CASE REPORT

Superselective Mesenteric Arterial Branch Cannulation for Intraoperative Identification of Bleeding Intestinal Mucosal Lesions

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Summary

The intraoperative localisation of small intestinal bleeding lesions identified at pre-operative angiography has always been difficult, resulting in extensive resections in doubtful cases. We report two patients in whom, at angiography, a small intestinal lesion was noted to be the cause of gastrointestinal haemorrhage. They then underwent superselective mesenteric arterial cannulation at a second angiographic procedure and were operated upon with the angiographic catheter left within the branch responsible for the bleeding. This superselective catheter placement facilitates precise localisation of the bleeding site intraoperatively, enabling limited segmental resection of bowel. Both patients have had no recurrent bleeding episodes.

Key Words: Superselective arterial cannulation, Intraoperative localisation, Intestinal bleeding lesions

Introduction

The intraoperative identification of small intestinal mucosal lesions has always been a problem to the surgeon. The surgeon may know from preoperative investigations that the lesion is in the jejunum or ileum, but at operation it is usually very difficult to pinpoint the segment which in involved. Palpation of the bowel may not reveal the lesion especially with angiodysplasia[1-4]. Multiple enterostomies or on table endoscopy via an enterostomy is not very practical.

We present two patients with small intestinal haemorrhage noted at preoperative angiography, but in whom the exact site of bleeding would have been very difficult to identify at laparotomy. They underwent superselective mesenteric arterial branch cannulation and with the catheter in situ to guide intraoperative localisation of the bleeding site, they were operated upon.

Case 1

A 44-year-old man first presented to a district hospital with a seven year history of intermittent episodes of malenic stools. He had no hematemesis or abdominal pain. Except for pallor, clinical

examination was unremarkable. Upper gastrointestinal endoscopy and barium meal follow-through were normal. He was transferred to our centre where a 99m Tc-sulphur colloid scan for Meckel's diverticulum and an ultrasound scan of the abdomen were performed, both of which were normal. A full blood picture showed iron deficiency anaemia probably secondary to blood loss. His blood coagulation profile was also normal. Superior mesenteric arteriography revealed features of angiodysplasia in the jejenum.

Preoperative superselective cannulation of the jejunal arterial branch supplying the abnormal area was then done using a French 5 cobra-shaped catheter (Figure 1). With the catheter in place, the patient was transferred to the operation theatre and laparotomy was performed. The catheter was palpated in the mesentry and a short (3cm) segment of bowel was excised corresponding to the branch of the jejunal artery which had the catheter within. The post-operative period was uneventful. At three months follow-up the patient was symptom-free with no evidence of anaemia. Histopathological examination of the resected jejunal segment showed features consistent with angiodysplasia.

Case 2

A 41-year-old man had undergone a right hemicolectomy for a bleeding caecal lesion at another hospital. The histopathology of the resected lesion had shown non-Hodgkin's Lymphoma. He underwent chemotherapy and had remained well until six months after the surgery when he presented to us with per-rectal bleeding. Colonoscopy up to the anastomotic site was normal as was the barium meal and follow-through. Superior mesenteric arteriography showed an abnormal

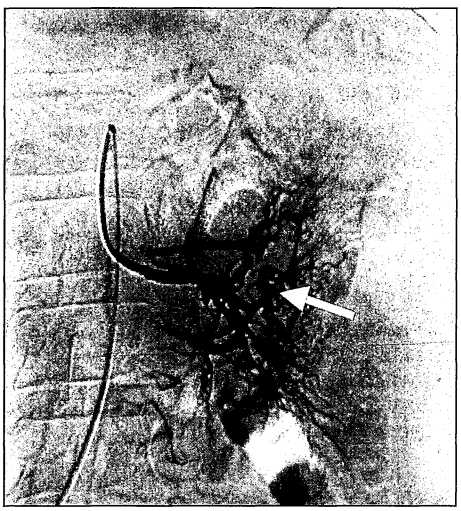

Fig. 1: Superselective mesenteric artery branch cannulation for intraoperative identification of bleeding intestinal mucosal lesions

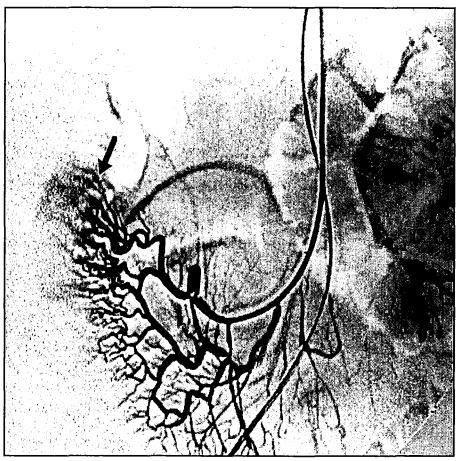

Fig. 2: Superselective mesenteric artery branch cannulation for intraoperative identification of bleeding intestinal mucosal lesions

vascular lesion in the ileum. He underwent superselective mesenteric arterial cannulation of the involved ileal artery using a French 5 cobra-shaped catheter (Figure 2). He was immediately transferred to the operation theatre with the catheter in situ. At laparatomy the catheter was found to be in the ileo-colic anastomosis. A 20cm segment of ileum and a 10cm segment of adjacent colon were resected. Gross examination of the resected bowel showed three ulcers in the ileum about two to 3mm in diameter each. Histopathology showed them to be non-specific ulcers with no evidence of recurrent lymphoma. The patient had an uneventful recovery and has not bled again at eight months followup.

Discussion

We had embarked on this technique in our two cases for precise preoperative localisation of small intestinal bleeding lesions without prior knowledge that it had been attempted before. A subsequent literature review revealed that a similar technique had been employed previously together with the injection of methylene blue in four patients[1,5]. However, in our two cases we found that superselective cannulation into the distal arterial branches was precise enough for very limited bowel resection if one compares the vascular anatomy at laparatomy with the angiography films.

We have used French 5 angiography catheters left indwelling in our two patients for 45 minutes and 30 minutes each between insertion of the catheter at angiography and removal intraoperatively, safely and without obvious ill-effects. Athanasoulis *et al* [5] had used coaxial French 6 and French 3 catheters in their cases safely, although the actual periods of time the catheters were left indwelling were not stated.

Theoretically, the presence of a catheter in the mesenteric vessels may induce thrombosis. For this reason we recommend that a patient planned to undergo this procedure should have a readily available operating theatre waiting to receive him for laparotomy.

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