Removal of Second Branchial Cleft Fistula with a Single Incision

Tek İnsizyonla İkinci Brankial Yarık Fistülün Çıkarılması

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Abstract: Branchial anomalies account for approximately 30% of congenital neck masses. They may occur in forms of cysts, sinuses or fistulas. Their incidence is similar in men and women, while they are usually diagnosed during the childhood and adolescence (first 2 decades of life). Second branchial cleft fistula, which is a rare branchial anomaly, is often characterized by having an inlet in the tonsillar region and an outlet opening to the skin around the sternocleidomastoid muscle. Surgical excision for branchial anomalies the only route of treatment. We present single-incision surgical method applied to a second branchial cleft fistula case in a 17-year-old boy and discuss our findings in light of the literature on this topic.
Keywords: second branchial cleft fistula, congenital malformations of the neck, fistula

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Özet: Brankial anomaliler, konjenital boyun kitlelerinin yaklaşık% 30'unu oluştururlar. Kist, sinüs veya fistül olarak ortaya çıkabilirler. Erkek ve kadınlarda eşit oranda görülürler ve çoğunlukla çocukluk ve ergenlik döneminde ortaya çıkarlar. İkinci brankial fistül'ün tonsiller bölgede bir girişi ve sternokleidomastoid kası üzerindeki ciltten dışarı doğru açılan bir çıkışı vardır. Bu lezyonların görülme sıklığı son derece seyrektir. Tedavi yöntemi olarak brankial anomalileri için cerrahi eksizyon tercih edilir. 17 yaşındaki bir erkek çocuğunda nadir görülen ikinci brankial fistül olgusuna uyguladığımız cerrahi yöntemi literatür eşliğinde sunuyoruz.
Anahtar Kelime: ikinci,brankial,fistül,konjenital malformasyonlar

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1. Introduction

Branchial cleft anomalies are divided into four types according to location: first, second, third and fourth branchial cleft anomalies. First branchial cleft anomalies account for around 1% of all branchial cleft anomalies, while the third and fourth branchial anomalies are extremely rare (1). Second branchial cleft anomalies are the most common anomaly and account for 95% of all branchial anomalies (2). Bailey et al. divided the lesion into four classes according to the location of the lesion and its course in the neck region (3). Type 1 is not associated with the carotid sheath. Type 2, the most common, passes through the front or back of the carotid sheath. Type 3 passes between the internal and external carotid arteries. Type 4 passes through the medial of the carotid sheath near the pharyngeal wall adjacent to the tonsillar fossa. At least 75% of second branchial cleft anomalies are cysts. 25% of them are sinuses and fistulas (4).

Preoperative diagnosis is made with anamnesis, physical examination and the results of radiological imaging methods. The treatment is surgery. Among the various techniques that have been used, we preferred to use the single incision technique in our case. We present this case to demonstrate that second branchial cleft fistulas could be treated with this method, and to discuss the literature on this topic.

2. Case Report

A 17-year-old male patient applied to our outpatient clinic with the complaint of occasional discharge and swelling at the left side of his neck, which had been present for a long time (Fig. 1). Patient history revealed that he had undergone surgery twice, but his complaints remained. As a result of radiological examinations (Fig. 2), the patient was diagnosed with second branchial cleft fistula and operated after consent from him and his family was obtained.

The patient was operated under general anesthesia. A horizontal incision was made on the sternocleidomastoid muscle. The fistula tract was dissected up to the left tonsillar fossa. The fistula was sutured after being cut from the location it entered to the pharynx (Fig. 3). The excised material was sent to the pathology laboratory for histopathological examination (Fig. 4). The pathology result was reported as branchial fistula.

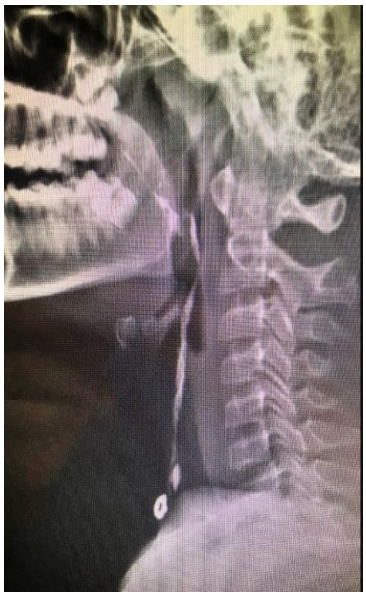

Figure 1. *Fistula trachea was observed in fistulography*

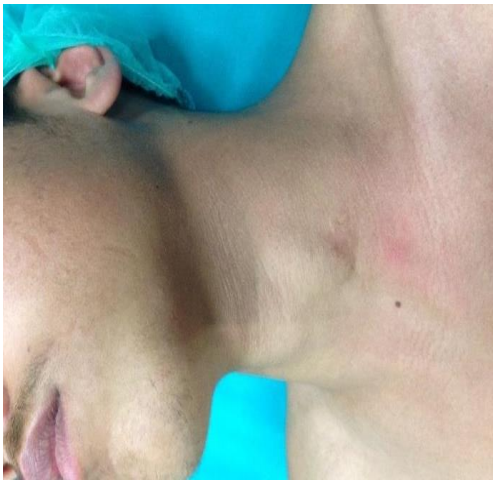

Figure 2. *Dermal hole of fistula and swelling are seen 2/3 of the lower of SCM on the left side of the neck*

