Penetrating injuries of the inferior vena cava (IVC) carry a high mortality. In a hemodynamically unstable patient, ligation of the vena cava often becomes necessary as a lifesaving measure. We describe a delayed reconstruction of the IVC using autologous femoral vein after stabilization of the patient. This case demonstrates the value of working with the trauma team in successful resuscitation of severe shock, acidosis, and hypothermia and in control of abdominal contamination before a venous bypass. The patient has consented to this case presentation.

CASE REPORT

A 23-year-old man arrived in the trauma bay with severe hypotension after a gunshot injury to the abdomen. During emergency department resuscitation, the patient arrested, requiring thoracotomy and aortic cross-clamping. The patient was placed on massive transfusion protocol and transported to the operating room for exploration, with findings of a transection of the distal inferior vena cava (IVC) and small bowel injury. Because of persistent hemorrhagic shock, the IVC was ligated. During the next 3 days, he developed worsening bilateral leg edema. He was taken back for reanastomosis of his small bowel and reconstruction of the IVC using autologous femoral vein harvested from the right leg. We think that patients requiring ligation of the vena cava with worsening leg edema can benefit from a staged reconstruction of the IVC. (J Vasc Surg Cases and Innovative Techniques 2017;3:136-8.)

Staged reconstruction of the inferior vena cava after gunshot injury

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ABSTRACT

A 23-year-old man with a gunshot injury to the abdomen and cardiac arrest requiring emergency department thoracotomy had a transection of the distal inferior vena cava (IVC) and small bowel injury. Because of persistent hemorrhagic shock, the IVC was ligated. During the next 3 days, he developed worsening bilateral leg edema. He was taken back for reanastomosis of his small bowel and reconstruction of the IVC using autologous femoral vein harvested from the right leg. We think that patients requiring ligation of the vena cava with worsening leg edema can benefit from a staged reconstruction of the IVC. (J Vasc Surg Cases and Innovative Techniques 2017;3:136-8.)

DISCUSSION

Penetrating injuries of the inferior vena cava (IVC) carry a high mortality. In a hemodynamically unstable patient, ligation of the vena cava often becomes necessary as a lifesaving measure. We describe a delayed reconstruction of the IVC using autologous femoral vein after stabilization of the patient. This case demonstrates the value of working with the trauma team in successful resuscitation of severe shock, acidosis, and hypothermia and in control of abdominal contamination before a venous bypass. The patient has consented to this case presentation.

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studies have documented minimal lower extremity venous comorbidities when the vein is harvested between the deep and popliteal veins.\textsuperscript{14,16,17} In our case, the trauma service had ligated both the IVC and bilateral iliac veins as a damage control maneuver. The patient subsequently developed early, progressive lower extremity edema. Based on the early progressive edema, at a planned second-look laparotomy after a completed resuscitation, we opted to perform the venous reconstruction. The ease of exposure and controlled contamination facilitated a successful reconstruction. Although it is not necessary in all patients, an attempt at reconstruction can be considered in patients developing rapidly progressive lower extremity edema.

There are no published case series or reports on a staged approach to reconstruction of the IVC after emergency ligation with worsening leg edema, many years after ligation, when reconstruction may be hazardous because of extensive collateral vein development and a scarred retroperitoneum.

In our institution, traumatic IVC injuries are rare. We have performed only one other reconstruction in 4 years. It is still our practice to monitor patients after IVC ligation for progressive edema and not to perform early reconstruction. Guidelines are difficult to develop on a single case report. This case report simply illustrates one alternative approach for postligation patients who develop early progressive edema.

**CONCLUSIONS**

We think that a staged approach to reconstruction of the IVC can be considered, particularly when there are early signs of progressive leg edema. The opportunity to approach a major venous bypass when the patient is stable and the dissection of the site of injury is uncomplicated gives us better options for reconstruction.

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