder. Thus, manual reduction of the bladder hernia was performed, and the patient was admitted to the surgical ward for follow-up and was discharged the next day. On the 19th day after discharge, transabdominal preperitoneal (TAPP) repair was performed. He was discharged on postoperative day 2 and had an uneventful postoperative course. Herein, we report a case of IBH treated using the TAPP method to understand the anatomy and safely perform the surgery without bladder injury.

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KEYWORDS: inguinal bladder hernia, laparoscopy, transabdominal preperitoneal repair

Introduction

Inguinal bladder hernia (IBH) has been determined to be a rare clinical condition, accounting for <4% of all inguinal hernia cases; however, its incidence in obese men aged >50 years has been documented to reach 10%.^{1,2)} Although open surgery has been the main surgical method for IBH, a small number of laparoscopic surgeries have been reported in recent years. Herein, we report a rare case of IBH that was safely operated by laparoscopic surgery without bladder injury.

Case Report

A 58-year-old man with a right inguinal bulge for 5 years was diagnosed with right inguinal hernia by a local doctor. He was left untreated due to the absence of symp-

toms; however, his right inguinal bulge gradually increased at 1 year and complained of frequent urination at 6 months before presentation. He then presented to our emergency department with a right inguinal hernia incarceration. He had a history of diabetes mellitus and bronchial asthma.

His body mass index was 27.7 kg/m². Laboratory studies were within normal limits, except for glycated hemoglobin of 7.0%. Computed tomography (CT) scan revealed a right inguinal hernia containing a portion of the urinary bladder (Fig. 1). He was diagnosed with inguinal bladder hernia. Manual reduction of the bladder hernia was then performed, and he was admitted to the surgical ward for follow-up and was discharged on the next day.

On the 18th day after discharge, he was readmitted for surgery and underwent transabdominal preperitoneal

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Fig. 1 A preoperative computed tomography scan showing a right inguinal hernia containing a portion of the urinary bladder (a): axial view, (b): coronal view.

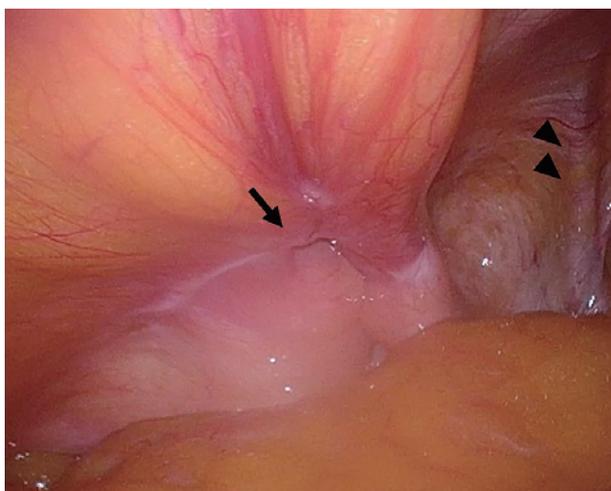


Fig. 2 A right direct inguinal hernia was confirmed (arrow, hernia orifice; arrowhead, inferior epigastric vessels).

(TAPP) repair on the next day. The surgery was performed under general anesthesia, and a urinary catheter was inserted preoperatively. A 12-mm port was inserted into the umbilicus, and carbon dioxide was insufflated at 10 mmHg. A right direct inguinal hernia was confirmed (Fig. 2). Two 5-mm ports were placed in each flank. The peritoneum was incised 2 cm above the internal ring and extended medially up to the medial umbilical ligament. The preperitoneal space was then dissected toward the Retzius space, which confirmed a portion of the urinary bladder was protruding from the hernial orifice (Fig. 3a, 3 b). The strong adhesions were observed surrounding the

bladder, and these were carefully dissected to avoid bladder damage. After the dissection, a right direct inguinal hernial orifice measuring 2.5 cm in diameter was confirmed (Fig. 4a). The ventral and lateral sides were dissected to provide space for the mesh. A 12 × 10-cm Versatex Monofilament Mesh (Medtronic Company, COVIDIEN, Tokyo, Japan) was inserted into the dissected space to cover the myopectineal orifice. The mesh was then fixed to the Cooper's ligaments, rectal sheath, ventral side, and lateral side using a 5-mm AbsorbaTack (Medtronic Company, COVIDIEN, Tokyo, Japan) (Fig. 4b). The peritoneum was closed using a 3-0 Stratafix suture (Johnson & Johnson, Ethicon, Inc., USA). The operation time lasted for 99 min, and blood loss was minimal. This case was diagnosed as PM2 in the European Hernia Society classification³⁾ and paraperitoneal type in the IBH classification.⁴⁾

The patient was discharged on postoperative day 2 and had an uneventful postoperative course. Two weeks postoperatively, his urinary frequency remarkably improved.

Discussion

IBH is a rare disease, with majority of its cases diagnosed intraoperatively. Approximately <7% of patients with IBHs are diagnosed before herniorrhaphy, 16% are diagnosed postoperatively due to complications (bladder injury causing leakage), and the remaining patients are diagnosed intraoperatively.⁵⁾ However, preoperative diagno-

