



## Urological Complications Associated with Intestinal Obstruction: A Case Report

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### Abstract

**Background:** Intestinal obstructions are common medical emergencies with significant morbidity. Although the gastrointestinal implications are well-documented, urological complications, such as ureteral compression or hydronephrosis, remain rare and underreported.

**Case Presentation:** We report the case of a 30-year-old male with a history of segmental ileal resection and double-barrel ileostomy who presented with signs of intestinal obstruction, including bilious vomiting, cessation of stool and gas, and a non-functional stoma. Imaging revealed a bowel-to-bowel intussusception complicated by necrosis and a retroperitoneal hematoma compressing the right ureter, causing moderate dilation of the excretory cavities. The patient underwent urgent surgical intervention, including resection of the necrotic bowel, evacuation of the hematoma, and restoration of intestinal continuity. Postoperative recovery was uneventful, and the patient showed significant clinical improvement.

**Discussion:** Ureteral compression caused by retroperitoneal hematomas secondary to intestinal obstruction is rare. This case highlights the importance of cross-sectional imaging in diagnosing complex interactions between the digestive and urinary systems. Multidisciplinary management, involving surgical resection and evacuation of obstructive masses, is crucial for preventing long-term complications such as chronic hydronephrosis or renal insufficiency.

**Conclusion:** This case underscores the need for awareness of urological complications in intestinal obstruction, particularly in patients with prior abdominal surgery. Prompt diagnosis and multidisciplinary care are essential to optimize patient outcomes.

**Keywords:** Intestinal Obstruction; Ureteral Compression; Retroperitoneal Hematoma; Bowel Intussusception; Urological Complications; Cross-Sectional Imaging; Case Report

### Introduction

Intestinal obstructions are a common medical emergency that can lead to significant morbidity and mortality if not promptly diagnosed and managed. While the focus often lies on the gastrointestinal consequences of such obstructions, their impact on the urinary system remains underexplored. Urological complications, such as ureteral compression or hydronephrosis, secondary to intestinal obstruction are rare but clinically important. They are most commonly attributed to extrinsic compression by distended bowel loops, retroperitoneal hematomas, or local inflammatory processes [1-3,11].

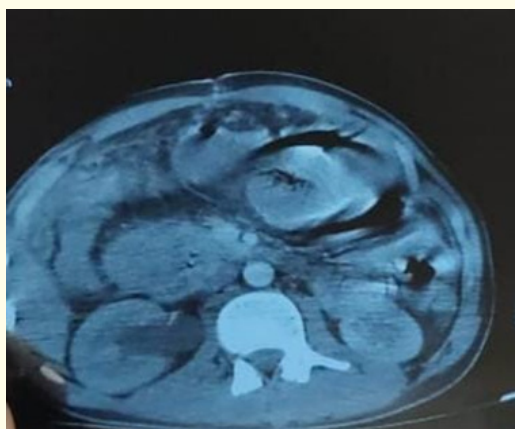
Several studies have highlighted the role of cross-sectional imaging, particularly CT scans, in identifying such secondary complications. Lee., *et al.* (2015) emphasized that imaging is essential for diagnosing rare anomalies, such as mechanical ureteral compression due to intestinal obstruction [4]. Additionally, White., *et al.* (2010) documented cases where intestinal obstructions led to hydronephrosis or urinary complications, albeit in the context of pelvic tumors or postoperative adhesions [5].

This case report illustrates a rare instance of intestinal obstruction complicated by ureteral dilatation caused by extrinsic compression from a retroperitoneal hematoma. This unique presentation, compounded by a history of previous abdominal surgery, highlights the importance of multidisciplinary management and early imaging to prevent long-term complications.

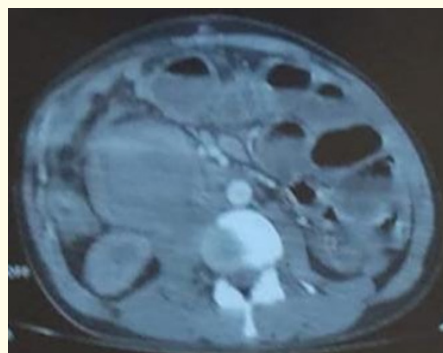
### Case Report

We report the case of a 30-year-old male with a history of segmental ileal resection and double-barrel ileostomy following a road traffic accident. Four days before admission, the patient developed signs of intestinal obstruction, including cessation of stool and gas, bilious vomiting, and a non-functional stoma. Upon admission, he was conscious but agitated, dehydrated, with normocolored conjunctivae, a body temperature of 36.5°C, blood pressure of 100/70 mmHg, heart rate of 92 bpm, and a respiratory rate of 32 bpm. Abdominal examination revealed a median scar, generalized guarding, a distended and tympanic abdomen, and free hernia orifices. Digital rectal examination showed a healthy anal margin, good sphincter tone, and no palpable masses. Stomal examination revealed both stoma ends with stool traces on finger testing.

