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Endo-aneurysmorrhaphy of a giant aneurysm of the subclavian vein

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ABSTRACT

Venous aneurysms are relatively rare anomalies which can affect different parts of the vascular system. Diagnosis and management of this condition could pose important problems. We here report a giant false aneurysm of the subclavian vein with emphasis on the thought process that determined the management strategy.

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CLINICAL SUMMARY

A 63-year old lady presented with ischemic heart disease requiring surgical revascularization. She had history of trauma to the neck 10 years earlier with haematoma evacuation, ligation of the left internal jugular vein and removal of the sternal head of the clavicle. During pre-operative work-up, she was found to have a left-sided, soft, pulsating swelling extending from the angle of the mandible to the clavicle (15 × 10 cm) which increased in size significantly on lying flat. Chest x-ray showed a soft tissue shadow in the upper left mediastinum. Duplex ultrasound examination of the neck showed a hugely dilated venous channel with sluggish whirling flow. Contrast-enhanced CT scan confirmed the presence of an aneurysmally dilated venous channel related to the left subclavian vein.

In theatre, the patient was cooled to 20°C and bypass was discontinued. The left brachiocephalic vein was exposed and followed distally past the origin of the subclavian vein. The large sac was opened and the inlet and outlet orifices were identified. The mouth of the venous aneurysm was surgically closed from within. CABG was performed with LIMA to LAD and SVG to OM1.

In the initial post-operative period, the swelling increased in size. On the second day, it shrunk to its pre-operative size and disappeared completely by the third day leaving lax overlying skin. Post-operative duplex ultrasound examination showed complete thrombosis of the venous aneurysm with preserved flow in the left subclavian vein which was confirmed by CT scan (see Figs. 1 and 2).

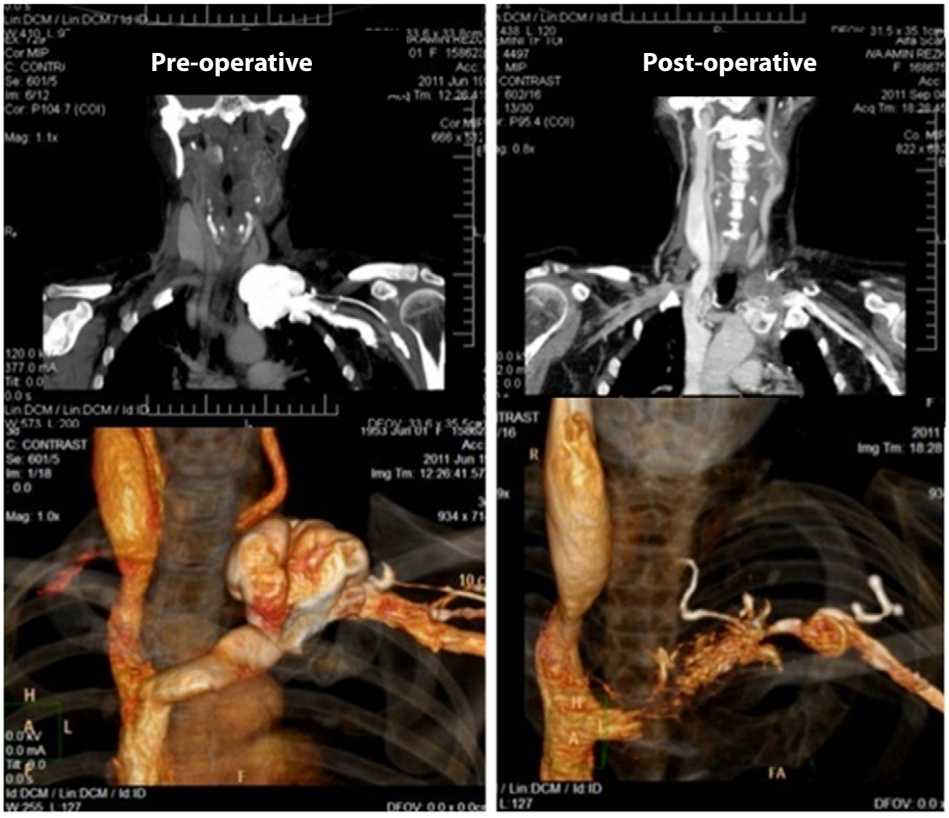

Figure 1. Contrast enhanced CT study (venous phase) with coronal and reconstructed pre- and post-operative images. Pre-operatively: aneurysmally dilated venous sac connected to the left subclavian vein. The left internal jugular vein is not visualized whilst the right is significantly dilated; post-operatively: total thrombosis of the aneurysm with apparent attenuation of the left subclavian vein in the coronal plane.

