

## Case Report



# Isolated Herniation of the Bladder into the Inguinal Canal: A Rare Case Report

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### Abstract

Herniation of the bladder towards the inguinal canal is a rare condition. A 76-year-old male patient with long-term left groin swelling was admitted to the emergency clinic complaining of abdominal pain that started about 5 hours ago. The patient, whose abdominal examination was normal, had an incarcerated hernia in the left inguinal region. On superficial ultrasonography, intestinal loop herniation in the left inguinal canal and adjacent loculated fluid of 60x20 mm in size was observed. In the computed abdominal tomography, it was determined that the majority of the bladder had passed through the left inguinal canal and into the hernia sac. Lichtenstein method hernioplasty was applied to the patient who was taken to emergency surgery. Isolated bladder herniation is an extremely rare condition. Recognition of bladder herniation in the pre-operative period may prevent possible complications during surgery.

### Introduction

Herniation of the bladder into the inguinal canal is a rare condition. It has been reported that only 1% of inguinoscrotal hernias are accompanied by intestinal loops within the hernial sac of the bladder. Isolated herniation of the bladder is much less common. It has been reported that its incidence rate increases significantly in the elderly male patients and is more common on the right side.<sup>1</sup> Although patients usually present with signs of urinary obstruction, they are usually diagnosed incidentally. Known risk factors for bladder herniation are obesity, bladder outlet obstruction, anterior abdominal wall weakness, or detrusor muscle weakness.<sup>2</sup> Here, a case with isolated bladder herniation into the inguinal canal investigated with the pre-diagnosis of an incarcerated inguinal hernia is presented.

### Case Presentation

A 76-year-old male patient was admitted to the emergency service with an ongoing abdominal pain for 5 hours and swelling in the left groin. In the history taken from the patient, a history of chronic obstructive pulmonary disease, hypertension, chronic renal failure and atrial fibrillation and the use of medication for them were indicated. The patient stated that he had swelling in the left groin for 2-3 years, but he had not received any treatment because it had not caused pain. He also stated no active urological problem. In physical examination, he did not have abdominal tenderness, guarding, or rebound tenderness in the abdomen. There was an incarcerated

inguinal hernia in the left inguinal region.

In the patient's laboratory tests, the leukocyte count was 13800/mm<sup>3</sup>, hemoglobin was 13.1 g/dL, creatinine level was 3.75 mg/dL, and C-reactive protein (CRP) was 167 mg/L. In the superficial inguinal ultrasonography (USG), intestinal loop herniation in the left inguinal canal and loculated fluid adjacent to this loop, 6x2 cm in size, was observed. On computed tomography (CT), it was observed that approximately half of the bladder passed through the left inguinal canal and into the hernia sac (Figures 1-3). USG and CT revealed a left incarcerated hernia with the herniated bladder, and the patient was taken to emergency surgery.

In the intraoperative examination, approximately half of the bladder was observed to have been herniated into the inguinal canal. In addition, there was an indirect inguinal hernia on exploration. Lichtenstein hernioplasty was applied to repair the defect. The patient was followed up in the general surgery service and was discharged on the third day without any complication.

### Discussion

Inguinal hernia repair is an extremely common operation performed by general surgeons. The most common types of inguinal hernia are direct, indirect, and femoral hernia. However, rare types of inguinal hernia such as Amyand's hernia<sup>3</sup> and bladder hernia are also available.

Bladder herniation into the inguinal canal, is usually seen in older male patients, and is mostly in the form of a direct inguinal hernia. The presented case was in the form of an