Biological tests revealed a hemoglobin level of 14 g/dL, normal electrolytes, and renal function. Urinalysis showed microscopic hematuria. The diagnostic workup included an abdominal X-ray, which showed intestinal air-fluid levels. The abdominopelvic CT scan revealed a mechanical obstruction of the proximal small intestine due to a bowel-to-bowel volvulus, with dilation of the upstream bowel loops (up to 41 mm). A large heterogeneous mass was observed in the right iliac fossa, as well as in the pre- and sub-renal areas, with a cocarde appearance on axial cuts and a sandwich appearance on longitudinal cuts. This spontaneously hyperdense mass, associated with fat infiltration and a thin layer of perilesional fluid, compressed the right ureter, causing moderate dilation of the upstream excretory cavities. Both kidneys appeared morphologically and functionally normal.

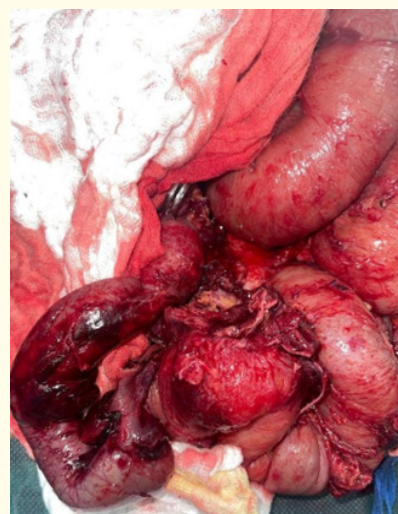


**Figure 1:** Abdominopelvic CT scan showing intestinal air-fluid levels with dilated bowel loops and extrinsic compression of the right ureter.

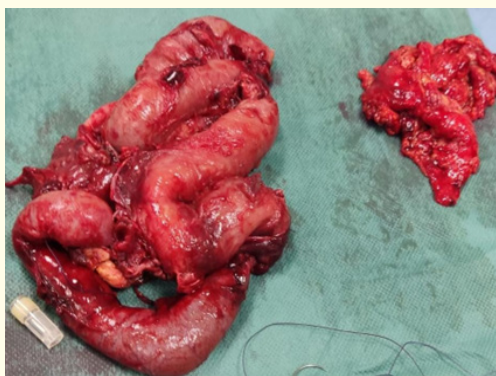


**Figure 2:** Axial view of the abdominopelvic CT scan showing a target-like mass with a typical appearance of intestinal intussusception.

After brief hydro-electrolytic resuscitation and preoperative anesthetic assessment, the patient was transferred to the operating theater. During the exploration of the abdominal cavity, 1.5 liters of intestinal distress fluid (sero-hematic) were identified. A bowel-to-bowel intussusception complicated by intestinal necrosis over approximately 51 cm was observed. The necrotic segment was resected, followed by a two-layer end-to-end anastomosis using absorbable sutures. A retroperitoneal hematoma was noted in the right parietocolic gutter, with no active bleeding. Extrinsic compression of the right ureter by the hematoma was confirmed. The hematoma was completely removed, and the right ureter was visualized, appearing intact with no lesions. The right kidney was morphologically and functionally normal. The procedure was completed with thorough irrigation of the peritoneal cavity using warm saline solution. Postoperatively, the patient spent five days in the intensive care unit, during which they received a blood transfusion with good efficacy. The postoperative course, marked by favorable clinico-biological progress, was uneventful, and the patient was discharged on the eighth postoperative day.



