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Traumatic superior mesenteric arteriovenous fistula

A case report

D. F. DU TOIT, F. RADEMAN

Summary

In a case of traumatic superior mesenteric arteriovenous fistula resulting from a stab wound in the abdomen clinical signs of high-output cardiac failure or portal hypertension were absent. Selective angiography was useful in confirming and locating the fistula. The patient made a good recovery after resection of the aneurysm and fistula and insertion of a prosthetic graft.

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Department of Surgery, University of Stellenbosch and Tygerberg Hospital, Parowvallei, CP

D. F. DU TOIT, PH.D., F.C.S. (S.A.), F.R.C.S.
F. RADEMAN, M.B. CH.B.

A traumatic arteriovenous (AV) fistula in the mesenteric and portal systems is of special interest because of the effects on the circulation and the challenge which its correction presents to surgical ingenuity and skill.

A patient with a superior mesenteric artery (SMA) AV fistula resulting from a knife stab in the abdomen is reported.

Case report

A 30-year-old woman underwent an emergency laparotomy after being stabbed in the epigastrium. At laparotomy two lacerations in the stomach were sutured. Insignificant bleeding was observed at the root of the small-bowel mesentery and bleeding vessels were oversewn. The postoperative course was uneventful and the patient was discharged from hospital on the 10th day.

Readmission was necessary 1 month later because the patient complained of severe abdominal pain. Clinical examination was essentially normal. Abdominal examination revealed a systolic-diastolic bruit in the epigastrium associated with a palpable thrill. There were no signs of cardiac failure or portal hypertension.

A selective mesenteric arteriogram (Fig. 1) demonstrated a large AV fistula between the proximal SMA and vein, communicating through a false aneurysm. At a second laparotomy the fistula was divided and the aneurysm resected. The defect in the vein was

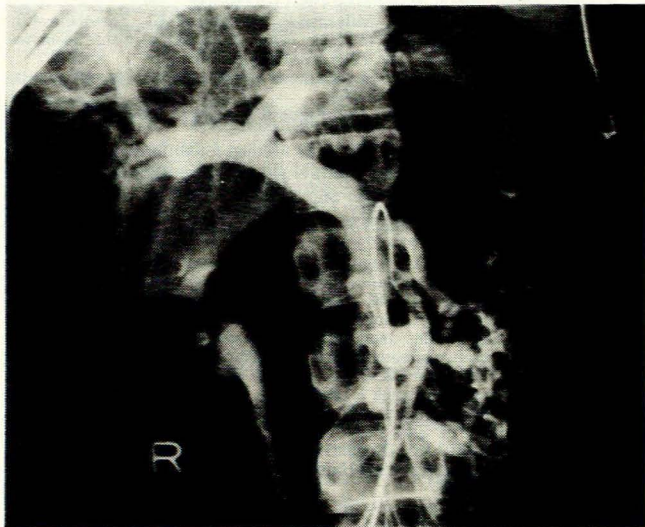


Fig. 1. Pre-operative selective SMA arteriogram showing a sacular aneurysm related to the SMA and opacification of portal vein and its branches indicating the presence of a systemic-portal AV fistula.

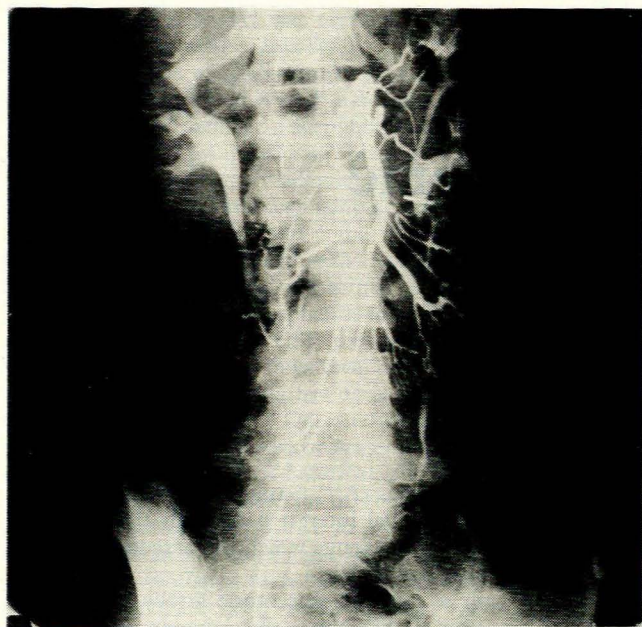


Fig. 2. Postoperative arteriogram showing good opacification of the SMA without filling of the portal vein confirming the surgical and clinical impression of successful fistula repair.

sutured and arterial continuity was restored by insertion of a polytetrafluoro-ethylene interposition graft. A postoperative arteriogram (Fig. 2) showed successful repair of the fistula. The patient made an uneventful recovery.

Discussion

AV fistulas of the mesentericoportal circulation are relatively rare. Acquired AV fistulas of the portal circulation are more common than congenital ones and may result from abdominal trauma, either blunt or penetrating, as in our patient, or be iatrogenic in origin.¹⁻⁴ Mesenteric AV fistulas have been reported after bowel resection, division of adhesions, mass ligation of the splenic vessels during splenectomy or after gastrectomy. Most acquired fistulas involve the splenic vessels.

The diagnosis of a traumatic mesenteric (AV) fistula is generally straightforward and is characterised by the finding of an abdominal bruit which is virtually diagnostic. Angiography is essential for localisation and definition.

In all cases surgical correction is advisable because of the dangers of portal hypertension and cardiac failure developing if the fistula becomes haemodynamically significant,⁵ although portal-systemic fistulas characteristically do not cause symptoms of cardiac failure, presumably because of the buffer effect of the hepatic bed.⁶

Treatment of these fistulas entails closure of the AV communication which may be achieved by quadruple ligation of the artery and vein proximal and distal to the fistula and/or resection of the aneurysm with restoration of the arterial circulation with autogenous or prosthetic engraftment to preserve the viability of the bowel. Although successful management of AV fistula by embolisation has been reported, embolisation was felt to be unsafe in our patient because of the large size of the fistula and significant flow into the portal vein.

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