

Case Report

Carotid-subclavian bypass in the treatment of subclavian artery occlusion during epidermoid cyst excision: A case report

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Abstract

In surgical cases, various complications may occur depending on the degree of difficulty and experience. In this case report, we present a 24-year-old patient who was operated 5 years ago for an epidermoid cyst in the right neck region and developed loss of strength in the right arm. Angiography revealed total occlusion of the right subclavian artery and right carotid-subclavian bypass was performed. It was aimed to emphasize the necessity of a multidisciplinary approach for the successful surgery of the case and the solution of developing complications.

Keywords: Epidermoid cyst, surgical complications, carotid-subclavian bypass

INTRODUCTION

Teratomas are subdivided into dermoid cyst, epidermoid cyst and teratoid cyst [1,2]. While epidermoid cyst contains only epithelial layer, dermoid cyst may contain skin and its appendages and teratoid cyst may contain cartilage, bone tissue and muscle tissue [3]. They may be localized in any part of the body, most commonly (80%) reported to originate from the ovary and testis, with a rate of 1.6-6.9% in the head and neck region [4]. Although they can be observed at any age, they are mostly seen in the 15-35 age range. Gender predominance has not been reported [5]. Treatment of epidermoid cysts is surgical [6].

Various complications may occur in some surgical procedures due to the difficulty and rarity of these operations. In all surgeries, a successful operation with an uncomplicated outcome is the goal. No matter how careful one is, undesirable situations may develop due to case differences.

In this case report, we present a 24-year-old patient who was operated 5 years ago for an epidermoid cyst in the right neck region and developed postoperative loss of strength in the right arm. Angiography revealed total occlusion of the right subclavian artery and right carotid-subclavian bypass was performed. It

was aimed to emphasize the necessity of a multidisciplinary approach for the successful surgery of the case and the solution of developing complications.

CASE REPORT

A 24-year-old woman was operated on 5 years ago in another center for a right neck mass. Her family history was unremarkable. She presented to our clinic with complaints of numbness, weakness and pain on exertion in the right arm which started immediately after the first operation. On physical examination, the right axillary artery and more distal pulses were absent. There was a temperature difference between the two hands, but there was no ischemic discoloration. Other physical examination findings were normal. Magnetic Resonance Image of the neck performed before the first operation showed a cystic lesion with lobule contour and approximately 4.5x4 cm in size, pushing the carotid communis anteriorly in the medial aspect of the jugular vein in the right half of the neck. Because of the localization of the lesion and its extension to the neural foramen, it is thought to be a cystic schwannoma. However, since the localization is also posterior to the sternocleidomastoid muscle, a third branchial cleft cyst may also be considered. The pathology result of the mass removed

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in the first operation: 5.5x4x0.5 cm ruptured epidermoid cyst and inflammatory granulation tissue. Angiography performed in our clinic showed occlusion of the subclavian artery from the right carotid-subclavian junction (Figure 1). The surgical procedure was decided after obtaining consent from the patient and his relatives. The patient was operated with ASA (American Society Anesthesiologists) 3 risk. Under general anesthesia, an end-to-side anastomotic bypass was performed between the right proximal common carotid artery and the middle region of the subclavian artery (approximately 6 cm in length with a 6 mm poly-tetrafluoroethylene ring graft). Postoperative brachial, radial and ulnar artery pulses were palpable and no complications occurred. Control Computed Tomography Angiography showed that the graft was patent (Figure 2).

