

# Enterovesical Herniation: A Rare Complication After Transurethral Resection of Bladder Tumor

## Enterovezikal Herniasyon: Mesane Tümörü Transüretal Rezeksiyonu Sonrası Nadir Görülen Bir Komplikasyon

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### Abstract

Enterovesical herniation through an acquired bladder wall defect after transurethral resection is an exceedingly rare complication. Small bladder perforations may go unrecognized after transurethral resection as adherent bowel loops seal the defect. We present a very rare case of internal herniation of both small bowel and sigmoid colon into the urinary bladder following transurethral resection of a bladder tumor. Magnetic resonance imaging revealed herniation of bowel loops into the lumen of the urinary bladder through a defect in the dome. On exploratory laparotomy, internal herniation of the ileum and sigmoid colon through a defect in the superior wall of the urinary bladder was found.

**Keywords:** Bladder tumor, Transurethral resection, Internal hernia

### Öz

Transüretal rezeksiyon sonrası gelişen mesane duvar defekti ile ilişkili enterovezikal herniasyon, son derece nadir görülen bir komplikasyondur. Transüretal rezeksiyon sonrası küçük mesane perforasyonları, yapışık barsak anslarının defekti kapatması nedeniyle tanınmayabilir. Bu çalışmada, bir mesane tümörünün transüretal rezeksiyonunu takiben mesane içine hem ince barsak hem de sigmoid kolonun internal herniasyonuna dair çok nadir bir olgu sunulmuştur. Kubbedeki bir defekt üzerinden barsak anslarının mesane lümenine doğru herniasyonu manyetik rezonans görüntüleme ile görüldü. Laparotomi araştırmasında, mesane üst duvarındaki bir defekten ileum ve sigmoid kolonun internal herniasyonu saptandı.

**Anahtar Kelimeler:** Mesane tümörü, Transüretal rezeksiyon, İnternal herni

### Introduction

Transurethral resection of bladder tumor (TURBT) is the initial and most commonly performed surgery for bladder tumor (1). Although this endourological procedure is typically safe and well-tolerated, the surgeon should be vigilant during surgery to avoid complications such as bladder perforation. Internal herniation of the bowel through an unrecognized iatrogenic rent in the bladder wall is a rare but recognized complication. Only 7 cases of enterovesical herniation have been reported previously in the literature making it one of the most uncommon causes of internal hernia (2). We present a very rare case of internal herniation of the small bowel along with Richter's herniation of the sigmoid colon into the urinary bladder following TURBT.

### Case Presentation

A 36-year-old man presented with urinary symptoms of enterovesical fistula, such as fecaluria and pneumaturia, 3 weeks after TUR of bladder tumor. It was associated with burning micturition and dysuria. Abdominal examination revealed an approximately 6 cm x 6 cm globular lump in the suprapubic region that was persistent after per-urethral catheterization. There were no signs of generalized peritonitis or intestinal obstruction. Digital rectal examination was performed and rectal mucosa was found to be normal. Past history revealed that he had undergone TUR of a 2.28 cm x 1.19 cm bladder tumor involving the posterior wall of bladder 3 weeks ago. No iatrogenic bladder perforation was documented during the

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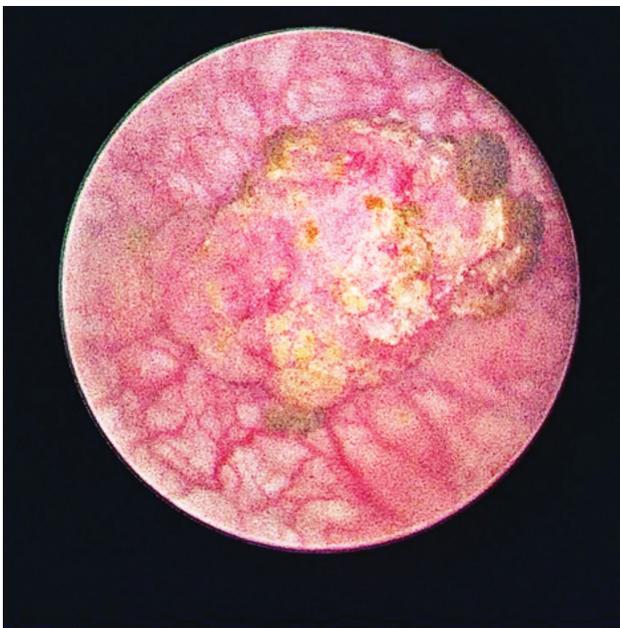
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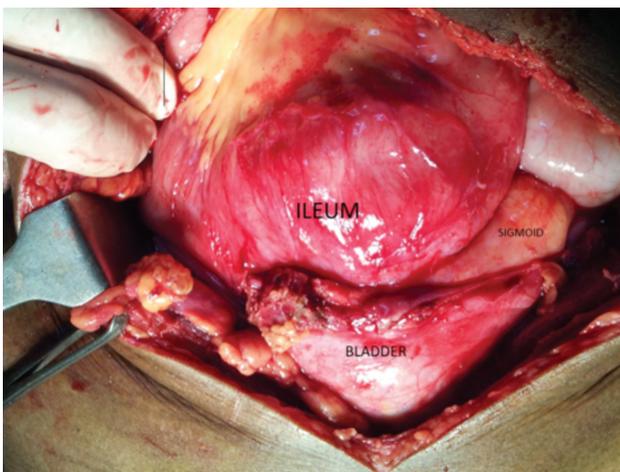
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procedure. Enterovesical fistula was suspected and magnetic resonance imaging (MRI) of the pelvis was performed instead of contrast-enhanced computed tomography (CT) to delineate the fistula tract as the serum creatinine was marginally above baseline. MRI showed herniation of bowel loops into the lumen of the urinary bladder through a defect in the dome with conglomerated gut loops in the supra-vesical region as a possible sequel of intraperitoneal bladder perforation (Figure 1). Cystoscopy demonstrated herniated wall of the bowel through a defect in the antero-superior aspect of the bladder with overlying debris; mucosa over the trigone and posterior wall was normal. A loop transverse colostomy was performed initially at presentation for temporary diversion of the enterovesical fistula. Exploratory laparotomy was performed 6 weeks later



