Inferior vena caval injury following self-inflicted abdominal stab wound

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Received: 28 October 2006 / Accepted: 21 January 2008

Abstract A rare case of attempted suicidal abdominal stabbing using a shoemaker's piercing awl is reported. The patient presented with the weapon still in place. On emergency exploration, injury to the inferior vena cava and the inferior mesenteric artery were found. The case highlights the fact that major vascular injury may be present in patients of abdominal stabs with retained weapons inspite of their haemodynamic stability. It also illustrates the importance of manipulating retained weapons only after complete exposure with adequate preparation for a vascular procedure.

Keywords Inferior · Vena cava · Injury

Introduction

Self-inflicted injury to the inferior vena cava (IVC) is extremely rare. Literature search revealed only two other reported cases of self inflicted stab injury to the IVC, which were operated upon successfully [1]. We report a case of self inflicted stab injury with a shoemaker's awl. The patient presented with the weapon in situ.

Although haemodynamically stable, he was found to have injury to the IVC and the inferior mesenteric artery, intraoperatively.

Case History

A 29-year-old male presented in the casualty, four hours after having stabbed himself with a shoemaker's piercing awl. The weapon was in situ. He was said to be a known case of psychiatric illness. However there was no history of past suicidal attempts. There was no history of alcohol consumption or drug abuse.

On examination he was haemodynamically stable. The abdomen was tender and there was a muscle guarding. The butt of the weapon used was visible and the working end was seen entering just above the umbilicus. There were no other injuries. An x-ray abdomen in standing position showed the weapon but no free intraperitoneal gas.

His haematological and biochemical investigations were normal. An emergency laparotomy was done with a midline incision. There was minimal blood in the peritoneal cavity and a retroperitoneal haematoma. The weapon had pierced the gastrocolic omentum, the transverse mesocolon and the small bowel mesentery [Fig. 1]. The tip was in the retroperitoneum almost in the midline. The retroperitoneum was approached from the right side, after reflecting the ascending colon to the left. There was brisk bleeding due to avulsion of the inferior mesenteric artery from its aortic origin. After

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partial clamping of the aorta the rent was sutured with running 4 zero polypropylene suture. As the patient was young the inferior mesenteric artery was ligated and reimplantation onto the aorta was not attempted. There were no ischaemic changes in the bowel.

The terminal hook of the shoemaker's awl was firmly anchored to the prevertebral fascia after having pierced the infrarenal part of inferior vena cava. The awl was removed after disengaging the tip. This resulted in profuse bleeding. Roller packing followed by application of vascular clamps helped to achieve haemostasis. There were two lacerations of 1 cm each present anteriorly and postero-medially. A venorrhaphy was done with 4 zero polypropylene. The posterior rent was sutured by rotating the vena cava. There were no other injuries. The shoemaker's awl was about 16 cm in length with a hook at its tip. The patient received prophylactic antibiotics and two units of whole blood in the perioperative period. Anticoagulants were not administered. There was no evidence of pedal edema postoperatively. He had a psychotic attack on the third day for which he was given injectable Haloperidol. There were no other postoperative problems and he was discharged on the tenth day and was referred for a psychiatric counseling. The patient is in good health two years after surgery.

Fig. 1 Intra-operative photograph showing the weapon going through the mesentery and entering the retroperitoneal area. (A sterile glove covers the butt).

Discussion

Self-inflicted abdominal stab injuries are rare. The most commonly used weapon for this purpose is a knife. Razor, scissors, and ice pick are the other objects used [1]. Self-inflicted stab wound to the abdomen with a spoon has also been described [2]. In the present case, a shoemaker's piercing awl was used and the patient presented with the weapon in situ. The awl's terminal hook had prevented its easy retrieval. The retroperitoneal haematoma had produced a tamponading effect, thus preventing exsanguinating haemorrhage.

Although a preoperative CT scan of abdomen was not done in the present case, it has been shown to be of value in determining the nature and extent of injury in such cases. It can detect, clinically unsuspected, major vascular injuries in cases of penetrating trauma of torso with weapon still in place [3].

A right-sided medial visceral rotation has been recommended for approaching the inferior vena cava. The bleeding should initially be controlled by pressure packing rather than by blind application of vascular clamps. Wherever possible a primary venorrhaphy with running fine monofilament sutures should be attempted. Posterior rents can either be sutured by rotating the vena cava or by approaching through the anterior rent after extending it. In case of a difficult repair the vena cava can be safely ligated at the infrarenal level [4].

The case illustrates the fact that major abdominal vascular injuries could be present in patients with retained weapons in spite of their haemodynamic stability [5]. It also highlights the importance of manipulating such retained weapons only after a detail intraoperative inspection, adequate exposure and appropriate preparation for a vascular procedure. A psychiatrist must be involved shortly after admission for evaluation and treatment of the psychiatric illness.

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