

Intrathoracic Giant Subclavian Artery Aneurysm: Case Report

İntratorasik Dev Subklavian Arter Anevrizması

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ABSTRACT True aneurysm of the subclavian artery is extremely rare. Upper extremity peripheral artery aneurysms the frequency of lower extremity peripheral artery aneurysms is much less; subclavian artery aneurysms are rare observed. The most common causes of these aneurysms are atherosclerosis and traumatic pseudoaneurysm. These aneurysms can rupture, thrombose, embolize or cause symptoms by local compression. A 75 years old female patient having hoarseness and shortness of breath was diagnosed with right subclavian artery aneurysm 10 years previously. Sternotomy and by-pass with aortasubclavian graft procedures were performed on the patient. Literature on the subject of atherosclerotic subclavian artery aneurysm etiology, diagnosis and surgical treatment were presented with in this case.

Key Words: Atherosclerosis; aneurysm; aneurysm, infected

ÖZET Gerçek subklavian arter anevrizması oldukça nadir görülür. Üst ekstremitte periferik arter anevrizmalarının görülme sıklığı alt ekstremitte periferik arter anevrizmalarından çok daha az olup subklavian arter anevrizmalarına nadir rastlanmaktadır. Bu anevrizmaların en sık nedenleri ateroskleroz ve travmadır. İntratorasik subklavian anevrizma daha çok asemptomatiktir. Bu anevrizmalar rüptür, tromboz, emboli ya da lokal bası semptomlarına neden olabilir. 10 yıl önce sağ subklavian arter anevrizması tanısı konulan, ses kısıklığı ve nefes darlığı olan 75 yaşında bir kadın hastada sternotomi ve aorta-subklavian greft prosedürleri ile by-pass yapıldı. Konuyla ilgili literatür gözden geçirilerek aterosklerotik subklavian arter anevrizmasının etiolojisi, tanı yöntemleri ve cerrahi tedavisi bu olgu eşliğinde sunulmaktadır.

Anahtar Kelimeler: Ateroskleroz; anevrizma; anevrizma, enfekte

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Upper extremity peripheral artery aneurysms are less frequent than in lower extremities and subclavian artery aneurysms (SAA) are rarely seen.¹

The intrathoracic segment of the subclavian artery is a rare location for a peripheral arterial aneurysm. Intrathoracic segmental aneurysm is secondary to atherosclerosis, medial degeneration, trauma, and infection. Subclavian arterial aneurysms involve an increased risk of rupture, embolization, or thrombosis. We describe a case of a patient presenting with hoarseness and an expanding intrathoracic mass that was due to a right subclavian aneurysm.

CASE REPORT

A 75 years old female patient having hoarseness and shortness of breath was diagnosed with right subclavian artery aneurism 10 years previously. The complaint of hoarseness and dyspnea started 3 months prior to presentation at our center. The patient had no history of upper extremity trauma, infection or embolus. The patient's upper and lower extremity arterial pulses without aneurysm, neurological and physical examination were normal.

Telecardiography revealed subclavian artery aneurysm with calcification of upper-middle mediastinum.

Angiography determined giant intrathoracic subclavian aneurysm of approximately 11.5x10 cm (Figures 1, 2).

Preoperative blood analysis indicated no pathology. Sternotomy and by-pass with aorta-subclavian graft (Dacron, 8 mm) procedures were performed on the patient (Figure 3). A thorax tube was placed and the operation was completed. The patient did not experience any postoperative complications and was discharged on the 6th day.

The peri-and-postoperative course was uneventful. No neurological deficit or ischemic symptoms of the arm were noted. Cultures from the wall of the aneurysm and thrombus were negative. Pathologic specimens taken from the aneurysm

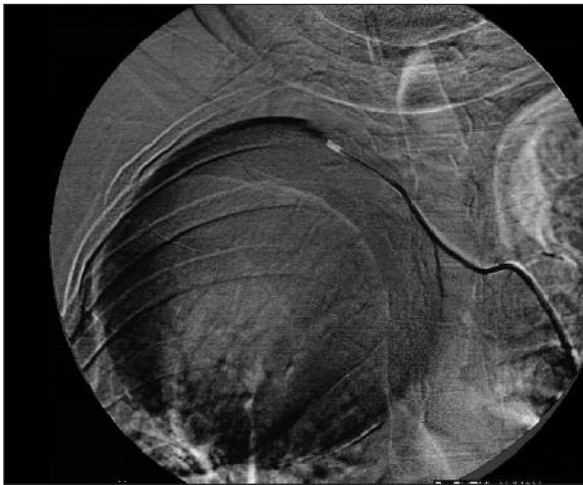


FIGURE 1: Peripheral angiography subclavian aneurysm.



FIGURE 2: Peripheral angiography subclavian aneurysm.

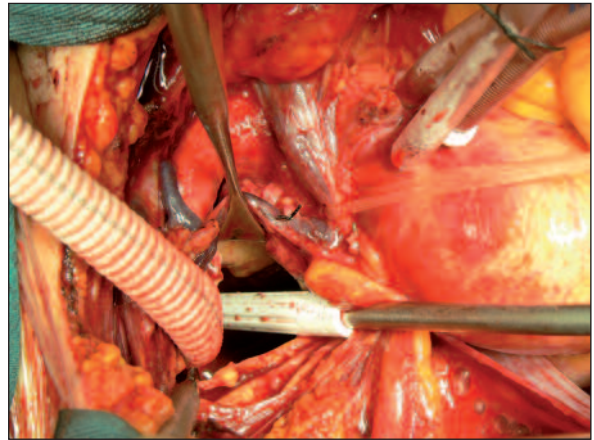


FIGURE 3: Intraoperative image aortasubclavian graft.

