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Case report

Complex thoracic aortic dissection treated by aorto-biiliac bypass and juxta-renal removal of aortic fenestrations

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ABSTRACT

Thoracic aortic dissections are a life-threatening pathology. They occur when there is an intimal tear causing separation of the layers of the aorta. Thoracic aortic dissections can be acute or chronic and depending on the pattern of the dissection can be difficult to treat. No acute dissections are the same, and herein we describe a case of a 62-year-old male presenting with an acute thoracic aortic dissection requiring acute aorto-biiliac bypass and juxta-renal removal of aortic fenestrations.

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Clinical summary

Sixty-two-year-old male accountant presented with a sudden onset inter-scapular back pain, with concurrent pain and reduced sensation in his right lower limb. His only past medical history included hypertension requiring a single anti-hypertensive agent. He consumed alcohol socially, was a non-smoker, and active (surfer).

Computed Tomography Angiography (CTA) (**Fig. 1**) identified a probable type A dissection involving the ascending and descending aorta. Whilst on deep hypothermic circulatory arrest, the cardiothoracic surgeons replaced his ascending aorta with 30 mm Dacron graft. The aortic entry was not easily seen. Intraoperatively, after rewarming, the hospital's vascular sur-

geons were consulted for an acutely ischaemic right lower limb. Diagnostic angiography confirmed no flow to the right leg due to an occluded right iliac artery system (**Fig. 2**). He underwent a temporizing left to right femoral-femoral artery bypass (8 mm Propaten ring enforced PTFE graft) to reperfuse his right lower limb.

Twenty-four-hour progress imaging illustrated the entry tear to be in the aortic arch, just proximal to the left subclavian, and that patient was reclassified as a non-type A/non-type B (SVS/STS type B0,10) aortic dissection.

On Day 4 post operation, he redeveloped an ischaemic right leg with progress imaging demonstrating residual dissection of the aortic arch. He illustrated ongoing false lumen pressurization with concurrent partial false lumen thrombosis. The true lumen at the aortic bifurcation had completely collapsed,

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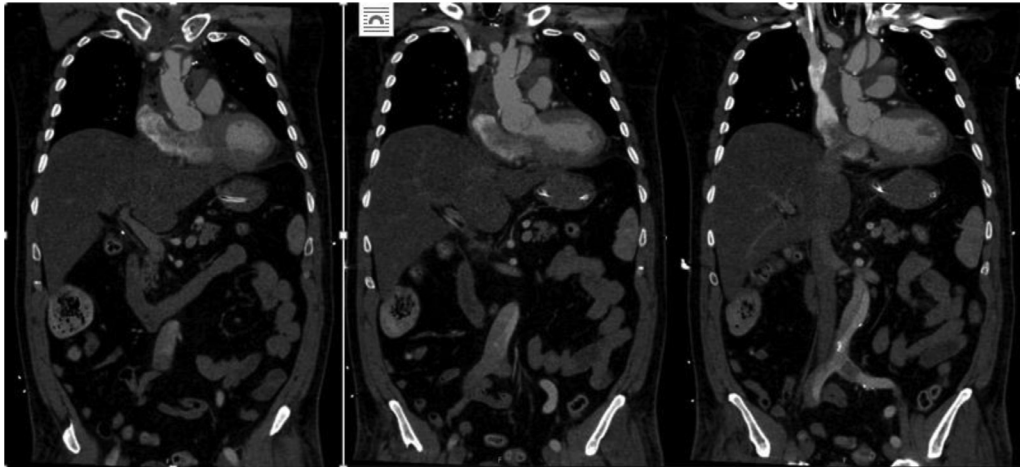


Fig. 1 – CTA suggesting type A dissection extending to involve both iliac arteries.

