



SUCCESSFUL ANAESTHETIC MANAGEMENT OF A CASE OF OPEN NEPHRECTOMY FOR GRADE 5 RENAL INJURY

Anaesthesiology

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ABSTRACT

Blunt trauma to the abdomen can cause damage to vital organs like spleen, liver, kidney and intestines and is associated with high morbidity. Hereby we are presenting a case of Grade 5 Renal Injury(shattered kidney) following blunt injury abdomen. A 21 year old male presented to our Emergency Room with history of RTA. He revealed history of severe abdominal pain. He presented with severe tachycardia (HR-140/minute), blood pressure and saturation were normal and GCS was 15/15. His CECT abdomen revealed shattered left kidney with subcapsular and perinephric collection with renal vascular injury. His hemoglobin was found to be 5.7g/dl, rest of the blood investigations were within normal limits. He was shifted to OT immediately and was proceeded with open nephrectomy. Post induction he developed severe hypotension and was started on iv crystalloids and colloids and minimal Nor adrenaline support. Intraoperatively 4 units of PRBC and 3 units of FFP were transfused. Around 1 litre of blood, bladder clots and a concealed hematoma in mesentery were evacuated. Post transfusion ABG revealed metabolic acidosis. He was shifted to ICU with the ET Tube. He made an uneventful recovery in ICU and was extubated. Physiologically, hemodynamic compensatory mechanisms maintain vital organ perfusion till about 30% TBV loss, beyond which there is a risk of critical hypoperfusion. Massive blood loss is best managed by following the massive transfusion protocol (MTP).

KEYWORDS

Massive Transfusion Protocol, Shattered Kidney, Blunt Injury Abdomen

INTRODUCTION

Blunt abdominal trauma accounts for the majority (80%) of abdominal injuries. Blunt forces exerted against the anterior abdominal wall can compress abdominal viscera against the posterior thoracic cage or vertebral column, crushing tissue and can cause damage to vital organs like spleen, liver, kidney and intestines and is associated with high morbidity. They may also create tears at vascular pedicles or can cause stretch injuries to the intima and media of arteries, resulting in infarction of susceptible organ. The kidney is most susceptible to such stretch injury. Hereby we are presenting a case of Grade 5 Renal Injury [shattered kidney] following blunt injury abdomen.

Case Report

A 21 year old male presented to our Emergency Room with history of RTA. He revealed history of severe abdominal pain. He presented with severe tachycardia [HR-140/minute], blood pressure and saturation were normal and GCS was 15/15. Abdominal examination revealed diffuse tenderness over abdomen more towards left side. Post insertion of urinary catheter he was found to have hematuria. All baseline blood investigations were sent and patient was immediately shifted for E-fast which revealed free fluid in morrison's pouch, paracolic gutter and hemoperitoneum. CECT abdomen (Figure-1) revealed shattered left kidney with subcapsular and perinephric collection with renal vascular injury and active extravasation of contrast with pseudoaneurysm formation from upper pole segmental artery.

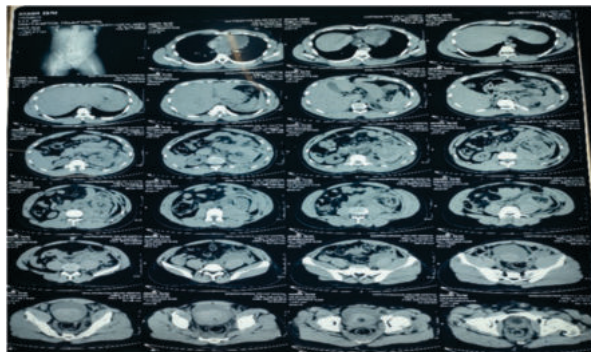


Fig 1- Cect Abdomen

His hemoglobin was found to be 5.7g/dl and rest of the routine blood investigations were within normal limits. He was shifted to OT immediately for open nephrectomy. He was premedicated with Inj

Midazolam 1mg iv, Inj Glycopyrrolate 0.2mg iv. Inj Fentanyl 100mcg iv was given and was induced with injection thiopentone 200mg iv. RSI was performed. Anaesthesia was maintained with O₂:N₂O-1:2 and Isoflurane 1%. Central line, peripheral lines using wide bore iv cannula and arterial lines were secured. Post induction he developed severe hypotension and was started on iv crystalloids and colloids and minimal Nor adrenaline support. Intraoperatively 4 units of PRBC and 3 units of FFP were transfused. Midline laparotomy incision was made. Shattered left kidney (Figure-2) was removed. Around 1 litre of blood, bladder clots (Figure-3) and a concealed hematoma in mesentery were evacuated and abdomen was closed.

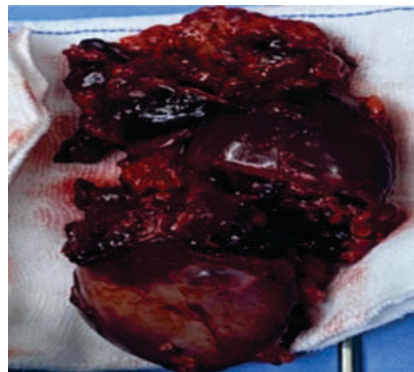


Fig 2- Shattered Kidney

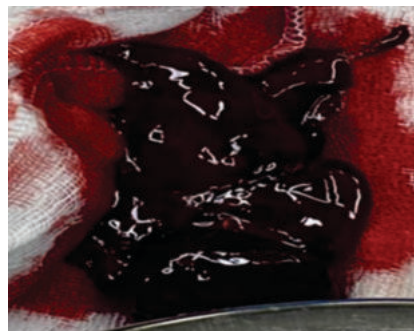


Fig-3 Bladder Clots

Total intraoperative blood loss was around 1800 ml and urine output

was 100ml. Post transfusion ABG revealed metabolic acidosis with a pH of 7.23 and lactate value of 4.5 and a hemoglobin value of 11.8. His vitals were stable and was shifted to ICU with the ET Tube. He made an uneventful recovery in ICU and was extubated the next day.

DISCUSSION

Haemorrhage remains major cause of potentially preventable deaths. Management of intravascular volume is a vital component of blood loss management. Physiologically, hemodynamic compensatory mechanisms maintain vital organ perfusion till about 30% TBV loss, beyond which there is a risk of critical hypoperfusion. Massive blood loss is best managed by following the massive transfusion protocol [MTP]. It is important to remember that overzealous resuscitation leading to high arterial and venous pressures may be deleterious as it may dislodge haemostatic clots and cause more bleeding.

CONCLUSION

Management of massive loss requires a quick concerted team effort. Understanding the complex pathophysiology of massive blood loss and its replacement is crucial to a successful outcome. Recent evidence supports early use of coagulation factors to improve survival in a massive blood loss.

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