DISCUSSION

Compared to their arterial counterpart, venous aneurysms—congenital, traumatic and acquired—are a rare finding. Among the latter, subclavian aneurysms represent a small subgroup [1]. Venous aneurysms of the head and neck are usually asymptomatic and are only discovered accidentally during imaging studies. Occasionally, patients may present with a soft-tissue mass with or without

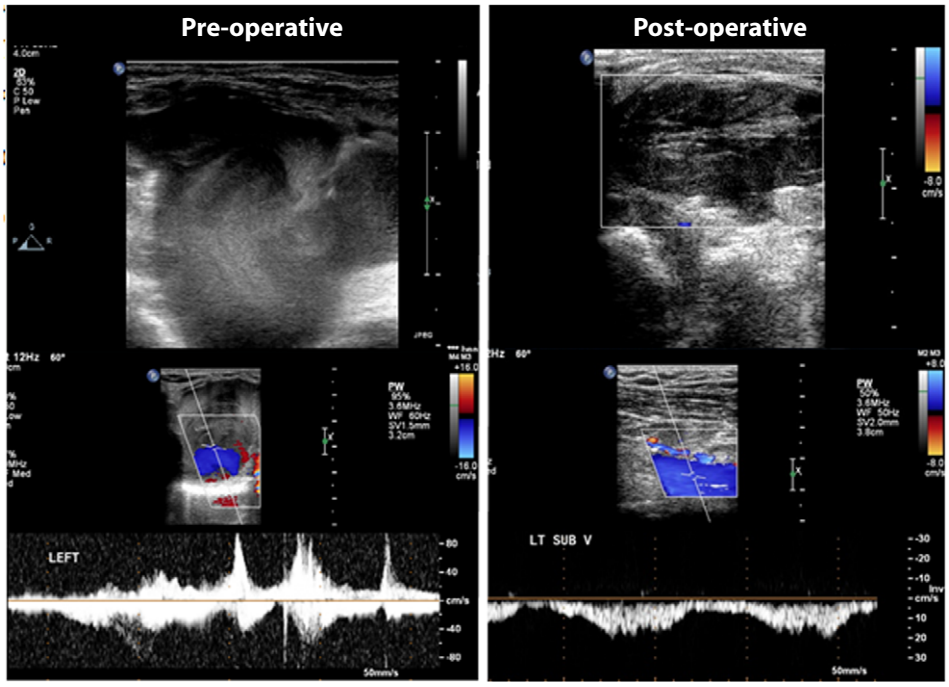

Figure 2. Duplex scanning of the left side of the root of neck. Pre-operative: 2D image showing a huge venous sac with whirling of blood. Respiro-phasic Doppler waveform accentuated by Valsalva maneuver confirms its venous communication; post-operative: color image showing totally thrombosed venous aneurysm with absent flow. Doppler waveform at the left subclavian vein shows normal venous flow.

localized pain. They rarely present with complications including thromboembolism, rupture, venous obstruction and compression of adjacent structures [2].

The optimal therapeutic strategy for this condition remains unclear given the limited data available. Surgical excision of the aneurysm has been previously reported with variable results a high incidence of complications such as uncontrollable haemorrhage and massive pulmonary embolism. Other options including polyethylene cellophane wrapping, endovascular stenting and watchful waiting have also been tried. [3–5]

In this report, we describe yet a different approach where sternotomy and cardiopulmonary bypass were used to allow for intraluminal repair of the aneurysm. Securing unobstructed venous drainage of the upper limb—particularly in the absence of an ipsilateral internal jugular vein—was considered mandatory. Endoaneurysmorraphy facilitated preserving an endothelialized venous channel to drain the upper limb post-operatively. Cooling and circulatory arrest made an endovascular approach possible without the need for massive dissection and potential injury to adjacent structures. By obstructing the outflow of the venous channel we were able to induce thrombosis of the aneurysm while maintaining physiological venous drainage.

CONCLUSION

Our report illustrates several points related to this rare condition including pathogenesis, diagnosis and management. We believe that our approach to tackle such aneurysms has the advantage of avoiding some of the aforementioned procedural complications. Regardless of the surgical technique, endovascular stenting and even conservative management remain valid strategies especially in patients with asymptomatic uncomplicated mediastinal venous aneurysms.

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