Portal vein thrombosis following laparoscopic gastric plication

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ABSTRACT

Portal vein thrombosis (PVT) following laparoscopic surgery including Roux-en-Y bypass, sleeve gastrectomy and Nissen's fundoplication is a rare but recognised complication. Laparoscopic gastric plication is a new procedure that is popular in some parts of the world. We report a case of a patient suffering PVT as a complication of this surgery.

KEYWORDS

Bariatric surgery – Portal vein thrombosis – Complication – Tourism – Gastric plication

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Case report

A 30-year-old female from the United Kingdom underwent laparoscopic gastric plication for obesity in Prague. She presented to an emergency department in London 10 days after the surgery with worsening abdominal pain. She complained of central abdominal pain associated with nausea that radiated to her chest and back. She had vomited once, on the first postoperative day in Prague. The patient stated that she underwent a contrast study while still in hospital in Prague and that the results of this had been normal.

She had not opened her bowels or passed flatus for 2 days. Her past medical history was unremarkable. She was tachycardic on admission and examination of her abdomen revealed epigastric tenderness. Blood tests showed a C-reactive protein (CRP) of 72; full blood count, serum biochemistry and liver function test were all within normal limits.

Computed tomography (CT) of her abdomen and pelvis demonstrated a splenic infarct of the superior pole secondary to splenic vein thrombosis and a thrombus within the portal confluence and thrombosis of the right portal vein (Figs 1 and 2).

She was commenced on therapeutic low molecular weight heparin (LMWH). Her thrombophilia screen was negative. She remained as an inpatient for 1 week while her symptoms resolved and her CRP decreased to less than 5. She continued LMWH for 4 weeks before starting warfarin.

Discussion

PVT is a rare but potentially life-threatening complication of laparoscopic surgery. It has been reported following routine day surgery such as cholecystectomy¹ and also laparoscopic bariatric surgery.^{2,3} One study reported that 1% of its cohort

developed PVT after sleeve gastrectomy.⁵ In patients undergoing abdominal surgery in general, the aetiology is multifactorial and includes systemic factors such as obesity and malignancy; local factors include localised inflammation and manipulation of the portomesenteric venous system; for example, in splenectomy.⁴

As such, PVT following laparoscopic bariatric surgery specifically is poorly understood. It is thought that the intra-abdominal pressure from pneumoperitoneum during laparoscopy and the steep reverse Trendelenburg position that is necessary during gastric plication and other bariatric procedures reduces portal venous blood flow, creating a prothrombotic state.^{2,3,5} This, in combination with the propensity of patients who are obese to suffer thrombosis, hypothetically leads to PVT. One also needs to consider air travel as a further risk factor when such patients have been abroad for surgery, as in this case report.

This is the second report of the complication in literature,⁶ but the first case report discussing this in depth. It is possible that laparoscopic gastric plication itself predisposes to PVT. We hypothesise that dividing the gastric branches of the gastroepiploic arteries, followed by the plication of the greater curve, leads to a degree of ischaemia, which predisposes the patient to portal pyaemia and thus PVT.

The signs and symptoms of PVT can be vague. Most patients present within 6 weeks of surgery, with severe, non-specific abdominal pain and nausea.^{2,3} Vital signs and laboratory tests are often within normal limits.^{2,5} The imaging modality of choice is CT, which will demonstrate the thrombosis, as well as any intestinal ischaemia, which can occur with extension of thrombus into the superior mesenteric vein (SMV).^{2,5}

Emergency intervention is reserved for patients demonstrating signs of bowel ischaemia. This includes

Figure 1 Computed tomography showing the splenic vein thrombus and the upper pole of the spleen infarct

Figure 2 Computed tomography showing patent hepatic artery but no contrast in the portal vein, suggestive of portal vein thrombosis

endovascular treatment or surgery for intestinal infarction.^{2,3} Stable patients without these signs must be commenced on therapeutic anticoagulation immediately. This is probably one of the few clinical conditions where the risk of thrombus propagation outweighs the risks of bleeding. Therapeutic anticoagulation was achieved with LMWH for 4 weeks and then changed to warfarin. This minimises the sub-therapeutic treatment levels that can be associated with warfarin.

An assessment for underlying thrombophilia should also be carried out. The patient should be observed for a period of time to ensure that their symptoms are resolving and that the thrombosis is not extending. Early follow-up is advisable and if no thrombophilia is detected patients require anticoagulation for 6–12 months. If thrombophilia is present, the patient should be referred to a haematologist and should be counselled on possible life-long anticoagulation therapy.

Knowledge of PVT following bariatric surgery is important for emergency department clinicians, physicians, general and bariatric surgeons for a number of reasons. Bariatric surgery is becoming increasingly common, with novel techniques being employed frequently. New procedures give rise to new complications or recognised complications presenting in unusual ways. Indeed, gastric plication for obesity is a procedure that, currently, is not widely performed in the UK; nor is it a recognised operation that is eligible for NHS funding. This, in combination with the phenomenon of ‘bariatric tourism’, means that patients can present with life-threatening complications of an operation that clinicians in this country may not be familiar with, as demonstrated by this case report. Although it is rare, PVT following laparoscopic bariatric surgery should be considered as a cause for abdominal pain in the postoperative phase.

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