Post Traumatic Isolated Ureteropelvic Junction Avulsion in a Child

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Introduction
Genitourinary trauma accounts for only 10% of all trauma patients. Ureteral injuries due to external trauma accounts for less than 1%, out of which more than 95% are due to penetrating injuries like gunshot, while as ureteral injuries due to blunt trauma is very rare and accounts for only less than 5% of all ureteral injuries [1]. We report a case of isolated ureteropelvic junction (UPJ) avulsion due to blunt trauma abdomen in an 8 year old child.

Case Report
An 8-year-old boy was brought to our Accident and Emergency Department with 4 hours history of blunt trauma left side of upper abdomen and chest due to road traffic accident. He was hit by a two wheeler while crossing road. On general physical examination he was conscious co-operative and oriented. His pulse rate was 100 bpm, blood pressure 100/70 mmHg and respiratory rate was 22 breaths per minute with bilateral normal chest expansion and air entry. Abdomen was soft with fullness and tenderness in left flank and renal angle. There were external bruises with no laceration. There was no hematuria and urine output was adequate. His baseline blood investigations and chest X-ray were normal. Focused assessment with sonography for trauma revealed no intra-peritoneal fluid with a left side perinephric hematoma. A contrast-enhanced computed tomography of the abdomen revealed left kidney well opacified with a cut off at UPJ in urogram, distal to which ureter was not identified (fig. 1). There was perinephric collection as well. Cystoscopy was not available that time in emergency and patient was taken to operating room for exploration. A midline supraumbilical incision was made and left sided colon mobilised, ureter identified and complete avulsion at about 3–4 cm from renal hilum was found. A water tight spatulated end-to-end anastomosis was performed by 5-0 vicryl interrupted sutures over a 4.8/16 cm double J stent (fig. 2). Foley catheter was removed after 72 hours followed by tube drain. Patient was discharged on day 4 and DJ stent was removed after 6 weeks. He is on our follow-up since last 6 months and is doing well.

Discussion
Genitourinary trauma is often overlooked in the setting of acute trauma due to immediate, life-threatening injuries taking precedence. Upper ureteral injury caused by blunt trauma is extremely rare [1] as the ureter is well protected in the retroperitoneum by the bony pelvis, psoas muscles and vertebrae [2]. Upper ureteric injuries are most commonly iatrogenic in origin [3]. Injuries typically occur during gynecological, urological and...
other pelvic surgeries [4]. Preoperative catheterization of ureters makes them easier to protect during surgery. Children because of their higher spinal mobility leading to maximum share stress on ureter during blunt trauma abdomen, have higher incidence of ureteral injuries. The injury is believed to arise from the stretching of the ureter from hyperextension, followed by a sudden deceleration [5]. The sharing forces acting between mobile and fixed parts at both ends of ureter result in contusion, laceration or even UPJ avulsion.

The diagnosis of ureteral injury is missed in about 50% of cases [6]. One of the reasons for delay in diagnosis is that clinical parameters are unreliable for predicting the need to investigate the ureters [1]. Complications associated with ureteral injury are sepsis, fistula (ureterovaginal and/or ureterocutaneous), urinoma, prolonged ileus, or renal failure secondary to bilateral obstruction (10%) [1].

Ureteral injury due to blunt trauma abdomen is almost always accompanied by multiple intra-abdominal visceral injuries [4]. In our case, no associated visceral injury or bone fracture was noted. Such an isolated ureteral injury is an extremely rare occurrence in cases of blunt abdominal trauma. Urine examination of 30–40% of cases do not reveal any evidence of hematuria, so lack of hematuria is an unreliable sign to exclude ureteral injury [4] as was true in our case. When the patient is stable, a primary repair of the ureter can be performed, with placement of a double J stent.

Our case is unique as the patient had an isolated left upper ureteric injury with no other renal-pelvis-bladder injury. To the best of our knowledge this is a very rare case.

**Conclusion**

All patients involved in accidents with hyperextension or deceleration mechanisms should be evaluated and observed with high index of suspicion of ureteral injuries especially in patients lacking hematuria, but presenting with flank tenderness or echymosis.
References

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