Unilateral Gluteal Compartment Syndrome: A Complication of Open Abdominal Aortic Aneurysm Repair Using an Aortobifemoral Bypass Graft

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Gluteal compartment syndrome following aortic surgery is a rare, often unrecognised complication. This report presents a case of unilateral gluteal compartment syndrome following an elective aortobifemoral bypass graft for an aortic aneurysm in a 58-year old male. Vascular surgeons and intensive care physicians should be aware of this potentially serious complication following aortic surgery and maintain a high index of suspicion.

Keywords: Gluteal compartment syndrome; Open aortic surgery; Hypogastric circulation; Renal protection.

Introduction

Open aortic surgery can be complicated by acute limb ischaemia, renal failure, bowel and spinal ischaemia, and cardio-respiratory problems. Gluteal compartment syndrome following this type of surgery is rare.1 This report presents a case of unilateral gluteal compartment syndrome following open abdominal aortic aneurysm repair with a review of the literature.

Report

A 58-year old male with a 5.3 cm infrarenal abdominal aortic aneurysm and intermittent claudication underwent elective repair.

Co-morbidities included hypertension, ischaemic heart disease, and type II diabetes mellitus controlled by diet and oral hypoglycaemics and centripetal obesity (weight: 110 kg). Right renal angioplasty and stenting had been performed 5 years earlier.

At operation the distal aorta and the common iliac arteries were very calcified precluding use of a tube graft. Following suture-ligation of the distal aorta and common iliac arteries with 2/0 Prolene, an aortobifemoral bypass was performed. Dissection of the femoral vessels revealed gross common femoral artery calcification bilaterally and end-to-side anastomoses were fashioned to the profunda femoris arteries. Operative time was 330 minutes, with a cross-clamp time of 210 minutes, and an estimated blood loss exceeding 6 litres.

Post-operatively the patient was haemodynamically stable and was transferred to the intensive care unit. Four hours later whilst still ventilated it was noted that the patient’s left buttock was markedly tense and a compartment syndrome was suspected. Although urine output remained satisfactory, urinalysis provided objective evidence of myoglobinuria with a urine pH of 5.0. An alkaline diuresis using mannitol and sodium bicarbonate was initiated. Serum creatine kinase was grossly elevated (235, 840 iu/L).

Fasciotomy was performed over the left buttock with the patient in the right lateral decubitus position using a Kocher-Langenbach incision (Fig. 1). All gluteal compartments were decompressed and the sciatic nerve visualised. There was no evidence of muscle necrosis.
Aggressive hydration and a mannitol diuresis were continued and renal function remained normal. The fasciotomy wound was initially managed with a Vac-Pac™ system. The patient was discharged 28 days post-operatively and remains well with no claudication at 1-year. The fasciotomy wound healed by secondary intention after 12 weeks.

Discussion

Gluteal compartment syndrome is a rare complication of both open aortic surgery and endovascular AAA repair (EVAR) and has only been reported once before in the European literature following aortic surgery.

Its development following aortic surgery is usually secondary to interruption of the hypogastric circulation leading to gluteal ischaemia which is more likely after EVAR when pre- or intra-operative embolisation of the internal iliac arteries is performed. Alternatively the stent-graft may cover the origin of these vessels.

As a result of a well established pelvic collateral circulation, occlusion or even ligation of the internal iliac arteries is performed. Alternatively the stent-graft may cover the origin of these vessels.

Fig. 1. (a) Kocher-Langenbach incision for gluteal fasciotomy. (b) The incision allows the identification of the sciatic nerve.

The gluteal region comprises three compartments (gluteus maximus, medius & minimus) separated by non-distensible fascial boundaries. With such a large muscle mass there is a considerable potential for the development of compartment syndrome and its systemic sequelae.

Early diagnosis and expedient fasciotomies with debridement of necrotic muscle are critical in salvaging neuromuscular function and preventing renal impairment, renal failure, multi-organ failure and death. A high index of suspicion is crucial when typical symptoms and neurological signs are masked by sedation and ventilation. Awareness of this potential complication and the technique for renal protection and gluteal fasciotomy are important.
References


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