

# Right axilloaxillary cannulation for surgical management of a giant ascending aortic aneurysm

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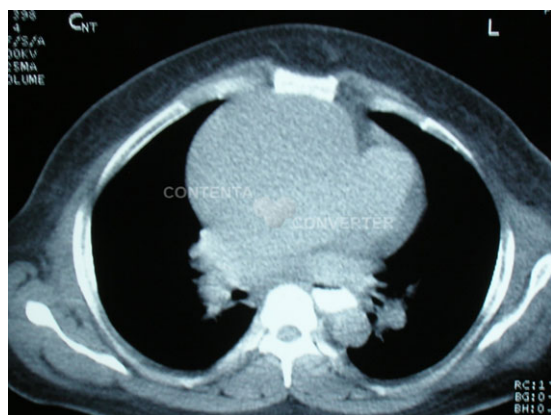
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Aortic aneurysms larger than 10 cm are defined as “giant aortic aneurysms” and may occur in adults and infants.<sup>1,2</sup> When these ascending aneurysms are in close proximity to the sternum, peripheral cannulation may be necessary prior to opening the chest. Currently, the axillary artery is the second most common site for arterial cannulation for ascending aortic pathology and may also be recannulated if it has been used previously.<sup>3,4</sup> In addition, the axillary vein may also be used to initiate cardiopulmonary bypass (CPB) when the femoral venous system is diseased.<sup>5</sup> We present images of a patient with a giant ascending aortic aneurysm in which axilloaxillary cannulation was used to initiate CPB.

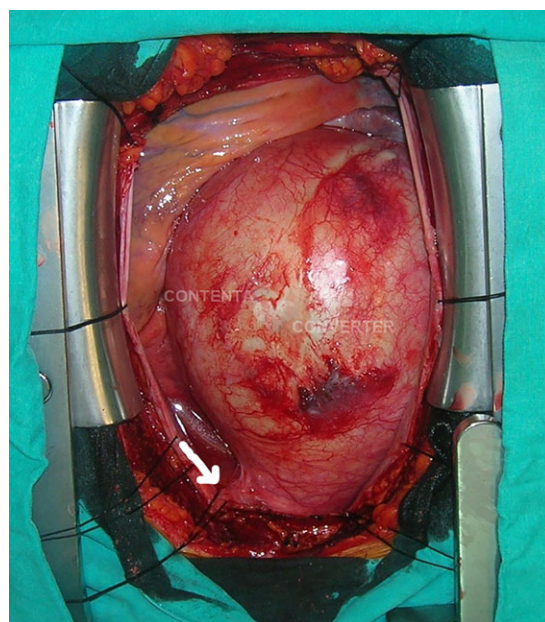
A 35-year-old male presented with dyspnea and chest pain. He had a history of chronic venous insufficiency and edema of the lower extremities. On physical examination, there was a 4/6 diastolic murmur and diffuse, bilateral varicose veins, and edema of the lower extremities. A computed tomography (CT) angio revealed a 14.5-cm ascending aortic aneurysm involving the root and extending to just

below the arch vessels (Figure 1). A transthoracic echocardiogram also demonstrated 4+ aortic insufficiency, an ejection fraction of 45%, and a pulmonary artery pressure of 50/27 mmHg. Doppler ultrasound of the lower extremities revealed diffuse, dilated superficial, and deep varicose veins.

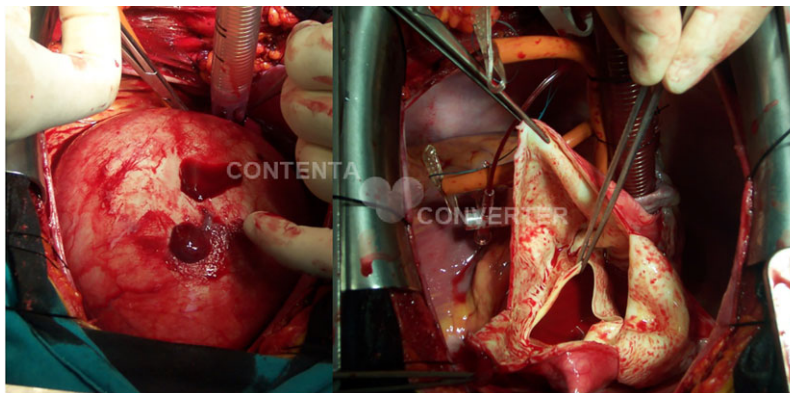
Since the aneurysm was in close proximity to the sternum, it was elected to place the patient on CPB before opening the chest. The right axillary artery was directly cannulated with a 21-Fr DLP arterial cannula (Medtronic Inc., Minneapolis, MN). In view of the diseased femoral venous system, the axillary vein was directly cannulated with a 24-Fr DLP femoral artery cannula. Partial CPB