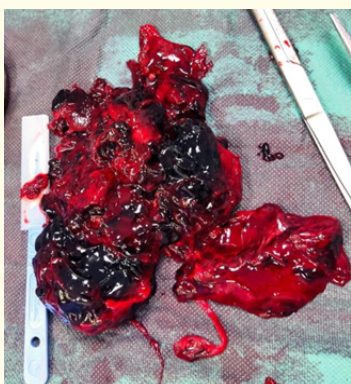
**Figure 3:** Intraoperative view showing a necrotic segment of ileum resulting from complicated intestinal intussusception.



**Figure 4:** Intraoperative view showing a necrotic segment of ileum resulting from complicated intestinal intussusception.



**Figure 5:** Intraoperative view of the dilated and necrotic intestinal segment with the adjacent retroperitoneal hematoma.



**Figure 6:** Extensive retroperitoneal hematoma secondary to complicated intestinal intussusception.

**Discussion**

Intestinal obstructions are a well-known medical emergency, but their impact on the urinary system remains understudied and rarely reported. This case illustrates a rare complication and highlights the complex interactions between the digestive and urinary systems that require particular attention. A comparative review with the existing literature allows this case to be contextualized within the available data, offering a deeper understanding of the

mechanisms and management of urological complications associated with intestinal obstruction.

In this case, ureteral dilatation was attributed to extrinsic compression of the right ureter by a retroperitoneal hematoma caused by bowel intussusception complicated by necrosis. This mechanism is consistent with several case reports in the literature that describe ureteral compressions secondary to abdominopelvic masses, such as abscesses, tumors, or post-traumatic hematomas [1-3]. However, ureteral compression specifically caused by intestinal complications, such as volvulus or intussusception, remains exceedingly rare. A study by White., *et al.* (2010) reported similar cases where intestinal obstructions resulted in secondary hydronephrosis due to mechanical compression, although these cases were primarily associated with pelvic tumors or postoperative adhesions [4].

In our case, the pathogenesis was compounded by the patient’s surgical history, including segmental ileal resection and ileostomy. Abdominal surgeries are frequently associated with anatomical alterations and adhesions, which can disrupt the spatial relationships between digestive and urinary structures. Postoperative adhesions are a well-documented cause of intestinal obstruction, but their role in urological complications remains less explored in the literature [5].

Imaging played a crucial role in this case. The abdominopelvic CT scan not only confirmed the intestinal obstruction but also diagnosed ureteral dilatation and ruled out structural damage to the kidneys or ureters. These findings align with current recommendations in the literature, which emphasize the importance of CT imaging in identifying secondary complications of intestinal obstructions [6]. A study by Lee., *et al.* (2015) demonstrated that cross-sectional imaging, such as CT, is essential for detecting associated urological anomalies, particularly in cases of mechanical compression or inflammation [7].

In this case, specific radiological signs (cocarde and sandwich appearances of the mass) facilitated prompt management. These observations corroborate descriptions in several studies that highlight the utility of specific imaging characteristics in distinguishing complex obstructive causes [8].

The multidisciplinary management of this patient, which combined surgical resection of the necrotic bowel and evacuation of the retroperitoneal hematoma, successfully resolved both the digestive and urological complications. This approach aligns with recommendations in the literature emphasizing the importance of rapid surgical intervention to prevent long-term complications, such as renal failure or ureteral fibrosis [9].

However, some reports highlight the possibility of managing less severe cases of ureteral compression through non-surgical means, such as ureteral stenting or percutaneous drainage of the hematoma [10]. In this particular case, the severity of the intestinal obstruction and the presence of bowel necrosis necessitated urgent surgical intervention.

This case underscores a rare but significant clinical issue, calling for increased awareness among clinicians about the interactions between the digestive and urinary systems in complex intestinal obstructions. While urological complications are rare, their early detection and appropriate management are critical to avoid more severe outcomes, such as chronic hydronephrosis or renal insufficiency.

Further studies are needed to better characterize these interactions and establish standardized protocols for management. For example, systematic imaging in cases of intestinal obstruction could facilitate the early detection of secondary complications, even when they are not clinically evident. Moreover, more robust data on the optimal management of retroperitoneal hematomas associated with intestinal obstructions would guide clinicians in their therapeutic decisions.

## Conclusion

This rare case illustrates the importance of considering urological complications in the differential diagnosis of intestinal obstructions, particularly in patients with a history of abdominal surgery. Although ureteral compression by intestinal structures or hematomas is rare, it requires prompt, multidisciplinary management. Better documentation of similar cases and comparative studies with the literature would enhance our knowledge and refine therapeutic strategies.

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