



Case Report

Acute Renal Trauma

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ABSTRACT:

The kidney is the most commonly injured genitourinary organ. Most injuries can be managed conservatively but nephrectomy may be needed in case of shattered or avulsed kidney. Here we present a case of haematuria with blunt trauma to the abdomen. The patient was haemodynamically unstable and his abdomen was distended and rigid. FAST revealed intraabdominal and retroperitoneal haematoma with left renal injury. After rapid primary management emergency nephrectomy had done as there were multiple lacerations and avulsion in the left kidney. Post operative recovery and subsequent follow up was uneventful.

Keywords: Blunt renal trauma, Haematuria, Nephrectomy.

Introduction

Trauma is the leading cause of death and disability world wide. Renal trauma occurs in approximately 1-5% of all traumas¹ and 10% of all abdominal trauma². The kidney is the most commonly injured genitourinary organ with a male female ratio 3:1.³ Blunt trauma is caused primarily by motor vehicle collisions, followed by falls, contact sports and paediatric accident.⁴

The kidneys are a pair of organ along the posterior muscular wall of the abdominal cavity. Kidneys lie behind the peritoneum that lines abdominal cavity and are thus considered to be retroperitoneal organs. The ribs and muscles of the back protect the kidneys from external injury. Perirenal fat surrounds the kidneys and acts as a protective padding.

The paediatric kidney is believed to be more susceptible to trauma because it is protected by an immature, more pliable thoracic cage and weaker abdominal musculature, has less perirenal fat and sits in a lower position in the abdomen than its adult counterpart.⁵

Renal trauma patients are largely managed conservatively but on occasion have to be embolised or taken to the theatre for definitive surgical management usually in the form of emergency nephrectomy.⁶

Case Report

A 13 years old boy was admitted to Jahurul Islam medical college hospital through emergency department with a history of blunt trauma to the left loin while he was playing badminton due to impact on a brick wall followed by gross haematuria. Injury occurred five and half hours before admission to our hospital.

On receiving the patient was irritable, lathergic, drowsy and paper white in appearance. On physical examination his pulse was feeble and thready, blood pressure was not recordable and patient was tachypnoeic.

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Received: 7th March 2018

Accepted: 25 December 2018

On abdominal examination abdomen was tense, tender and rigid. No abrasion, bruise or discoloration was seen over the region of impact. Percussion note was dull and bowel sound was sluggish.

Laboratory findings showed decreased levels of haemoglobin and haematocrit -4.5gm/dl and 13.6%.

FAST (Focussed assessment with sonography for trauma) revealed 1. left renal injury with haematoma in the lower pole and perinephric region, 2. haematoma in the left side of abdominal cavity with mild peritoneal collection, 3. large blood clot in the urinary bladder, 4. minimal pleural effusion (left).

We immediately managed the patient according to ABCD protocol. But since the patient was not becoming haemodynamically stable and gross haematuria persisting, we choose to go for immediate exploratory laparotomy. The goals of exploratory laparotomy were control of bleeding and possible preservation of renal tissue as well as the ability to address the concurrent injury.

Under general anaesthesia with endotracheal intubation abdomen was opened by upper midline incision extending below the umbilicus. Huge amount of blood was found in the peritoneal cavity which was evacuated. Then large retroperitoneal haematoma was detected in the left lumbar region, then upon entry into the left retroperitoneum decompression of the renal haematoma was done. It was revealed that there was a through and through lacerated injury along the middle part of the left kidney extending into the renal hilum where renal vessels were also found partially avulsed. There was another avulsion injury in the lower part involving half of the circumference of the same kidney. First we clamped the renal vessels and inspected thoroughly the injuries. Since this come under grade 5 renal injury according to AAST(The American Association for the Surgery of Trauma) nephrectomy was performed.

There was right sided retroperitoneal haematoma also which was evacuated and right kidney was thoroughly examined and found normal. No other visceral injury was detected in the peritoneal cavity and after through peritoneal toileting abdomen was closed in layers keeping two drains in two retroperitoneal spaces. Throughout the operative period and early post operative period bladder irrigagation was maintained as there was clot within the urinary bladder.

In the early post operative period Hb, Haematocrit and serum creatinine were investigated and input-output chart was closely monitored. Patient was found anaemic which was corrected by blood transfusion, serum creatinine level was found normal and urine output was adequate. Respiratory support was given by nebulization and chest physiotherapy.

Throughout the postoperative period patient was haemodynamically stable, his abdominal condition was improved gradually, drainage became nil, urine became clot free and normal in colour; so drains and catheters were removed.

On 8th p.o.d, stitches were removed, wound was found healthy and on 10th p.o.d patient was discharged with advice to attend S.O.P.D. after one month.

After one month interval patient was evaluated by monitoring his vital signs and ultrasonography of KUB and serum creatinine were done when all these are found normal.



Figure 1. *Lacerated and avulsed left kidney.*

Discussion

Current management of renal injuries has shifted towards a nonoperative approach with upto 85% of blunt renal injuries are managed nonoperatively.⁷ Goals of either a conservative or surgical approach should focus on preservation of renal tissue and kidney function while minimizing morbidity and mortality of the injury to the child.

Most blunt injuries in the children are low grade (I-III) and conservative management is appropriate and commonly involves bed rest and close observation until haematocrit measurements have stabilized and haematuria has resolved.⁸

Paediatric patients with high grade (IV-V) renal injuries who are haemodynamically stable should also be managed nonoperatively with surgery reserved only for those with ongoing bleeding.⁹ Surgery is also indicated for patients with a vascular pedicle injury or shattered kidney that place the patient at risk for life threatening haemorrhage.⁷ Absolute indications for operative management also include an expanding or pulsatile retroperitoneal haematoma and the inability to stop haemorrhage by selective angioembolization.

Single shot I.V.P taken (10-15) minutes after injection of contrast in the operating room is helpful in detecting a normally functioning contralateral kidney if unilateral nephrectomy is a consideration.⁵ But as our patient was haemodynamically unstable and ultrasonogram findings revealed normal right kidney per operative I.V.P was not considered.

In the clinically stable patient triphasic abdominal and pelvic C.T is the most sensitive method for diagnosis and classification of genitourinary trauma.¹⁰ As our case was haemodynamically unstable so there was no scope of doing C.T scan.

In our case the indication for urgent surgical exploration was based on haemodynamic instability of the child, persistent haematuria, intraabdominal and large expanding retroperitoneal haematoma.

Conclusion

Our case reported that transperitoneal approach in case of blunt renal injuries with haemodynamic instability is appropriate for management of intraabdominal and retroperitoneal injuries and nephrectomy of an irreparable shattered and avulsed kidney.

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