SHORT REPORT

Coarctation After Endograft Repair for Traumatic Rupture of the Aorta

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Abstract
Traumatic rupture of the aorta is often associated with multiple complex injuries which may increase the mortality in surgical correction of this fatal condition. Endografts may offer an alternative therapeutic strategy but may result in early complications in the younger age group.

Introduction
The increasing use of endografts to treat traumatic rupture of the aorta has been proposed as a less invasive procedure with a presumed lower mortality and morbidity in patients with associated multiple injuries.

An 18-year-old male was admitted to hospital with multiple injuries including a fractured hip, fractured tibia, subarachnoid haemorrhages, fractured cervical spine and a widened mediastinum. Computerised tomogram (CT) of the chest confirmed a pseudo-aneurysm of the proximal descending aorta distal to the left subclavian artery consistent with traumatic disruption of the aorta. Due to his multiple injuries a decision was made to use an endograft for repair of the rupture.

A 26 mm × 10 cm Gore TAG endograft was inserted via the right femoral artery and positioned above the transection. As there was no smaller-diameter endograft available at that stage in our institution, oversizing could not be avoided; also, in view of acute aortic angle, this specific endograft could not be placed further up on the proximal landing zone. The procedure appeared to be carried out successfully. Following a prolonged recovery period of 2 months in hospital for treatment of the associated injuries he was discharged in a satisfactory condition.

He was re-admitted 3 months later with severe headaches and a systolic blood pressure of 180 mmHg with poor peripheral leg pulses.

A blood pressure differential of 80 mmHg was noted between the upper and lower limbs. CT scanning showed an obstruction just distal to the left subclavian artery.

Surgical intervention was indicated due to the acute angle of the aorta with endograft obstruction, thus a low
Figure 1  CT 3D reconstruction of thoracic aorta demonstrating Post Endograft Coarctation (C = Acute Aortic Angle; S = Endograft).

Figure 2  Post Operative CT 3D Reconstruction Demonstrating Graft Implant (G = Haemashield Graft; PA = Pulmonary Artery; DA = Descending Aorta).
probability of success with the use of a second endograft and the fact that the long-term durability of endografts in young patients is unknown. Cardiopulmonary bypass support was instituted and proximal and distal aortic clamps were applied. The false aneurysm was opened exposing the stent confirming proximal lumen obstruction and no collapse. It was removed and replaced with a 22-mm Haemashield graft. He was discharged home normotensive with no pressure differential between the upper and lower limbs as measured intra- and post-operatively.

Comment

Endograft vascular repair for traumatic aortic rupture appears to be a safe and effective treatment option and may be the treatment of choice in patients with multiple associated injuries. However, the aorta in young patients is smaller and much more arched with a narrow angle compared to atherosclerotic aortas in older patients and may require the prosthesis to be placed in a steep and angulated manner which may result in an acute angle obstruction and/or collapse.

Since smaller endografts are currently not available, large mismatches between the diameter of the aorta and the endograft may occur, increasing the risk for complications. Thus, if the aortic diameter is <20 mm, with marked isthmus angulation with a short proximal landing zone of <20 mm, surgical repair should be considered as the primary therapy in these cases.

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None.

References