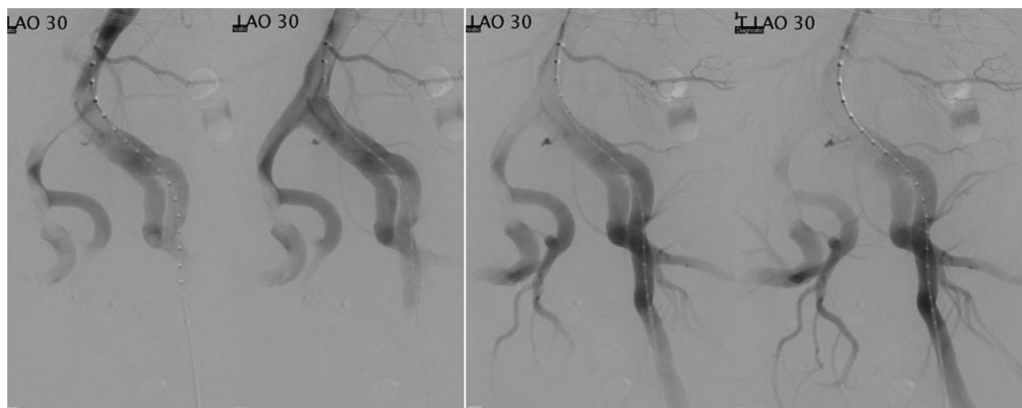


Fig. 2 – DSA illustrating no flow through the right EIA and CFA.

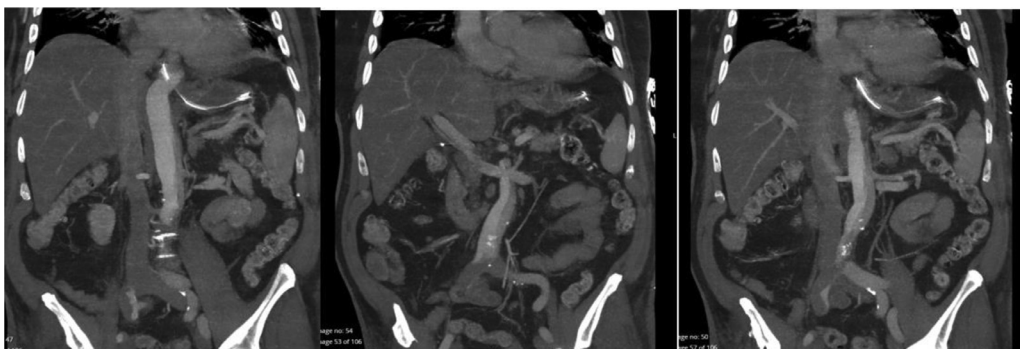


Fig. 3 – D4 CTA illustrating a collapsed true lumen at bifurcation. These are sequential images.

resulting in poor iliac flow bilaterally (Fig. 3). Due to ongoing concern for dynamic malperfusion to his lower limbs urgent intervention was deemed necessary to depressurize the false lumen and optimise true lumen aortic flow.

The risk of retrograde extension into the cerebral vasculature was considered high from proximal entry fenestration coverage.

Therefore, a decision was made to proceed to an open aortic defenestration. Midline laparotomy was performed, supra-celiac artery control achieved and a 16/8 mm Dacron bifurcated graft was used to replace the infra-renal aorta. Resection of the dissection flap in the visceral segment was also performed. Lower limb malperfu-

sion was successfully treated and the patient has not needed treatment for the persisting descending thoracic aortic entry tear.

Discussion

The mainstay of treatment for complicated thoracic aortic dissection is to repair or cover the proximal entry tear [1]. If recognized early, through multi-disciplinary approaches, options for complicated non type A/non type B repair include open cardiac surgery with frozen elephant trunk, supra-aortic vessel desbranching and Thoracic endovascular aortic repair [2,3]. Infrarenal aortic defenestration, with or without aortic replacement can be a means to salvage a complicated dissection with distal ischaemia where the entry tear has not been treated. End organ and lower limb malperfusion can be safely treated with open surgical defenestration techniques.

Patient consent

Consent has been gained from the patient described.

All authors agree with the content of this case report.

Declaration of Competing Interest

No conflicts of interest or financial support was obtained for this case report.

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