**Figure 1.** Cystoscopic view of the bladder tumor



**Figure 2.** Intraoperative picture showing internal herniation ileum and antemesentric wall of sigmoid colon (posteriorly) into the urinary bladder

when faecaluria had subsided and urine was sterile. Internal herniation of a loop of the ileum anteriorly along with Richter's hernia of the sigmoid colon posteriorly through the same defect in the superior wall of the urinary bladder was found (Figure 2). The gut loops were incarcerated into the bladder with severe surrounding inflammation. A portion of irreducible herniating loop of the small bowel and sigmoid colon was resected along with excision of a part of the bladder wall surrounding the hernia defect. The bladder was closed in two layers and a suprapubic cystostomy was done. The patient had urinary leakage from the site of bladder repair which manifested as high output of clear fluid having raised creatinine content in the pelvic drain during the second postoperative week. The urinary leak and drain output diminished with prolonged per urethral catheterization for 6 weeks. The catheter was removed after documenting no extravasation in the cystography performed 6 weeks after surgery.

Written informed consent form was obtained from the patient.

## Discussion

The goal of TUR is to achieve visibly complete resection along with ensuring adequate depth of resection. Small perforations might occur in the event of adequate resection of advanced tumors (3). Most of them are extraperitoneal and managed adequately with bladder drainage through urethral catheter. Intraperitoneal bladder perforation after TURBT is a dreaded complication that may lead to various sequels such as hemorrhage, peritonitis, urinoma, infection tumor spillage, TUR syndrome and even death. When diagnosed intraoperatively, it usually requires open surgical repair. It has an incidence of 0.36% in tumors involving the anterior wall, dome and high posterior wall with deep infiltration (4).

Internal hernias are defined by the protrusion of a viscus through a natural or acquired peritoneal or mesenteric aperture within the confines of the peritoneal cavity (5). The internal hernia orifice can be postsurgical, traumatic, or congenitally acquired. Only 7 cases of herniation of gut loops into the urinary bladder have been reported in the literature. Spontaneous rupture, alcohol-related bladder injury, total abdominal hysterectomy and TURBT were the etiologies in the reported cases (2,6,7,8,9). Internal herniation through an acquired bladder wall defect after TUR is an exceedingly rare complication, previously reported in only one patient (2). The patients have presented with symptoms of haematuria or inability to void. Cases reported by Yalla et al. (6) and Twemlow et al. (9) had additional features of bowel obstruction and strangulation. Our patient presented with urinary symptoms of passage of fecal matter and air in urine with no symptoms suggestive of bowel obstruction or strangulation. Internal hernia of a portion of the

ileum along with antimesenteric wall of the sigmoid colon had occurred through an unrecognized perforation in the dome of the urinary bladder following TURBT. Ischemic injury to the wall of the sigmoid protruding into the bladder probably resulted in ischemic necrosis and perforation of the antimesenteric wall, which resulted in fistula formation.

Although CT is the modality of choice in the evaluation of colovesical fistula, MRI has excellent intrinsic soft tissue resolution that allows accurate delineation of the fistula tract with a sensitivity and specificity reaching up to 100% (10,11,12). MRI was performed in our patient, which accurately identified the bowel loops herniating into the urinary bladder. Surgical exploration with reduction and repair of enterovesical herniation is recommended. It eliminates the risk of future bowel obstruction, strangulation, urinary extravasation, peritonitis, and possible enterovesical fistula formation.

Enterovesical herniation is an unusual but known complication after bladder perforation. Small bladder perforations may go unrecognized after TUR as adherent bowel loops seal the defect. Delayed presentation of gut herniation may be in the form of fecaluria due to formation of enterovesical fistula or with signs of intestinal obstruction. MRI of the pelvis is an excellent diagnostic tool and should be performed when clinical suspicion is high. Delayed surgical intervention after fecal diversion appears to be the definitive treatment for intravesical hernia with enterovesical fistula formation.

## Ethics

**Informed Consent:** Written informed consent form was obtained from the patient.

**Peer-review:** Externally peer-reviewed.

## Authorship Contributions

Surgical and Medical Practices: K.S., Concept: K.S., Design: K.S., S.C., Data Collection or Processing: K.S., S.C., Analysis or Interpretation: K.S., P.K.S., D.K., Literature Search: K.S., P.K.S., Writing: K.S.

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