On-line Case Report

Gastro-colonic anastomosis – a viable option in extensive small bowel infarction

AD Thomas, MD Rocker, G Morris-Stiff, MH Lewis

Department of Surgery, Royal Glamorgan Hospital, Llantrisant, UK

Introduction: We have previously presented a patient with massive small and large bowel infarction and demonstrated that even with only a few inches of remaining small bowel an almost normal life-style and diet is possible.¹

Patient: Recently, we have looked after a young and otherwise fit female patient who suffered mesenteric venous gangrene of the whole small bowel from the Ligament of Treitz to the caecum. In order to achieve gastro-intestinal continuity and to avoid the torrential fluid loss associated with high fistula, an anastomosis between the stomach and the transverse colon was formed.

Result: We are surprised to find that despite the extensive resection our patient maintains a good quality of life and is able to look after her young family.

Keywords: Mesenteric venous gangrene, Small bowel resection

A 25-year-old lady was admitted as an emergency complaining of a 24-h history of right upper quadrant pain, nausea but no vomiting. Despite this, she was able to tolerate a light diet. She had no relevant past medical history and was 5 months' post-partum. Her family history was unremarkable but her grandfathers had both died of pulmonary emboli.

On examination, she was obese and had significant tenderness confined to her epigastrium. Her initial haematological and biochemical investigations were within normal levels. She was admitted, observed, and prescribed opiate analgesia.

The following morning her pain had improved, she was mobilising and tolerating increased diet. She had opened her bowels normally. In the early hours of the second night, she complained of increasing epigastric pain. Her vital signs revealed a marked tachycardia, hypotension, white cell count of 20,000 and a base excess of -9.

After resuscitation, an urgent laparotomy was carried out. This revealed dusky small bowel from the duodenal-jejunal flexure to the ileo-caecal valve. The superior mesenteric artery (SMA) was found to be pulseless. An arteriotomy was performed in the SMA but no embolus was identified. Thrombus was noted in the superior mesenteric vein and its tributaries. She was transferred to X-ray under general anaesthesia and a selective mesenteric angiogram performed (Fig. 1). This did not reveal any capillary blush indicating that the capillaries of the affected small bowel were occluded. She was returned to theatre and the bowel was resected (Fig. 2) leaving proximal duodenum, caecum and colon. These were closed without anastomosis and she was transferred to the intensive care unit with a view to re-laparotomy the following day.

At laparotomy, there was no obvious evidence of further vascular insufficiency. In view of fears that further

Correspondence to: MH Lewis, Consultant Surgeon, Royal Glamorgan Hospital, Ynysmaerdy, Llantrisant CF72 8XR, UK

Tel: +44 (0)1443 443443 ext 3538; Fax: +44 (0)1443 443224; E-mail:mike.lewis@pr-tr.wales.nhs.uk

Figure 1 Arteriogram demonstrating good flow in superior mesenteric artery following embolectomy but absent capillary blush consistent with mesenteric venous thrombosis.

dissection would impair the blood supply of the stomach, liver or pancreas, and that this may lead to further metabolic imbalance, it was decided to anastomose the distal stomach to the transverse colon.

Postoperatively, the patient was anticoagulated and a proton-pump was commenced as was total parenteral

nutrition (TPN) via a subclavian line. She made an excellent recovery and within a week of surgery the patient was able to tolerate a light diet. Histological examination of the small bowel revealed features of acute ischaemia consistent with venous thrombosis with areas of ischaemia and early infarction and haemorrhage into the lamina propria and muscularis mucosae. There was also evidence of recent thrombus within the mesenteric veins present in the specimen.

She currently remains well and is managing her home TPN, maintaining her weight and nutritional status. The patient has minimal diarrhoea consisting of 3 loose motions per day and has no incontinence. Postoperative haematological studies have demonstrated that the patient has a protein-S deficiency as a predisposing factor for venous thrombosis and is to be maintained on long-term warfarin.

Discussion

Acute mesenteric ischaemia is a difficult condition to diagnose, as there remains no single diagnostic test for the acute presentation. Venous occlusion accounts for 10% of cases and is the most common form of mesenteric ischaemia to affect young patients.^{2,3} Mesenteric venous thrombosis has a spectrum of clinical presentations from abdominal pain to peritonitis.⁴ Once peritonitis is evident, urgent laparotomy should be undertaken.

Our management of the patient was initially in keeping with the accepted guidelines. However, after attempted

Figure 2 Segment of resected ileum demonstrating typical appearance of venous gangrene.

embolectomy of the SMA, it was evident that our suspicion of arterial embolus was unfounded. It was at this stage that the unusual step of performing selective visceral angiography whilst the patient was still anaesthetised was taken. We are fortunate to have excellent radiology facilities available and prompt angiography took place in the radiology department with the full consent and co-operation of the radiologists. The selective mesenteric angiography revealed flows in the SMA but the smaller vessels and the capillaries were occluded. These findings were in keeping with occlusive lesions in the superior mesenteric vein and its tributaries. The postoperative pathology report confirmed the radiological diagnosis of mesenteric venous thrombosis.

The formation of a gastrocolic anastomosis is unusual and we have been unable to find documentation of this form of anastomosis in the literature. There is considerable debate as to the optimum management of patients with extensive thrombosis as, given the relative rarity of the condition, there is no real evidence-base on which decisions can be made. There are two main options, namely the formation of stomas or the restoration of intestinal continuity.² Our main reason for performing this anastomosis was to ensure gastro-intestinal continuity. Stoma formation at the duodenum was thus avoided as this would have caused massive fluid loss which would have required very strict monitoring and would almost certainly have been very difficult to balance. The anastomosis of the stomach to the transverse colon did not require mobilisation of the bowel hence avoiding further vascular compromise to the remaining abdominal organs. We have ensured that the patient, although dependant on parenteral nutrition, is able to maintain her nutritional state and carry on with as good a quality of life as possible. Should the patient develop problems related to a blind duodenal loop in the future, then the anastomosis could be revised now that the patient is no longer critically ill.

One of the main problems faced by the patient with a gastrocolonic anastomosis is diarrhoea. This has so far not

proven to be detrimental to the patient's quality of life as she passes on average 3 loose motions per day, is not troubled by incontinence and does not require regular anti-diarrhoeal agents. Her home TPN has been well-tolerated, the only complications being minor line infections which have responded to oral antibiotic therapy.

Deficiencies of protein-C, protein-S, anti-thrombin III, and factor V Leiden are discovered in some cases of mesenteric venous ischaemia. However, these proteins can be falsely low in acute thrombosis.⁵ In this case, the pre-operative and immediate postoperative biochemical and coagulation profiles failed to reveal any underlying abnormalities; however, postoperatively, a protein-S deficiency was confirmed. Due to our patient's prothrombotic state we would advocate that the patient receives life-long anticoagulation.

Conclusions

Our patient is currently well, maintaining a steady weight, and her INR remains in the therapeutic range. This case illustrates that extensive resection and restoration of intestinal continuity can have a successful outcome and should be considered in patients in whom options are otherwise limited.

References

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