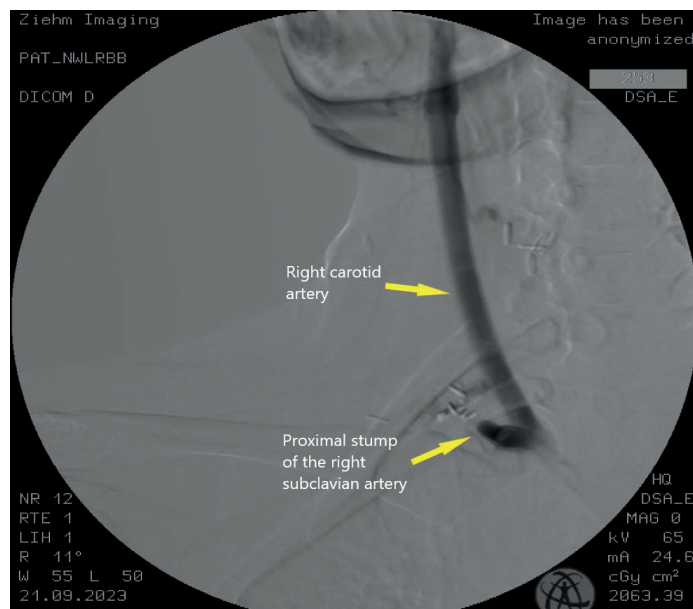


Figure 1. Angiography image of the right carotid artery and subclavian artery junction

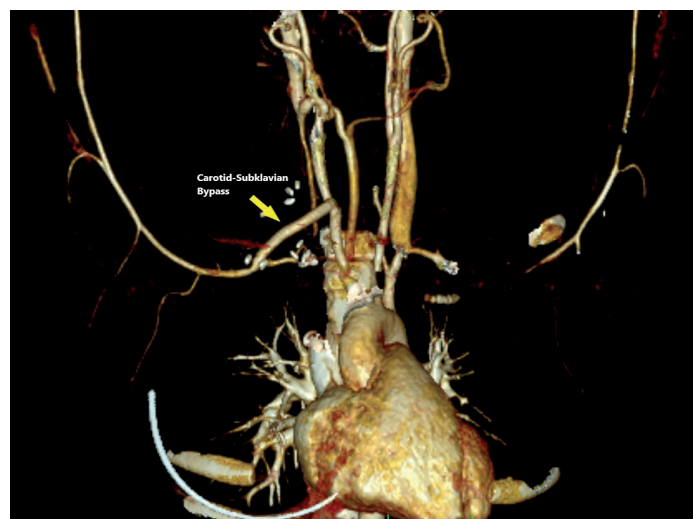


Figure 2. Carotid-Subclavian bypass (PTFE graft) CT angiography image

DISCUSSION

Surgical operations are characteristically cases in which the integrity of the body is first disrupted and then the integrity is tried to be restored after the planned procedure. In some parts of the body, it is not possible to restore integrity due to the coexistence of many important structures in a limited area. Since the neck region is rich in thyroid/parathyroid gland, muscle groups, important vascular and neural networks, surgery of this region is special. In addition, the rich organ distribution is the specialty of more than one clinic. In this case, the procedure performed during the first operation and the complication experienced is not known in detail. However, based on the anamnesis and angiography, it was determined that the right subclavian artery was damaged and totally occluded, and the patient's complaints developed accordingly.

In the literature, there are various proposals for the management of occlusive subclavian artery disease. Compared to the number of carotid endarterectomies, subclavian artery reconstructions have been reported to constitute 4.6% (95% CE, 3.4%-6.1%) of surgeries [7]. Left external carotid-left subclavian artery bypass has been reported to be promising in patients with thoracic endovascular aortic repair occluding the mouth of the left subclavian artery [8]. Carotid-subclavian bypass performed in cases of subclavian steal syndrome due to atherosclerosis has been reported to show low mortality-morbidity and high long-term patency rates [9,10]. 3, 5 and 10-year patency rates are reported to be 98%, 96% and 92%, respectively [11]. In another study (6 or 8 mm PTFE graft was used), patency rates at the 1st year, 2nd year, 3rd year, 4th year and 5th year were reported as 100%, 96%, 96%, 96% and 85%, respectively [12]. In a comparison of patients who underwent carotid-subclavian bypass with different grafts, the 5-year patency rate was 95.2% with poly-tetrafluoroethylene grafts, 83.9% with dacron grafts and 64.8% with vein grafts [13]. In this case, an end-to-side bypass was performed between the proximal part of the common carotid artery and the middle part of the subclavian artery with a graft approximately 6 cm in length. Since the patient was young, we preferred to use a ringed poly-tetrafluoroethylene graft with better long-term results. Aorta-subclavian bypass is an alternative method. However, it was not preferred because it is a more invasive method (requiring thoracotomy or sternotomy). Another method was external carotid-subclavian artery bypass instead of the common carotid artery. Regarding this option, we were concerned about whether the flow provided by the external carotid artery could provide sufficient flow for the graft to be placed and for the subclavian artery which was totally occluded. Therefore, the common carotid artery was used without any risk.

