

CASE REPORT

A Novel Technique to Control Internal Iliac Artery Back Bleeding

D. Osarumwense,* R. Pararajasingam and S. R. Walker

Department of Surgery, Royal Lancaster Infirmary, Lancashire, UK

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Introduction

The reported mortality rate following repair of ruptured aorto-iliac aneurysms range from 24–95%.^{1,2} The cause of post-operative morbidity and mortality is multifactorial, including haemorrhage, coagulopathy, cardiac events, renal failure and multi-organ failure.³ Surgical repair of ruptured abdominal and aorto-iliac aneurysms is technically difficult due to retro peritoneal and pelvic haematomas which obscure the anatomy, making control of the iliac and aortic vessels more difficult. The internal iliac artery lies deep within the pelvis and lies in close proximity to large iliac veins, making it a difficult artery to control in these circumstances. We describe a method of occluding the internal iliac artery with a piece of Polypropylene knitted Non-absorbable Mesh (Prolene[®], Johnson & Johnson Intl., UK) and Oxidised Regenerated Cellulose (Surgicel[®], Johnson & Johnson Intl., UK) to control haemorrhage during repair of rupture of an aorto-iliac aneurysm.

Case Report

A 53-year-old gentleman presented to his general practitioner with left iliac fossa and suprapubic pain. Following a hypotensive collapse he was admitted as an emergency with a diagnosis of a ruptured abdominal aortic aneurysm. On arrival no abdominal aortic aneurysm was palpable due to obesity but the

clinical picture was so suggestive of a ruptured abdominal aortic aneurysm that he was taken straight to theatre. At operation there was a large retro-peritoneal haematoma, a 7 cm infrarenal aortic aneurysm and a 5 cm right common iliac aneurysm extending down to the right internal iliac artery. Following control of the proximal aneurysmal neck and the left (normal) common iliac artery with clamps attention was turned on to the aneurysmal right iliac artery. The bifurcation of the internal and external iliac artery was difficult to dissect due to the pelvic haematoma. A clamp was established with difficulty on the right external iliac artery however it was not possible to control the right internal iliac artery. The aneurysmal sac was opened and back bleeding from the right internal iliac artery was initially controlled with a Fogarty balloon catheter. An attempt was made to over sew the origin of the right internal iliac artery, however the diseased aneurysmal vessel would not hold the sutures and control of this artery was becoming increasingly difficult. A piece of polypropylene knitted non-absorbable mesh (Prolene[®], Johnson & Johnson Intl.) (11 cm by 6 cm) was wrapped with oxidised regenerated cellulose (Surgicel[®], Johnson & Johnson Intl.) (Figs. 1 and 2) and impacted into the lumen of the internal iliac artery in order to occlude this vessel. This controlled the back bleeding from this vessel.

The patient went on to have a bifurcated graft reconstruction of his infrarenal aorta to the right external iliac artery and the left common iliac artery. On completion of the anastomoses haemostasis was good and there was no bleeding from the occluded right internal iliac artery.

The patient was transferred to the intensive care

*Corresponding author. D. Osarumwense, Department of General Surgery, Royal Lancaster Infirmary, Ashton Road, Lancaster LA1 4RP, UK.

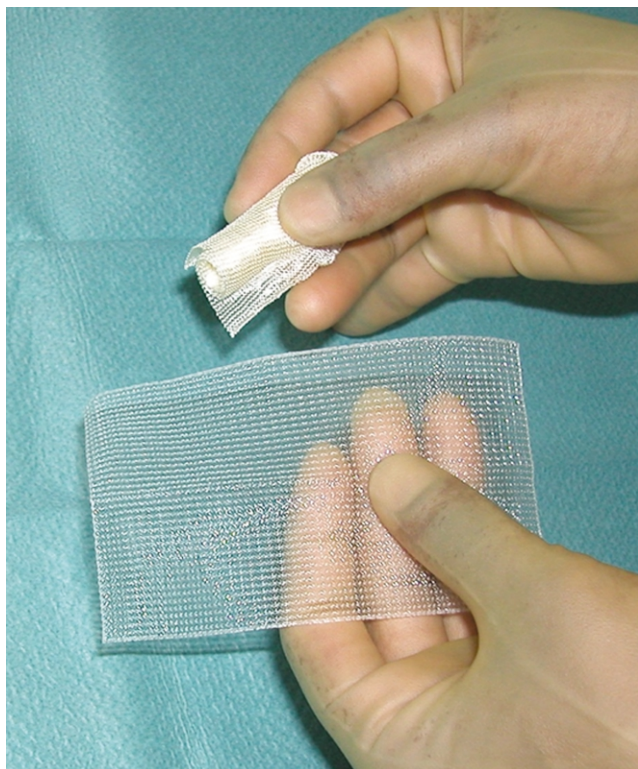


Fig. 1. Materials used in the technique: a Polypropylene knitted non-absorbable mesh (Prolene[®], Johnson & Johnson Intl.) and a piece of oxidised Regenerated Cellulose (Surgicel[®], Johnson & Johnson Intl.).

unit where he made a good postoperative recovery and was discharged home. He has been reviewed in the outpatient's clinic and is doing well.

Discussion

The reported operative mortality rate following surgery for a ruptured AAA ranges between 24–



Fig. 2. Polypropylene knitted non-absorbable mesh (Prolene[®], Johnson & Johnson Intl.) wrapped in the piece of oxidised regenerated cellulose (Surgicel[®], Johnson & Johnson Intl.).

90%^{1,2} depending on the date of the study and the specialisation of the reporting centre. More recent studies estimate the operative mortality rate at about 40 despite improvements in critical care and a trend towards specialisation in vascular surgery.²

The control of bleeding intraoperatively is a major challenge to the operating surgeon. Coagulopathy following massive blood transfusion can be very difficult to manage and every effort must be made to control haemorrhage early in the procedure. Although abdominal packing has been described as a means of controlling haemorrhage in these patients,⁴ we describe a novel technique to control bleeding from deep pelvic vessels.

The rationale for this unusual approach was that continued attempts at suture control of back bleeding from the aneurysmal internal iliac artery risked venous injury, which would have caused more problems. The internal iliac artery is the main supply to the organs and structures within the pelvis. It is sometimes intentionally occluded during endovascular repair of abdominal aortic aneurysms. The complications reported following occlusion of one or both internal iliac arteries include colonic ischaemia, hip and buttock claudication, gluteal necrosis, and sexual dysfunction.^{5–9}

In a large study on risk factors to develop colonic ischaemia, the odds ratio to develop colonic ischaemia was 2.6 if one or both internal iliac arteries were occluded.⁷ Also in a prospective study on colonic ischaemia bilateral ligation of the internal iliac artery increased the risk of colonic ischaemia dramatically.⁸ However, other studies have suggested that occlusion of only one of the internal iliac arteries is associated with less morbidity and is better tolerated than occlusion of both arteries.⁵

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