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Surgical treatment of huge aortic arch aneurysm in a 13-year-old girl

Aortic arch aneurysms are very rare in a childhood. Due to complexities of anatomy, operative maneuver can be quite difficult. Our case and images briefly demonstrate the possibility of achieving good result of repair using combined surgical approach.

Key words: congenital heart disease, aortic arch, aneurysm, aortic operation.

A 13-year-old girl was referred to our institution from regional hospital with complains of persistent coughing. She hadn't any relevant history of trauma, infection, or genetic diseases. Computed tomography scan aortography revealed a huge saccular aortic arch aneurysm preferably in segments A and B *(Fig. 1)*.

Due to extremely large sizes of aneurysm combined surgical approach was chosen. Surgery was performed during a single operative session. Firstly, the patient underwent left-sided thoracotomy through 4th intercostal space. After approach was completed, descending aorta was carefully mobilized within 3rd and 4th pairs of intercostal arteries. All these arteries were ligated and transected.

Due to high-risk of bleeding aneurysmal sac has been left untouched. Thoracotomy incision was drained, closed, and the patient was returned to supine position on operation table. Then, using supraclavicular approach the left subclavian artery to the left common carotid artery end-to-side anastomosis was placed using continuous prolene 6/0 stitch. This incision was conventionally closed as well. Finally, midline sternotomy was performed. After initiation of cardiopulmonary bypass with ascending aorta and right atrium canulation, under moderate (+28 °C) hypothermia the whole aneurysm was excised *(Fig. 2)*.

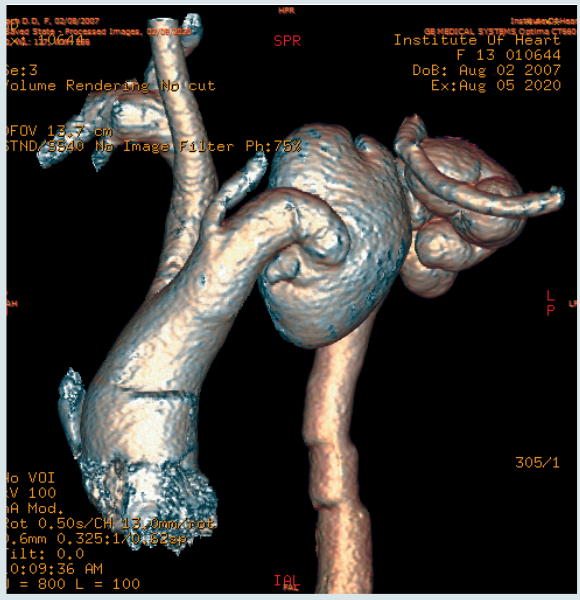

Figure 1. **3D reconstructed pre-operative CT angiogram**

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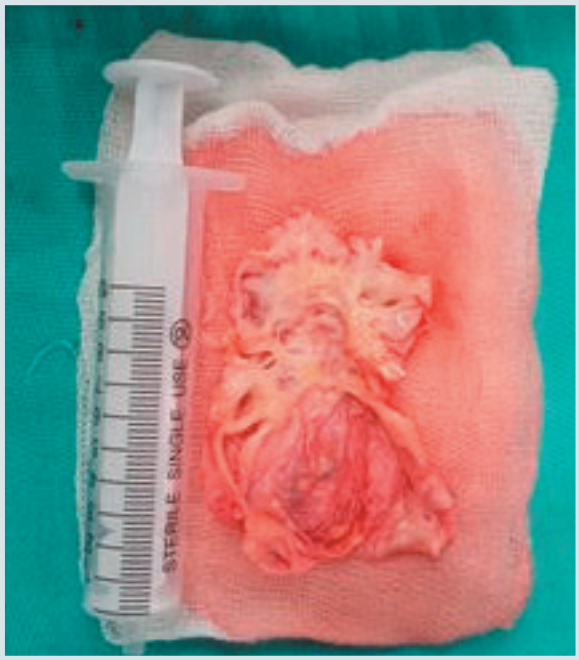

Figure 2. **Intraoperative view of the excised and transversely transected aneurysmal sac**

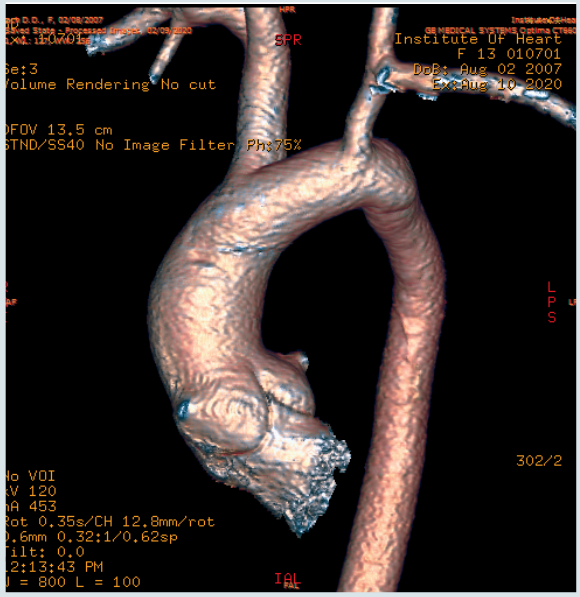

Figure 3. **3D reconstructed post-operative CT angiogram**

The aorta was reconstructed in an end-to-end anastomosis fashion using continuous prolene 5/0 stitch. Sternotomy incision and skin was closed. The post-operative computed tomography scan aortography showed excellent anatomical result *(Fig. 3)*. The patient's hospital stay was uneventful, and she was discharged home on the 11th post-surgery day.

There are many genetic syndromes associated with the aortic aneurysmal disease which include Marfan syndrome, Ehlers – Danlos syndrome, Loeys – Dietz syndrome, familial thoracic aortic aneurysms and dissections, bicuspid aortic valve disease, and autosomal dominant polycystic kidney disease [1].

Congenital diseases in the aorta tend to be aneurysmal when they present later in life. In addition, they tend to be associated with proven connective tissue disorder [2].

There are cases of aortic aneurysms reported in children without genetic disorders [3].

Histological evaluation of the wall of the aneurysm in our patient revealed no evidence of any specific changes. Our case demonstrates the possibility of achieving good result of such complicated aneurysm repair using combined surgical approach.

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Хірургічне лікування гігантської аневризми дуги аорти в дівчинки віком 13 років

Аневризми дуги аорти в дитячому віці трапляються дуже рідко. Через складнощі анатомії оперативний маневр може бути досить складним. Наш випадок і зображення коротко демонструють можливість досягнення гарного результату лікування за допомогою комбінованого хірургічного підходу.

Ключові слова: вроджена вада серця, дуга аорти, аневризма, операція на аорті.