Reminder of important clinical lesson

Retroperitoneal haematoma causing gastric outflow obstruction following endovascular repair of a ruptured abdominal aortic aneurysm

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Summary

A 74-year-old man presented with back pain and collapse. A ruptured infrarenal abdominal aortic aneurysm was successfully managed by endovascular aneurysm repair. Postoperatively, he developed gastric outlet obstruction owing to duodenal compression from the unevacuated retroperitoneal haematoma. In the absence of abdominal compartment syndrome, conservative management with gastric decompression and parenteral nutrition led to a full recovery.

BACKGROUND

We present a previously unreported complication of endovascular aneurysm repair (EVAR) for a ruptured abdominal aortic aneurysm (AAA), where a retroperitoneal haematoma resulted in duodenal compression and prolonged gastric outflow obstruction.

CASE PRESENTATION

A 74-year-old man presented with back pain and collapse. He was a smoker with hypertension and chronic obstructive airway disease, but no history of gastrointestinal disease. CT scanning showed a ruptured infrarenal AAA, which was successfully treated by EVAR using a bifurcated endurant stent graft (Medtronic, Bloomington, Minneapolis, USA).

The day after EVAR, he developed vomiting and upper abdominal distension. On the second day, he developed sepsis and respiratory compromise, with signs suggestive of pneumonia.

INVESTIGATIONS

Abdominal x-ray revealed a markedly dilated stomach. CT was indicative of aspiration pneumonia and demonstrated that para-aortic haematoma from the aneurysm rupture was compressing the second part of the duodenum, resulting in gastric outflow obstruction (figure 1). No other abdominal pathology was noted and there was no endoleak. There was no gastrointestinal obstruction evident on preoperative CT. Oesophagogastroduodenoscopy showed luminal obstruction beyond the limit of the scope but mass lesion. Intravesical pressure measurement via a urinary catheter demonstrated no evidence of intra-abdominal compartment syndrome (IACS).

DIFFERENTIAL DIAGNOSIS

While EVAR for ruptured AAA has been suggested to offer lower early death rates than traditional surgery,¹ it is not without potential complications. These include endoleak,

colonic ischaemia, graft limb and renal artery occlusions and arterial injury. Furthermore, current evidence suggests that IACS occurs in 20–34% of ruptured AAAs treated by endovascular means.^{2–3}

IACS arises from the combined effect of visceral oedema and increasing pressure from accumulating blood, and has been associated with death rate as high as 50%.⁴ Diagnosis may be made by clinical signs alone, which include abdominal distension, oliguria and hypoxia, or by objective bladder pressure measurements.^{5–6} The only direct treatment for IACS is abdominal decompression and the timing of this intervention must take into account the degree of metabolic disturbance and the development of organ failure.⁷

TREATMENT

Conservative management with gastric decompression was initiated to avoid laparotomy. A percutaneous

Figure 1 Post-endovascular aneurysm repair contrast-enhanced CT showing dilated stomach and proximal duodenum.

endoscopic gastrostomy (PEG) was placed to allow gastric emptying, as nasogastric decompression was not tolerated. Nutrition was administered parenterally via an in-dwelling peripherally inserted central catheter. The patient was managed with antibiotics for pneumonia and gastric decompression for 23 days.

OUTCOME AND FOLLOW-UP

Once gastric aspirate volume had become physiological, a gastrograffin small bowel study, via the PEG, demonstrated decompression of the duodenum and gastric emptying. Enteral feeding was started gradually and the patient ultimately made a full recovery. He has had no further complications from EVAR after 14 months of follow-up; 12-month CT follow-up shows decrease in AAA diameter and normal gastrointestinal tract.

DISCUSSION

We believe this is the first reported case of duodenal compression from retroperitoneal haematoma following EVAR for ruptured AAA. In the context of open AAA repair, the most common aetiology for duodenal obstruction is adhesion formation, though extrinsic compression by seroma or haematoma has been implicated. Duodenal obstruction by haematoma has been described in other contexts, including following ureterolithotripsy,⁸ blunt trauma or drug-induced bleeding.⁹

In patients with early duodenal compression post-aortic surgery, conservative management by gastric decompression is apposite, resolving the obstruction in 83% of patients by 2 weeks.¹⁰ In the presented case, significant respiratory compromise meant that surgical exploration and evacuation of haematoma were undesirable and a conservative approach was favoured. CT diagnosis of the cause of obstruction was essential to exclude malignant occlusion or adhesion, which would likely require surgical intervention. IACS should also be excluded by intravesical manometry.

This case highlights that gastric obstruction, previously described in the context of open AAA repair, may also complicate EVAR for ruptured AAA. We have emphasised that, in the absence of IACS, gastrointestinal obstruction by haematoma may be treated conservatively by gastric

drainage and nutritional supplementation until normal bowel function is restored.

Learning points

- Duodenal obstruction by haematoma may complicate endovascular aneurysm repair.
- In such patients, intra-abdominal compartment syndrome (IACS) must be excluded.
- In the absence of IACS, obstruction may be managed conservatively.

Competing interests None.

Patient consent Obtained.

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