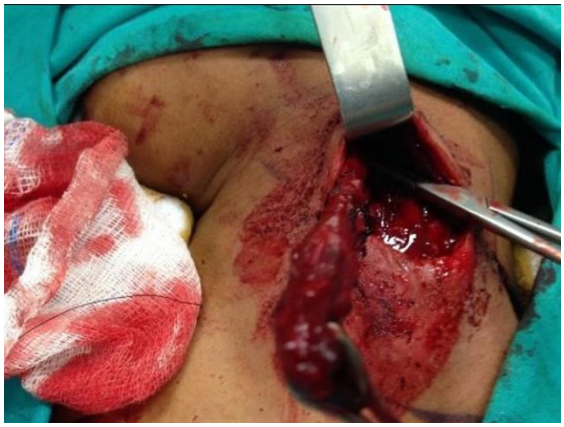

Figure 3. *The site where the fistula tract enters the pharynx*

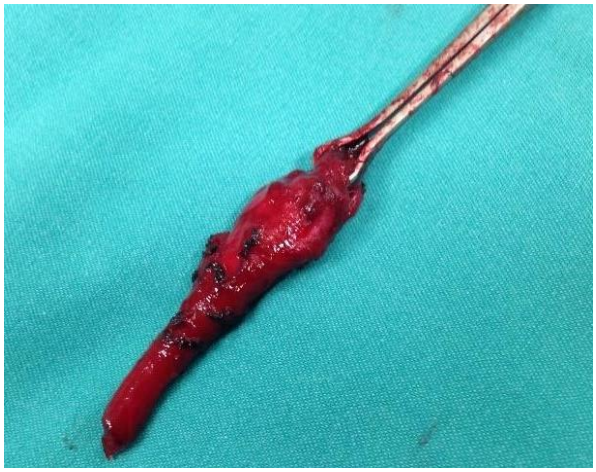

Figure 4.*Extracted material*

3. Discussion

Branchial anomalies are seen in three different forms: cyst, sinus and fistula. Cysts are structures without internal and external openings. If there is a single opening, the condition is termed as a sinus, while the term fistula is used if there are more than one internal and external openings. Cysts (80.8%) are more common than fistulas (19.2%) (2). Our case was a complete second branchial cleft fistula. Although branchial anomalies may be found at any age, they are most frequently diagnosed in the first and second decade of life. Our patient was 17 years old. He had been previously diagnosed (in the second decade) and had undergone 2 operations prior to applying to our center.

It has been shown that 6% of patients who suffer from complete fistula have a family history of the condition (5). 1% of cases are bilateral and there is no gender predisposition in localization (right or left region). However, one particular study by Augustine et. al. reported that lesions on the right side are more common (6). In our case, the lesion was located on the left side and had appeared in the second decade of life, which is compatible with the literature.

The most common symptoms in second branchial anomalies are reported as follows: mass (80%), pain (30%), intermittent swelling increase (20%), infection (15%) and compression symptoms (7%). It was reported that, with palpation, 70% of cases were considered as cystic, while 30% had solid masses (7). Additionally, the literature states that, conductive or sensorineural hearing loss may be seen in these patients, especially in those with first and second branchial arch pathologies. Because the epithelial structure of branchial anomalies is extremely similar to respiratory epithelial structure, lesions may increase in size after upper respiratory tract infections (URTIs).

In the diagnosis, radiological examination as well as careful anamnesis and physical examination are important. Ultrasonography (USG), contrast-enhanced computed tomography (CT), fistulography and magnetic resonance imaging (MRI) are the most important radiological examinations. Through visualization of the extension of the tract, sinograms with contrast material, are useful in reducing the recurrence rate by determining the presence of a sinus or fistula in the patient (8). In our case, we used contrast-enhanced MRI, USG and Fistulography as diagnostic methods. Surgery is the only treatment option in branchial fistulas.

In addition to the cervical approach, the stepladder and the stripping methods are also used in surgery (6). It is also emphasized that the stripping technique is better in terms of cosmetic result. We used a single-incision cervical approach in our case, a method similar to the that reported by Gupta et al., in a study involving 10 pediatric patients treated with significant success (10). We did not detect any recurrence in two-year periodic follow-ups.

4. Conclusion

Complete second branchial fistula is a rarely seen congenital anomaly which can only be treated via surgery. Since the success rates of all surgical methods are high, the surgical method to be chosen should be decided according to rate of recurrence as well as the surgeon's experience and aesthetic concerns of the patient.

5. Declarations

We declare there is no potentially conflict of interest and this study is not published or reviewed by elsewhere. This article has not been published anywhere before as a poster or a presentation. The consent concerning the operation and the case report was obtained from the patient and his relatives before the operation.

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