Subclavian steal syndrome may develop in patients undergoing carotid-subclavian bypass [9]. In this syndrome, findings of cerebral ischemia or vertebrobasilar insufficiency may be observed as a result of reversal of blood flow in the vertebral

artery. Headache, dizziness and transient stroke-like symptoms may be observed especially when the arm is used. In the patient we bypassed, blood was supplied from the carotid artery to the subclavian artery. Theoretically, if the flow is too high, steal-like symptoms may occur. To prevent this situation, care should be taken about the width of the arteriotomy and the diameter of the graft to be selected. In addition, anastomosis or graft narrowing (banding) procedures can be performed if necessary. The patient did not have any complaints suggestive of cerebral ischemia in the first week and one month postoperatively.

CONCLUSION

In conclusion, various complications may occur during surgical operations. In order to overcome these complications, sometimes experience is sufficient and sometimes multidisciplinary work is needed.

Patient Consent for Publication: Informed consent was obtained from the patient and their relatives.

Data Sharing Statement: The data that support the findings of this study are available from the corresponding author upon reasonable request.

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REFERENCES

- Hiremath R, Chandrashekarayya SH, Manswini Pol, Anegundi TJ, Rudrappa K. A rare case of submental epidermoid cyst: a case report. JCDR. 2011;5:1452-3.
- Jham BC, Duraes GV, Jham AC, Santos CR. Epidermoid cyst of the floor of the mouth: a case report. J Can Dent Assoc. 2007;73:525-8.
- Sabhalok SS, Shetty LS, Sarve PH, Setiya SV, Bharadwaj SR. Epidermoid and dermoid cysts of the head and neck region. Plastic and Aesthetic Research. 2016;3:347-50.
- De Ponte FS, Brunelli A, Marchetti E, Bottini DJ. Sublingual epidermoid cyst. J Craniofac Surg. 2002;13:308-10.
- Kandogan T, Koç M, Vardar E, Selek E, Sezgin O. Sublingual epidermoid cyst: case report. J Med Case Rep. 2007;17:87.
- Jha AK, Sahoo NK. An unusual case of submental epidermoid cyst in a ten-year-old child: a case report. International Journal of Case Reports and Images. 2011;2:10-3.
- Sterpetti AV, Schultz RD, Farina C, Feldhaus RJ. Subclavian artery revascularization: a comparison between carotid-subclavian artery bypass and subclavian-carotid transposition. Surgery. 1989;106:624-31.
- Shimura S, Yamaguchi M, Cho Y, Aki A, Furuya H, Ueda T. External carotid to subclavian artery bypass for thoracic aortic stent grafting. Asian Cardiovasc Thorac Ann. 2013;21:546-50.
- Gürer O, Yapıcı F, Çınar B, Kösem M, Enç Y, Sezerman Ö. Mid-term results of subclavian steal syndromes performed with carotico-axillary/subclavian bypass grafts. Türk Göğüs Kalp Damar Cer Derg. 2002;10:106-9.
- Küçüker A, Hidiroglu M, Çetin L, Kunt A, Sağlam F, Bayram BA, et al. The results of carotid-subclavian bypass in a single institute. Turk J Vasc Surg. 2013;22:285-91.
- Aburahma AF, Robinson PA, Jennings TG. Carotid-subclavian bypass grafting with polytetrafluoroethylene grafts for symptomatic subclavian artery stenosis or occlusion: a 20-year experience. J Vasc Surg. 2000;32:411-9.
- AbuRahma AF, Lee A, Davis E, Dean LS. Safety and durability of concomitant carotid endarterectomy with carotid-subclavian bypass grafting. J Vasc Surg. 2021;73:968-74.
- Law MM, Colburn MD, Moore WS, Quinones-Baldrich WJ, Machleder HI, Gelabert HA. Carotid-subclavian bypass for brachiocephalic occlusive disease. Stroke. 1995;26:1565-71.