

# Penetrating Abdominal Trauma – A Case of Isolated Inferior Vena Cava Injury

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Isolated inferior vena cava (IVC) injury is a rare presentation of abdominal trauma. Here we report a case of penetrating abdominal trauma with isolated IVC injury.

## Introduction

Isolated injury of IVC is an uncommon complication of abdominal trauma and is associated with a high mortality rate. Here we report such a case.

## Case Report

A 29 year old construction worker presented with a history of fall over steel rod. On examination he had a heart rate 116 beats per minute low volume, systolic BP of 80 mm Hg and cold clammy extremities. Per abdomen examination revealed a 2 cm by 2 cm puncture wound below the right costal margin with distension of abdomen. Blood pressure was not maintained even after fluid resuscitation. Decision was taken to perform emergency laparotomy. Intraoperatively 2 litres haemoperitoneum was drained. Large retroperitoneal haematoma at right hypochondrium extending to mesocolon and transverse colon was found. There was no injury to other solid organ or bowel. On exploration of haematoma a 5 cm disruption of IVC at confluence of right renal vein was seen leaving intact only 5 mm broad part of vein anteromedially. The left renal vein entered IVC 3 cm above this site (Fig.1). The tear on IVC was clamped using Satinsky's clamps. The tear was closed using 4-0 monofilament polypropylene in a continuous manner (Fig. 2). Right renal vein could not be rescued due to heavy damage and large haematoma near capsula adiposa. Right nephrectomy was done. Left kidney was normal. Postoperative course was uneventful and patient was discharged on the twelfth post operative day.

## Discussion

In penetrating abdominal trauma the

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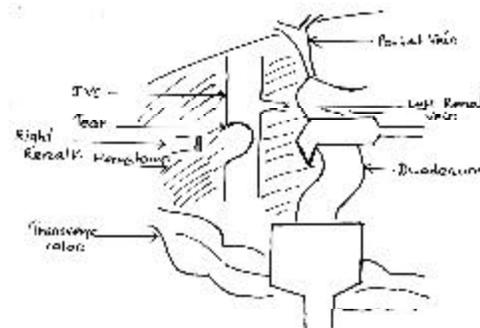


Fig. 1 :

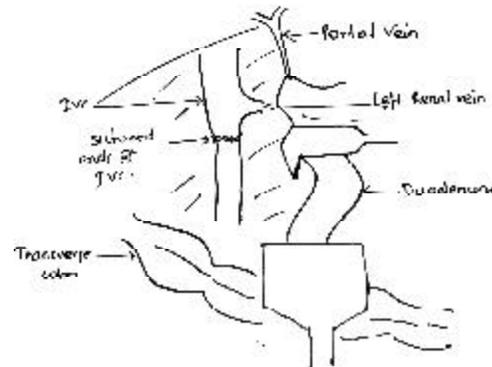


Fig. 2 :

major sites of haemorrhage are mesentery and vasculature. The incidence of injuries to major abdominal vessels in a patient sustaining penetrating abdominal trauma is 10%.<sup>1</sup> Most abdominal vascular injuries result from penetrating trauma and are associated with other abdominal injuries.<sup>2</sup> Clinically the patient will present either as free intra peritoneal haemorrhage or as a contained retro peritoneal haematoma.<sup>3,4</sup> To rule out associated cardiac injury with secondary tamponade or associated haemothorax<sup>5-8</sup> a

FAST (Focussed assessment with sonography in trauma) is useful in both stable and unstable patients. Intra venous pyelography (IVP) is no longer routinely performed and is not indicated unless it is a stable patient with flank wound and gross haematuria and if CT scan is unavailable.<sup>9</sup>

The location of the retroperitoneal haematoma and the mechanism of injury guide the decision to explore the haematoma. Any haematoma in Zone 1 of retroperitoneum (Midline Inframesocolic Area which includes infrarenal abdominal aorta and inferior vena cava) should be explored. If inframesocolic haematoma appears to be more extensive on the right side of abdomen than left and if there is active haemorrhage coming through base of mesentery of ascending colon or hepatic flexure of colon, injury to IVC below the liver should be suspected.

Survival rates for patients with injury to IVC depend on location of injury. The average survival rates for 515 patients with injuries to infrahepatic IVC was 72.2%.<sup>10-13-16</sup> When injury to infrarenal IVC alone are included the average survival for 318 patients was 70.1%<sup>10-12,14-16</sup>

### Conclusion

Penetrating injury of IVC remains a challenging problem. The key to effective management includes early diagnosis, resuscitation and prompt surgical intervention. Associated solid or hollow visceral injuries negatively affect survival. In case of haemodynamic instability, sometimes, a technically simpler solution is more beneficial than a complex, time consuming reconstruction. In our patient, the early recognition, prompt intervention and absence of other associated abdominal injuries culminated in satisfactory outcome.

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