ISSN: 0975-8585

Research Journal of Pharmaceutical, Biological and Chemical Sciences

A Rare Case of Isolated Ureteric Injury Following Blunt Abdominal Trauma.

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ABSTRACT

Isolated ureteric injuries following blunt abdominal trauma are exceedingly rare, with most cases involving the ureteropelvic junction (UPJ). These injuries are often overlooked, leading to delayed diagnosis and potential complications such as urinoma, ureteral fistula, and strictures. We report a case of a 54-year-old female with a history of diabetes and hypertension who presented with periumbilical pain and burning micturition following a road traffic accident. Initial assessments missed the ureteric injury, which was later confirmed by CT Urography showing a proximal ureteric injury with a retroperitoneal collection. The patient underwent successful endoscopic management, including laser lithotripsy and Double-J stent placement, followed by percutaneous drainage of the urinoma. The patient's symptoms resolved, and follow-up imaging revealed minimal residual collection. This case underscores the importance of maintaining a high index of suspicion for ureteric injuries in trauma patients, even in the absence of other abdominal injuries. Early diagnosis and minimally invasive management are crucial for favorable outcomes. The case highlights the effectiveness of endoscopic intervention in managing lower-grade ureteric injuries and the need for ongoing follow-up to prevent long-term complications.

Keywords: Ureteric injury, Blunt abdominal trauma, Endoscopic management

https://doi.org/10.33887/rjpbcs/2024.15.5.45

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ISSN: 0975-8585

INTRODUCTION

Isolated ureteric injuries following blunt trauma are exceedingly rare, with most cases involving the ureteropelvic junction (UPJ). Such injuries are often missed, particularly when other abdominal organs remain uninjured. The delayed diagnosis can lead to complications such as urinoma formation, ureteral fistula, periureteral abscess, and ureteric stricture. Diagnosis is typically achieved through a contrast-enhanced CT scan of the abdomen and pelvis with delayed imaging, with management strategies ranging from endoscopic intervention to surgical repair depending on the injury's severity [1, 2].

CASE PRESENTATION

A 54-year-old female with a history of diabetes and hypertension presented with periumbilical pain, burning micturition, and low-grade fever for two weeks. She had been involved in a road traffic accident three weeks prior, during which she collided with a two-wheeler and fell on her left side. Initially, no abdominal injury was diagnosed, although she sustained fractures to her left tibia and ulna, for which she received treatment.

Upon presenting with the above complaints, ultrasonography revealed a left proximal ureteric injury with a significant retroperitoneal collection measuring 1.4x1.1x0.9 cm. This finding was confirmed via CT Urography. In the operating room, a left-sided retrograde pyelogram demonstrated a contrast leak. A 6/7.5 ureteroscope was passed, revealing a ureteric calculus just distal to the ureteric rent, which was successfully fragmented using a holmium laser. A Double-J stent was placed, and the 580cc retroperitoneal collection was aspirated percutaneously under ultrasonography guidance. The patient was treated with culture-specific antimicrobial agents and became symptom-free. Follow-up scans revealed minimal residual collection, and the patient remains under observation.

DISCUSSION

This case underscores the rarity and complexity of isolated ureteric injuries following blunt abdominal trauma. Despite the protective anatomical position of the ureter, such injuries can occur and are often associated with significant diagnostic delays, leading to potential complications. This case highlights the importance of maintaining a high index of suspicion for ureteric injury in patients with relevant trauma history, even in the absence of other abdominal injuries. The successful management of this patient through endoscopic intervention demonstrates the efficacy of minimally invasive approaches in lower-grade ureteric injuries [3].

Isolated ureteric injuries following blunt abdominal trauma are exceptionally rare occurrences, with an incidence of less than 1% among all non-iatrogenic injuries to the urinary tract. This low frequency is attributed to the ureter's anatomical positioning within the retroperitoneum, where it is shielded by surrounding structures, including the vertebral column, muscles, and other abdominal organs. The ureter's flexibility and tubular structure further contribute to its protection, making it less susceptible to direct trauma. When such injuries do occur, they are frequently overlooked, especially in the absence of concurrent injuries to other abdominal organs, which can lead to delayed diagnosis and increased risk of complications [4, 5].

The ureter is particularly vulnerable at the ureteropelvic junction (UPJ), where it transitions from the renal pelvis into the ureter. This area is the most common site of injury in blunt trauma cases, particularly in pediatric populations involved in motor vehicle accidents or falls from significant heights. The injury mechanism often involves a combination of hyperextension of the body, sudden deceleration, and compression of the ureter against a bony structure, such as the vertebral column. This can lead to partial or complete avulsion of the ureter from the renal pelvis or along its length, resulting in urine extravasation into the retroperitoneal space.