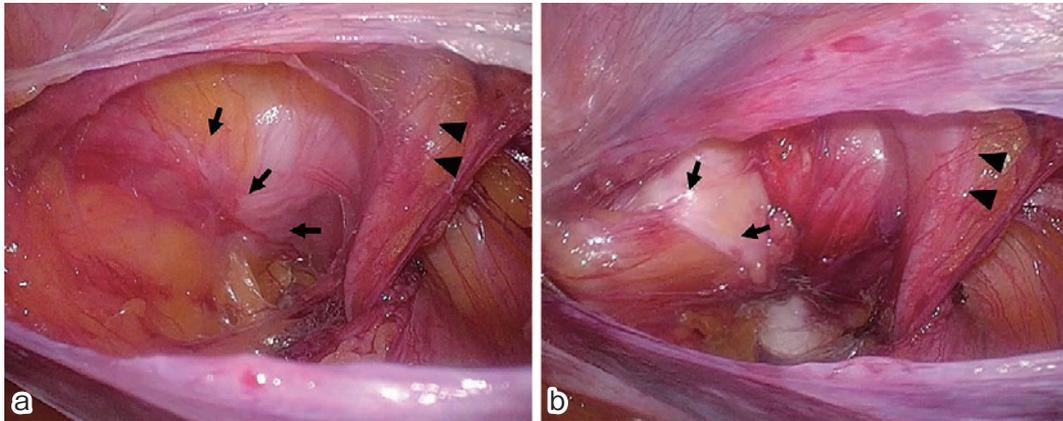


Fig. 3 A portion of the urinary bladder protruded from the hernial orifice (arrow, hernia orifice and arrowhead, inferior epigastric vessels) (a,b). Strong adhesions were observed surrounding the bladder.

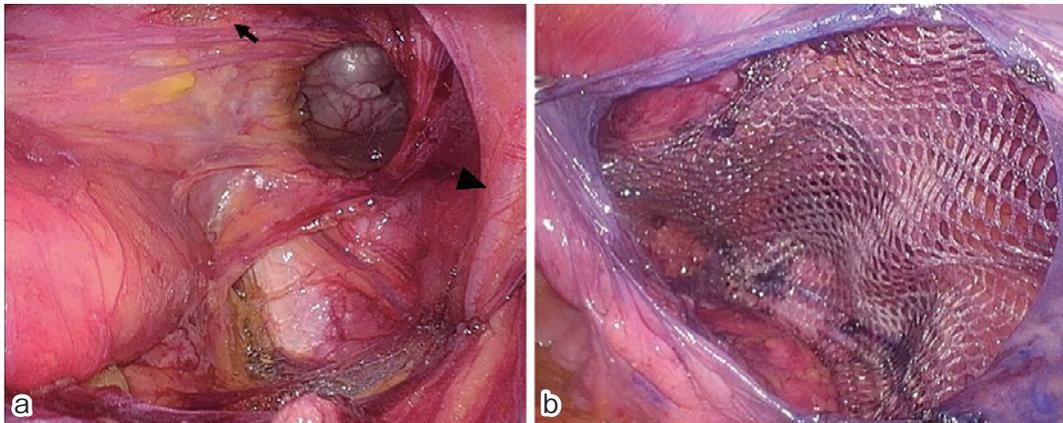


Fig. 4 A right direct inguinal hernial orifice was confirmed (a) (arrow, rectus abdominis muscle and arrowhead, inferior epigastric vessels). A mesh was inserted into the dissected space to cover the myopectineal orifice (b).

sis was possible in nearly 60% of the cases due to the frequent use of CT examination in recent years²⁾

Symptoms depend on the size and contents of the hernia. However, majority of patients with IBH are asymptomatic, with inguinal bulging as the most common symptom. Patients may have nonspecific symptoms, such as urinary frequency, urgency, hematuria, and nocturia. In rare cases of very severe bladder herniation, patients may describe a two-stage urination in which they feel the need to compress the scrotum in order to urinate.^{6,7)}

The pathophysiology of IBHs may be related to pulling of the bladder together using a peritoneal sheath that forms its sac, through a weak point in the abdominal fascia.⁸⁾ Several factors might be associated to the occurrence of IBHs; these include bladder outlet obstruction, obesity, decreased bladder tone, and pelvic musculature weak-

ness.^{7,8)} As the size of hernias mainly grows due to negligence, other neglected comorbid conditions, such as chronic obstructive pulmonary disease or benign prostatic hypertrophy, may also be present.⁶⁾

Bladder injury is one of the most serious complications of hernia. Preoperative diagnosis is considered an important factor to prevent intraoperative bladder injury. Gomella et al. reported a 38% rate of unrecognized bladder injury during the large inguinoscrotal hernial repair.^{1,9)}

Open repair is the most frequently reported surgical management for a herniated bladder.¹⁰⁾ Studies conducting the laparoscopic repair for bladder hernia are often limited. Laparoscopic surgery has a number of advantages over open surgery. In the TAPP technique, the hernia sac can be identified at the start of laparoscopy, and the protruding bladder cannot be mistaken for a hernia sac. Fur-

thermore, the TAPP technique has been determined to be superior to the open technique in identifying all anatomic landmarks such as the inferior epigastric artery, testicular artery, and rectus abdominis muscle. Laparoscopic repair provides better visibility of the bladder and its surrounding structures, and the treatment can be safely performed without damaging the bladder for faster recovery, lesser need for analgesia, and improved cosmesis.¹⁰ We believe that the TAPP technique for bladder hernias can be safely performed without bladder injury if the Retzius cavity can be safely entered as in inguinal hernias. Dissection should be carefully performed until all anatomical landmarks are in place.

In conclusion, we managed a rare case of IBH successfully repaired by TAPP. Transabdominal preperitoneal repair may be considered as a standard treatment for IBH because it helps understand the anatomy of the inguinal region; however, further validation is needed by accumulating and analyzing more cases.

Authors' contribution: All authors contributed to the interpretation of the data, discussed the results, and commented on the manuscript. N.F. wrote the manuscript.

Conflicts of interest: None declared.

Informed consent: Informed consent was obtained from the pa-

tient for the publication of this case report and accompanying images.

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