SHORT REPORT

Pre aortic Confluence of the Common Iliac Veins Complicating Elective Abdominal Aortic Aneurysm Surgery

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Abstract We present the case of a rare vena cava abnormality, with the confluence of the iliac veins lying anterior to the aortic bifurcation, in a 76 year old male who underwent an urgent open aneurysm repair. His anomaly was found during surgery and the surgical technique had to be modified to accommodate the abnormality. Variations from the normal anatomy of the IVC occur in 3% of the population and this case highlights the need for thorough evaluation of both venous and arterial anatomy prior to AAA repair.

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Introduction

A rare vena cava abnormality complicating urgent open abdominal aortic aneurysm (AAA) repair is presented. At operation the confluence of the iliac veins was found to be lying anterior to the aortic bifurcation.

Case Report

A 76 year old male was admitted from outpatients with a tender, 7.5 cm infra-renal aneurysm confirmed on ultrasound. He was an otherwise healthy man who was placed on an urgent list for repair of his aneurysm following anaesthetic assessment and a CT scan of his AAA. His scan demonstrated an infra-renal aneurysm with dilated right common iliac artery and his operation took place shortly following admission.

During open surgery it became apparent that the inferior vena cava was anterior to the aortic bifurcation with the confluence of the common iliac veins rising up from between the common iliac arteries (Fig. 1).

His aneurysm was repaired with a bifurcated graft. On the left side the distal anastomosis was onto the common iliac origin whilst the right limb of the graft was passed behind the inferior vena cava and anastomosed to the common iliac artery bifurcation (Fig. 2). The “original” anatomical position was preserved in order to reduce the possibility of compression of the inferior vena cava by the graft.

The patient made an uncomplicated recovery postoperatively and was discharged on day 7.

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Discussion

The embryogenesis of the inferior vena cave is complex and involves the fusing of three separate paired embryonic veins. Variations from the normal anatomy of the IVC occur in 3% of the population. Of the various kinds of anomaly, IVC duplication and a left-positioned vena cava are most commonly found. Other reported anomalies include retro-aortic left renal vein, and circumaortic renal collar. When associated with abdominal aortic aneurysms, such venous abnormalities may increase the hazards of open surgical repair. If recognised on preoperative imaging, an endovascular approach is attractive in these cases to reduce the risk of catastrophic venous haemorrhage during exposure and control of the aneurysm. A pre-aortic iliac venous confluence is rare and has only been reported in situations other than aneurysm surgery. We did not proceed with an endovascular repair as, our radiologists at the time, considered the anatomy unfavourable for endovascular stenting, due to the severe angulation of the neck of the aneurysm.

This patient had no prior symptoms of lower limb venous hypertension despite the fact that the expansion of his aorta had stretched the origin of the inferior vena cave taught across the aneurysm. On several slices of the CT scan, viewed with hindsight of the operative findings, it was not possible to see this stretched cava, the position of which could only be deduced from the absence of a structure in the normal para-aortic position and it’s re appearance below the aortic bifurcation. (Fig. 3) This anomaly was not noted pre-operatively by radiologists nor by surgeons.

The initial finding at operation that alerted one to the existence of the venous abnormality was a rather anteriorly situated inferior vena cave stretched over the anterior sac wall. Once recognised it was possible to modify the surgical technique accordingly. If this man had presented as a rupture the standard approach to controlling his iliac arteries and opening the aneurysm sac to the bifurcation could have proven rapidly fatal. This anatomical variant, though rare, highlights the need for thorough evaluation of the venous as well as arterial anatomy prior to open AAA repair.

References