Ruptured asymptomatic and undetected pelviureteric junction obstruction after trivial abdominal trauma: A case report.

Abstract
Since the routine use of antenatal ultrasonography, congenital pelviureteric junction (PUJ) obstruction rarely presents as an incidental diagnosis following renal trauma. Acute severe abdominal pain following seemingly trivial trauma should arouse the suspicion of a pre-existing abnormality. Eight year-old boys with previously asymptomatic and undetected PUJ obstruction who first presented with acute abdomen following a trivial trauma from his little brother. During abdominal exploration every thing was normal other than ruptured cystic lesion found in the lesser sac, the provisional diagnosis was as ruptured mesenteric cyst. The drain that we put in the sac start to drain clear fluid as the same as that of urinary catheter. Contrast enhanced spiral CT scan confirm the diagnosis of bilateral PUJ obstruction with rupture of the right side, the drain was shown inside the right pelvis. The renal CT scan confirmed good cortical thickness and good renal function, and the improved general condition, a delayed Anderson-Hynes’ pyeloplasty was performed.

Key Word: Acute abdomen, occult hydronephrosis, pediatric renal trauma, Pelviureteric obstruction.

Introduction
Acute abdomen following blunt renal trauma is one of the rare presentations of occult renal anomalies in children (1). In the emergent situation, the risks of operation include bleeding, need for nephrectomy, and surgical morbidity (2). With the development of newer protocols, the treatment strategy of renal trauma has evolved from immediate surgery towards conservation of the functioning kidney (3).

Although it has been reported that preexisting hydronephrosis or a congenital UPJ obstruction renders the patient more susceptible to a UPJ disruption, this is controversial. The vast majority of patients with a history of trauma and preexisting UPJ or hydronephrosis will be found to have a renal contusion or grade 1 renal injury on evaluation. When urinary extravasation is seen, rupture of the renal pelvis or a major laceration extending through a thinned renal cortex into the collecting system (grade 3 renal injury) is the most common finding, not a UPJ disruption (4,5).

The majority of patients sustaining a UPJ disruption will present with vascular instability, requiring emergent laparotomy with the patient unable to undergo preoperative imaging. Urinalysis on presentation will have some degree of hematuria in 70% of patients; however, 30% of patients with UPJ disruption will have a completely normal urinalysis. Emergent exploratory laparotomy for coexisting intra-abdominal injury is usually necessary and exploration fails to reveal the presence of a retroperitoneal hematoma (4,6). Because of the frequent association of this injury with life-threatening trauma the diagnosis of a UPJ disruption is delayed for more than 36 hours in more than 50% of patients (6). Patients will eventually come to attention due to CT abnormalities found during the workup of persistent postoperative fever.
chronic flank pain, continued ileus, or sepsis (4,6).

We report a case with previously asymptomatic and undetected PUJ obstruction who first presented a case of acute abdomen following a trivial trauma. The diagnostic features at presentation and decision making in surgical management are discussed.

**Case Report**

A previously-well 8-year-old boy presented with acute abdominal pain when he sustain a trivial trauma from his little brother. Clinically, he was stable, his pulse and blood pressure (BP) were 83 per minute and 116/60 mmHg, respectively. There was tenderness and guarding over his entire abdomen. There were no external injuries. His haemoglobin and haematocrit levels were 10.5g/dL and 31.9, respectively.

Emergency exploration through a mid midline incision done for him which revealed clear fluid inside the abdomen, every thing was normal other than ruptured cystic lesion in the lesser sac, we put a tube drain in the cyst and close the abdomen. From the early moment after surgery the drain bring a clear fluid like that drained by the urethral Foley's catheter. To prove the suspicion that the fluid is urine we send for the measurement of the level of urea in it. The fluid contains a very high level of urea. It also stained red when we give the patient a capsule of rifampicin 150mg orally. Enhanced abdominal spiral CT scan shows bilateral PUJ stenosis with ruptured right side and the drain was inside the right renal pelvis. Fig.1 (A and B).

Six weeks after the initial trauma the right kidney was explored through a right loin (subcostal) incision. Since the kidney had a good cortical mass, an Anderson-Hynes’ pyeloplasty was performed. A rat tail catheter was kept in place during the operation, and removed after one month. Fig.2 (A and B).

**Discussion**

The kidney is affected in 10% of all blunt abdominal trauma. It is the most frequent urinary organ to suffer injury in blunt trauma (1). Even the normal paediatric kidney is predisposed to increased risk of injury due to various factors (2). It is proportionately larger within the abdomen, and is less protected due to a thinner perirenal fat cushion, underdeveloped flank muscles, and less ossification of the overlying ribs. Persistence of foetal lobulations will also allow easier disruption of the parenchyma. Furthermore, there is a predisposition for different types of injuries on each side. The right kidney is better protected under the liver, but has a larger bare area and is more mobile. Hence, it will escape minor crush forces, but will sustain a severe injury following a severe compression force. On the other hand, the left kidney is not covered by the liver, is less mobile due to its additional ligamentous attachments (splenorenal and phrenocolic) and has fewer bare areas. Hence, it is more prone to a higher number of minor injuries (7). The presence of an abnormality further predisposes the kidney to severe injury following even minor trauma (8,9).

CT is recommended for detection and characterization of the grade of injury, for qualitative assessment of renal function, and to rule out associated intraabdominal injury that may warrant immediate surgery (7,10,11). The finding of a dilated pelvis, cortical thinning and collapsed ureter is suggestive of a pre-existing PUJ obstruction (12,13). The aim of management is to prevent mortality, conserve the kidney, and reduce immediate and longterm morbidity. The treatment of such patients can be either operative or nonoperative. Primary pyeloplasty at initial presentation has been performed for traumatic ureteropelvic disruptions (10). However, different reports show that immediate
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surgery after blunt renal trauma had a high nephrectomy rate (10,14,15). Temporary percutaneous nephrostomy is indicated in patients with severe extravasation or expanding urinoma with adynamic ileus or flank discomfort. It is useful in estimating the split function of the traumatised kidney that helps in deciding to conserve the kidney (16). The general consensus for management in haemodynamically-stable patients is conservative; with monitoring and follow-up imaging as warranted from the grade of injury as seen on the initial CT (3,17,18). Furthermore, the presence of incidental genitourinary anomalies in renal trauma does not seem to have an impact on recovery from the injury itself (2,8,9,19). Definitive surgical treatment of the PUJ obstruction was achieved by a dismembered (Anderson- Hynes) pyeloplasty. The long-term prognosis is expected to be good (20).

References

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Fig (1, A and B): Enhanced spiral CT shows huge dilation of the left pelvis and drain within the right pelvis.

Fig (2, A and B): Operative finding during the second operation shows the drain within the right pelvis (a) and stent within the right ureter (b) and the tear is still visible (c).