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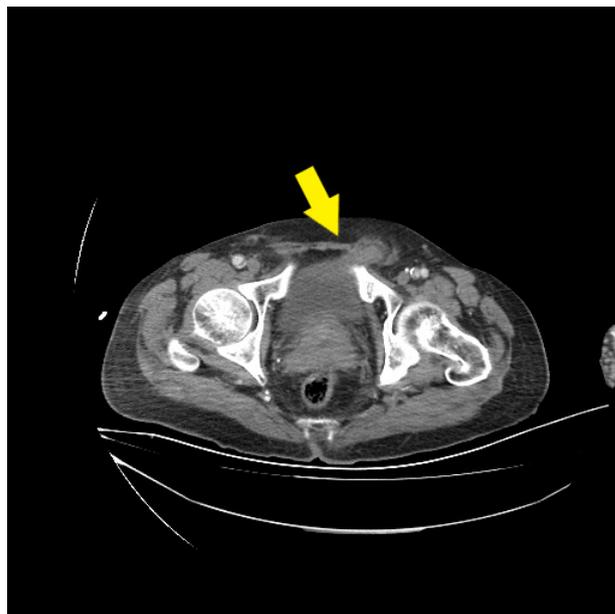
indirect hernia. Only 7% of the cases can be diagnosed before the operation, and most of them are noticed during the operation.<sup>4</sup> Small bladder herniation may be asymptomatic or present with nonspecific complaints. If the herniated bladder section is small, the hernia may become apparent when intravesical pressure is increased or during micturition. Patients with large herniations may present with more specific complaints such as swelling in the groin or scrotum reduced by micturition or two-stage micturition. While the bladder is emptied spontaneously in the first phase of the two-stage micturition, in the



**Figure 1.** Coronal CT section showing bladder herniation into the inguinal canal



**Figure 2.** Sagittal CT section showing bladder herniation.



**Figure 3.** The left anterolateral wall of the bladder herniated into the left inguinal canal on abdominal CT imaging of the case

second phase, the urine is emptied by manual compression of the hernia sac.<sup>5</sup> Therefore, bladder herniation should be kept in mind in the presence of urological complaints accompanying inguinoscrotal hernia.

Bladder hernias are divided into para-peritoneal, intra-peritoneal, and extra-peritoneal types, according to their relationship with the peritoneum. Para-peritoneal hernias are the most common type. The herniated bladder section is outside the inguinal hernia sac and runs along the inner rim. If the peritoneum surrounds the hernia, it is an intraperitoneal hernia. If bladder herniation is not associated with the peritoneum, it is the extra-peritoneal type.<sup>6</sup> Intra-peritoneal bladder hernia was observed in the presented case.

Bladder scintigraphy is considered as the gold-standard method for the diagnosis of bladder herniation. Since the pre-diagnosis of an incarcerated hernia was considered in this case, scintigraphy was not used, in order to avoid wasting of time.

Intravenous pyelography (IVP) showing bladder wall protrusion may also be useful in diagnosis of bladder herniation. IVP can detect bladder herniation at a rate of 30% in the supine position, 50% in the prone position, and 100% in the standing position.<sup>6</sup> On USG, the hernia can be seen as a cystic lesion associated with the intra-abdominal part of the bladder in the inguinal region. Post-micturition wall thickness and size change should raise suspicion for bladder herniation<sup>6</sup>. CT is an imaging method that shows the relationship between the inguinal canal and bladder herniation in detail. Antero-inferior angulation of the bladder floor on tomography images is a sign of bladder herniation. In large-sized hernias, the bladder can be followed along the inguinal canal on sequential tomography images.<sup>7</sup>

Recognition of bladder herniation with pre-operative examinations will also reduce the bladder injury and related complications during the operation. Complications such as perforation, strangulation, torsion, hydronephrosis, and renal failure may occur in untreated bladder herniations.<sup>8</sup> Resection is recommended in cases where necrosis develops in the bladder within the herniated bladder or in the presence of additional pathologies such as tumor and diverticulum in the herniated bladder section.<sup>9</sup> In our case, no signs of necrosis were observed in the herniated bladder tissue, and the defect was repaired.

### Conclusion

Only 7% of bladder herniation cases are diagnosed before the operation. Isolated bladder herniation is an extremely rare condition. Preoperative knowledge of bladder herniation is essential in terms of preventing injuries that may occur during surgery. Therefore, it is recommended to evaluate bladder hernia by advanced radiological methods in addition to USG in elderly patients with inguinal hernia accompanied by urinary symptoms.

### Conflict of Interest

The author declared no potential conflicts of interest regarding the research, authorship and / or publication of this article.

### Ethical Approval

The study was conducted in accordance with the ethical standards set forth in the 1964 Helsinki Declaration and its subsequent amendments.

### Author's Contributions

MK wrote the article. The author commented and reviewed and gave their final approval.

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