(See color figure at

<http://www.turkiyeklinikleri.com/journal/cardiovascular-sciences/1306-7656/>)

during the procedure confirmed an atherosclerotic origin. The patient recovered from hoarseness after the operation and developed no morbidity at 1-year follow-up.

CONCLUSION

True SAAs are infrequent. Aneurysms of the subclavian artery are rare, especially in the intrathoracic portion. In an extensive review, Dent et al. found true subclavian artery aneurysms in only 0.13% of 1488 patients with other atherosclerotic aneurysms.² Smyth performed the first successful proximal ligation of an SAA. The first successful resection and graft replacement of a saccular aneurysm involving the subclavian artery was reported by Bahnson, in

1953.³ Davidovic et al. fall into two distinct groups in terms of etiology, presentation, and treatment: those of the intrathoracic and those of the extrathoracic portion of the subclavian artery. Although aneurysms of the extrathoracic subclavian artery are related to thoracic outlet syndrome or to previous trauma, intrathoracic segmental involvement is mainly due to atherosclerosis.⁴

Intrathoracic aneurysms are most often asymptomatic but can present with symptoms caused by compression or acute aneurysm expansion, such as upper chest or shoulder pain, Horner's syndrome, venous congestion, and hoarseness.

Subclavian artery aneurysms are rare, but potentially life-threatening due to the risk of rupture, distal embolization, and thrombosis.

SAAAs are sometimes completely asymptomatic, as in the case presented. When symptoms occur, upper chest or shoulder pain is most common. A pulsatile mass in the supraclavicular fossa, which often is tender, may be noted by the patient or examiner. Brachial plexopathy can occur and Horner's syndrome is not infrequent. Dysphagia has been described, although this is more common with aberrancy of the right subclavian artery.⁵ Rarely, patients may be diagnosed with signs and symptoms of rupture, thrombosis, or cerebral and upper extremity emboli. Hemoptysis was the presenting symptom in three case reports.⁶ Findings related to associated conditions such as Marfan syndrome, tuberculosis, or tertiary syphilis should be sought. Intrathoracic SAAAs will usually be evident on chest radiography as a superior mediastinal mass, and computed tomography has proven to be a valuable diagnostic tool.

Since 1926, 64 patients with 70 SAAAs have been reported. Focal involvement of the proximal or intrathoracic subclavian artery, as in the case presented, has been reported in about half of these. Atherosclerosis is the most common cause of SAA, comprising about 60% of reported cases overall. Syphilis and tuberculosis were the most common causes earlier in the 20th century and accounted for 15% and 10% of reported cases, respectively. A few cases of mycotic (bacterial) SAA have also been re-

ported. Marfan syndrome and cystic medial necrosis have been more recently appreciated causes of SAA, representing about 10% of all cases. Rarely, congenital aneurysms occur, and SAA has been associated with Turner's syndrome.

Aneurysms have more often been reported on the right side than left (52% vs. 37%), with bilateral aneurysms occasionally observed (12%). Male patients outnumber female patients by a 2:1 ratio. The wide age range reflects the diverse causes of SAA; the mean age from this review is 49 years, whereas in the atherosclerosis subset it is 61.

A very important observation in a number of series has been the presence of multiple aneurysms, both at the time of diagnosis and in subsequent follow-up, particularly in the atherosclerotic subgroup. Aneurysms may be aortic, visceral, or peripheral and occur in as many as 33% to 47% of patients with SAA.⁷ Significant late death from rupture of these other aneurysms has been noted. Thus patients found to have SAA should be thoroughly evaluated for other aneurysms and monitored closely for the development of aneurysmal disease elsewhere.

It is indicated that aneurysms may be recognized as a pulsatile mass, sometimes with a thrill during physical examination; however, if a lesion has deep localization or is shadowed by a surrounding hematoma, these findings may not be present.

It is pointed out that opacities, clavicle or first rib fractures or lung or mediastinal pathologies that may be determined by direct x-rays form only indirect findings on determination of subclavian aneurysm; USG methods such as Doppler and duplex scanning, contrasted computerized tomography, conventional angiography, digital subtraction angiography or MRI may be required to confirm the diagnosis. It is indicated that arteriography is also very important for differential diagnosis.

Embolus, rupture, and thrombosis have all been observed. Before elective operation, arteriography is routine although, in some centers, magnetic resonance angiography may provide sufficient details.

Although there are procedures such as repair with endovascular stents and intravascular thrombin injection for treatment of subclavian artery aneurysm, the preferred primary treatment modality is surgery.⁸⁻¹⁰

Potential problems of endovascular repair include difficulty accessing the aneurysm base and the possibility of causing obstruction on side branches of important great vessels. It should not be forgotten that intravascular thrombin injections may lead to catastrophic results due to false injection to side branches related to cerebral circulation.^{9,11}

Treatment of SAA is usually surgical. A few small SAAs left untreated have been reported. At surgery, a supraclavicular incision is adequate only for aneurysm of the second and third portion of the subclavian artery. Intrathoracic subclavian artery aneurysm on the right side is best approached by

median sternotomy, whereas a high lateral thoracotomy is preferred for left-sided aneurysms

Primary planned procedure in surgical approach should be aneurismectomy and arterial reconstructive intervention. End-to-end anastomosis or primary repair with a suitable graft (preferably saphenous vein) should be chosen. Using this method, reconstruction together with saphenous vein graft interposition is reported as the surgical therapeutic approach from the perspective of both providing arterial continuity and protecting extremity liveliness.¹²

Open surgical repair of the subclavian artery, especially of the intrathoracic segment, necessitates an invasive approach with sternotomy or lateral thoracotomy. In a series of 13 patients with open surgery for subclavian artery aneurysms, Salo et al. reported a postoperative complication rate of 46%.⁵

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