**FIGURE 1** Computed tomography showing the giant ascending aortic aneurysm applying pressure onto the sternum



**FIGURE 2** Operation view of the ascending aortic aneurysm. The arrow indicates the termination level and neck of aneurysm



**FIGURE 3** Operation view of the aneurysm and chronic dissection

was initiated with a mean aortic pressure of 50 mm Hg and a venous return of 1500-2000 mL/min. The sternotomy was then performed without any difficulty.

A standard two-stage DLP venous return atrial cannula was then placed in the right atrium and the axillary vein cannula was removed. The aneurysm was noted to occupy the entire anterior mediastinum and terminated just below the arch vessels (Figure 2). Following systemic cooling and circulatory arrest with antegrade cerebral perfusion via the axillary artery cannula, the heart was arrested with intermittent, retrograde cold blood cardioplegia. An aortotomy was performed which revealed a dilated root and evidence of a chronic dissection (Figure 3). The aortic valve and the ascending aorta were resected and replaced with a homemade composite valve conduit using a 27-mm mechanical valve (St. Jude Medical Inc., St. Paul, MN) and a 30-mm tube graft (Jutec Inc., Hechingen, Germany). The CPB,

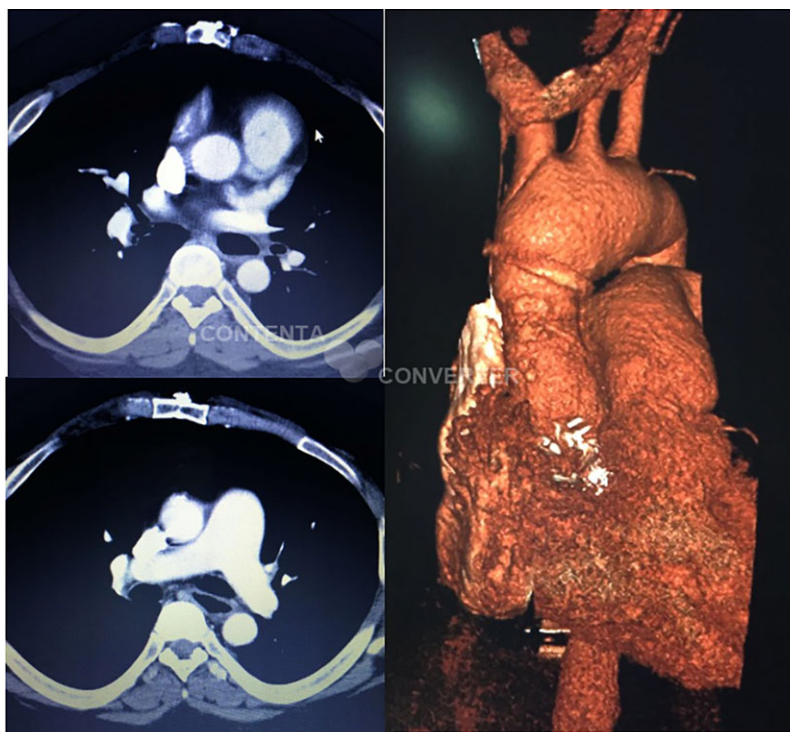
cross clamp, and circulatory arrest times were 280, 118, and 13 min. The patient tolerated the procedure well and had an uncomplicated postoperative course. A postoperative CT angiogram showed no residual ascending aortic aneurysm (Figure 4).

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**FIGURE 4** View of the postoperative computed tomography

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