In adults, isolated ureteric injuries are rarer, and when they occur, they are often associated with severe blunt force trauma, such as in road traffic accidents, as illustrated by the present case. The injury may not immediately present with obvious symptoms, leading to diagnostic challenges. The symptoms of ureteric injury are often non-specific and may include flank pain, hematuria, nausea, vomiting, and signs of peritoneal irritation. In some cases, these symptoms may be overshadowed by more pressing injuries, further complicating timely diagnosis.

ISSN: 0975-8585

The management of ureteric injuries depends largely on the severity and location of the injury, as classified by the American Association for the Surgery of Trauma (AAST) Organ Injury Scale. This scale grades ureteric injuries from I to V, with Grade I representing contusions or hematomas without devascularization, and Grade V representing complete ureteral transections.

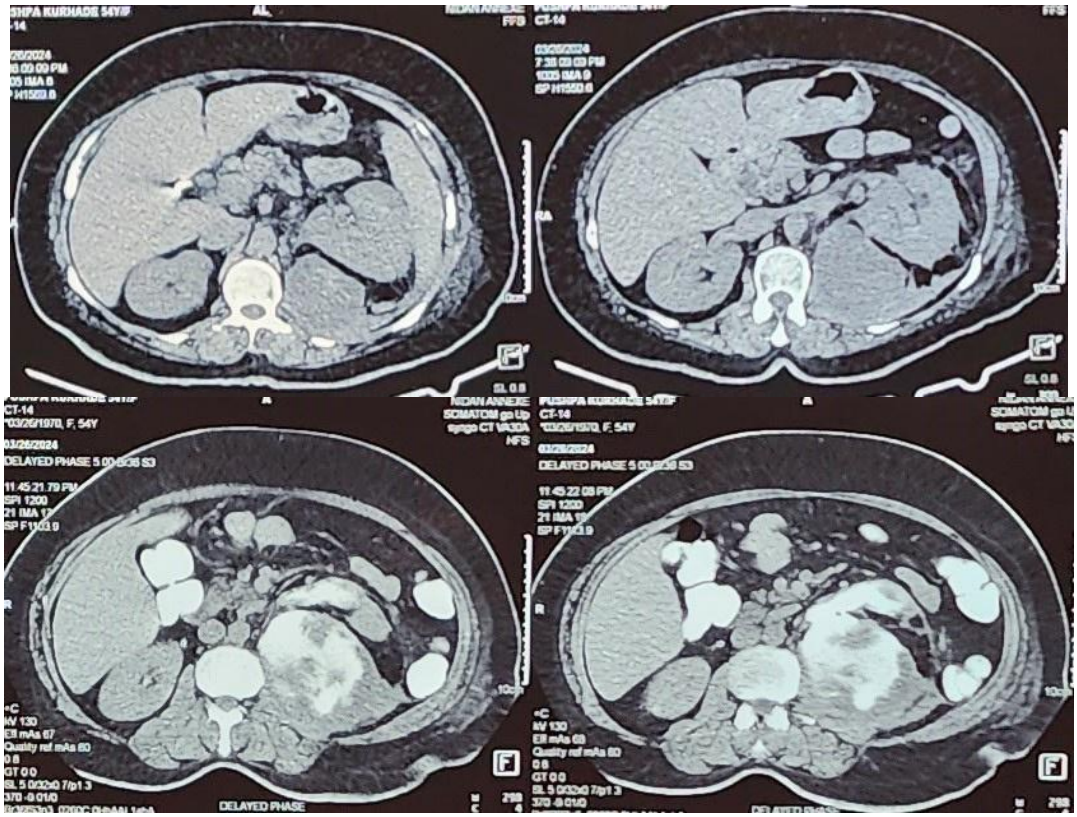

Figure 1: CT scan

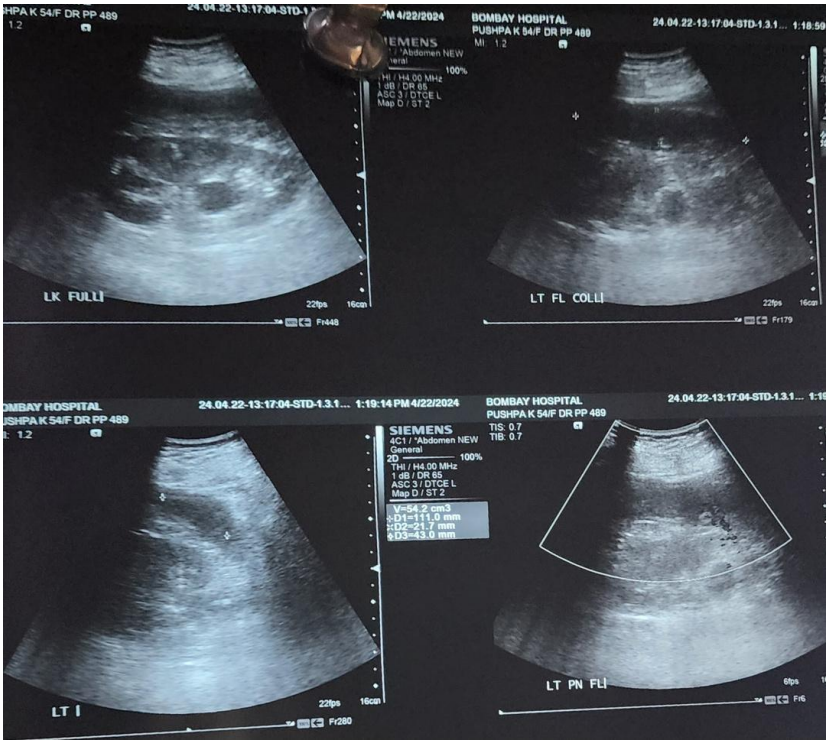

Figure 2: USG

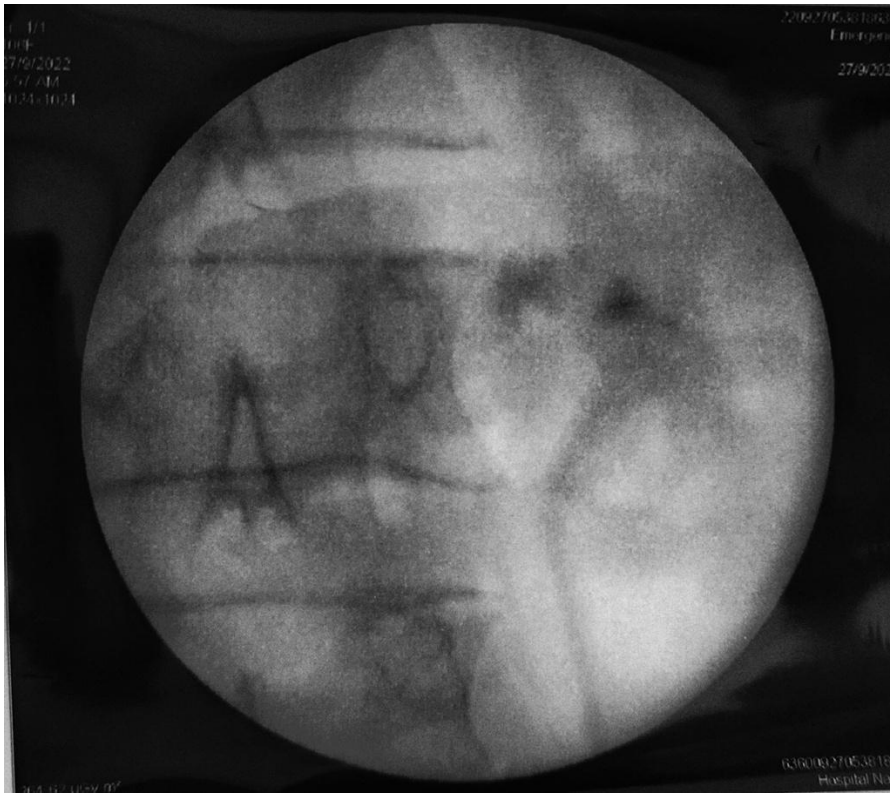

Figure 3: Endoscopy

For lower-grade injuries (Grades I-III), endourological management is often sufficient. This may involve the placement of a Double-J stent to ensure ureteral patency and allow for healing. In cases where there is associated ureteric calculi, as in the present case, the calculus can be fragmented using holmium laser lithotripsy, a minimally invasive technique that reduces the risk of further ureteral damage.

In higher-grade injuries (Grades IV-V), surgical intervention may be necessary. This could involve pyeloplasty or ureteroureterostomy to reanastomose the ureter, ensuring a tension-free, watertight closure. In some cases, more extensive reconstruction may be required, including the use of bowel segments (e.g., ileal ureter) to bridge longer defects. The choice of surgical technique depends on the location of the injury, the extent of damage, and the patient's overall condition.

CONCLUSION

This rare case illustrates that blunt abdominal trauma can result in isolated ureteric injury or partial ureteric avulsion with retroperitoneal collection, necessitating a high degree of suspicion for accurate diagnosis and appropriate management. Endoscopic treatment, as demonstrated in this case, can be highly effective for lower-grade injuries.

ACKNOWLEDGEMENTS

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