

Abdominal Stab Wound with Inferior Vena Cava Injury: A Case Report

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INTRODUCTION

Injury to the inferior vena cava (IVC) resulting from stab wound carries a high mortality rate.¹ Conventional open repair of the inferior vena cava is very challenging. Its morbidity and mortality ranges from 33-66%.² The predictors determining the outcome are the mechanism and type of injury, the initial blood pressure, the hemodynamic response to fluid resuscitation, the location of the vena caval injury, the presence of multiple other vascular and solid organ injuries.¹ We report a successfully treated suprarenal IVC injury.

CASE REPORT

A 52 year old Indian gentleman presented to the casualty with a stab wound to the right hypochondrium and evisceration of the small bowel. He was clinically stable. Exploration was performed and noted perforation of the ileum and proximal transverse colon, a grade III D2 injury and an incidental finding of a longitudinal suprarenal IVC tear, measuring 1 cm was seen during the mobilization of the duodenum. The laceration on the IVC appeared to be tamponaded by the retroperitoneum and mobilization of the duodenum lead to profuse bleeding.

The IVC bleed was controlled by direct gentle finger pressure by the assistant while the proximal and distal IVC mobilized to achieve better visualization of the tear and the surrounding structures. Direct compression of the proximal and distal IVC against the spine with fingers allowed the tear to be repaired with continuous suturing with prolene 4/0 as shown in Figure 1. The transverse colon and duodenum was repaired primarily. Ileal perforation was exteriorised as ileostomy. Gastrostomy decompression tube inserted using a 20Fr T-tube and a 10Fr feeding tube was advanced into the jejunum through one of the T limb of gastrostomy tube as shown in Figure 2. Only 500ml of whole blood transfused perioperatively.

Post operative recovery was uneventful. He was fed through the transduodenal feeding tube. Prophylaxis heparinisation was given throughout the admission. At post op D10, contrast study was performed and showed no leak through the duodenum repair site. He was allowed orally and discharged home at day 12 of surgery with the gastrostomy tube spigotted. At 1 month of discharge, distal loopogram was performed through the ileostomy and showed there was no leak or stricture over the transverse colon. The gastrostomy

tube was removed during follow up and the ileostomy was reversed at 3 months of surgery.

DISCUSSION

The incidence of IVC tear is recorded to be 10 to 15% in penetrating trauma of the abdomen. Half the patients die before reaching the hospital and another 50% may die perioperatively.³ The site of the injury determines the outcome of the patient. There are 5 sites of clinical significance for an abdominal IVC injury. They are the retrohepatic, suprarenal, perirenal, infrahepatic and bifurcation.³ Generally, an injury below the renal vein carries a better prognosis than above.²

Our patient is fortunate to have survived his injury despite being undetected preoperatively. This could be due to the spontaneous retroperitoneal tamponade on the IVC site that was torn following the stab wound. Records have shown many surgeons observed similar findings in their exploration. However, as high as 40% mortality has been reported after the surgical exploration due to exsanguinations from torrential bleed.³ Diligent and fast surgical control of the bleeding is a significant reason for the patient's survival.

IVC repair with direct suturing technique can lead to narrowing of the IVC and deep vein thrombosis. However, if the laceration is small and not extensive, direct repair is good enough and causes minimal narrowing of the IVC.⁴ Long-term anticoagulation is not an absolute indication unless in a more extensive injury, when a patch repair or graft is used depending on the hemodynamic stability of the patient.¹ In an unstable condition, ligation of the infrahepatic IVC can be done anywhere along its course.⁴ Less is more.

Almost all penetrating IVC injuries have other abdominal organs injured.^{2,3} Our patient had three different parts of the gastrointestinal tract injured; the second part of the duodenum, ileum and the transverse colon. The duodenum was repaired primarily with gastrostomy decompression and trans duodenal feeding, directly into jejunum via a feeding tube. Management of duodenal injury may vary depending on the extent of the injury.⁵ The transverse colon was repaired primarily with the ileum perforation exteriorized as an ileostomy.

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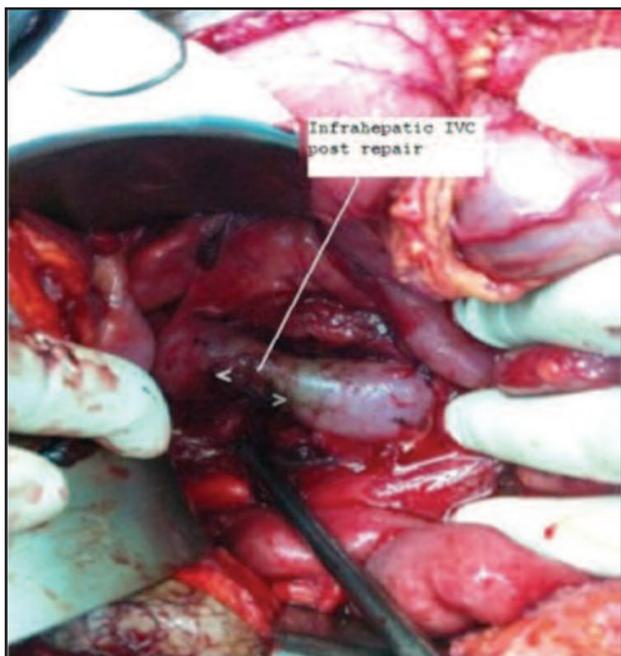


Fig. 1: The IVC after the repair. The tear is between the brackets.

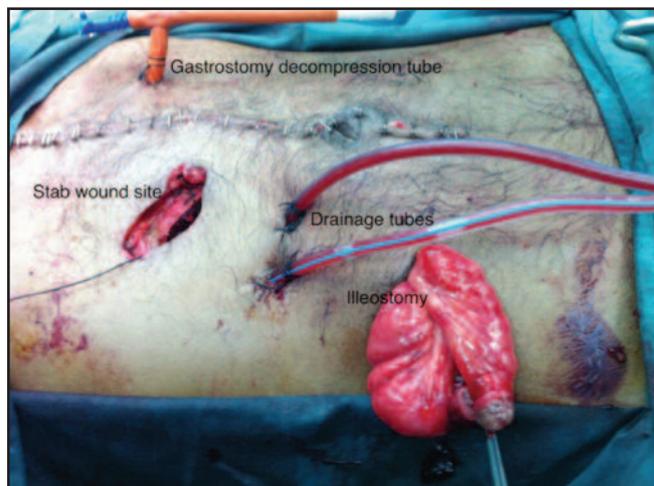


Fig. 2: The stab wound site, gastrostomy decompression tube, drainage tubes and ileostomy.

CONCLUSION

IVC injury carries a high mortality and morbidity. A high suspicion and preparedness to manage the bleeding is of utmost importance during exploration. Quick arrest of the bleeding and repair of IVC tear determines survival. Concurrent visceral injury must be managed optimally.

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