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Tessier No. 3 Facial Cleft: Surgical and Orthopaedic Treatment – A Literature Review

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Abstract

Tessier No. 3 is one of three types of oblique facial clefts according to Tessier's classification. This serious and rare congenital anomaly requires many specialized reconstructive operations and long-term postoperative treatment, the necessity for which is emphasised in this article. Based on a review of the literature, the paper discusses techniques of ortho-surgical treatment of Tessier type 3 facial cleft.

Keywords: Oblique facial cleft; Tessier type 3 cleft; Ortho-surgical treatment

Introduction

Craniofacial clefts constitute a broad spectrum of malformations which have a large variety of forms. They occur at a frequency of 1 to 5 per 100,000 live births [1]. One such extremely rare developmental defect is an oblique face cleft, which represents 0.24% of all craniofacial clefts [2]. Currently, the most widely used classification of cleft defects in the facial part of the skull is that proposed by Tessier in 1976 [3]. Oblique facial clefts are described as Tessier types 3, 4 and 5; the naso-ocular cleft Tessier 3, is located the most mesialy. It involves such a craniofacial structure as the vermilion border of the upper lip and the nasal wing. It results in the lack of an oral vestibule in this area. Then, the cleft fissure passes through the side wall of the nose up to the medial angle of the eye, medially in relation to the lower lacrimal point. In addition, this type of cleft is accompanied by a slit in the lower eyelid, a downward dislocation of the medial angle of the eye, microphthalmia, hypertelorism, improperly formed nasopharyngeal tract, a cleft of the medial orbital wall, as well as a cleft of the hard palate and the maxillary alveolar process [4-6].

Discussion

Most often, the first surgical intervention of Tessier type 3 cleft is performed in infancy and consist of a correction of the lower eyelid, preventing the development of keratitis [5,6]. This procedure involves lifting the lower eyelid to the level corresponding to the medial angle of the eye, an effect which is obtained by making an incision along the lower eyelid and cheek [6]. The second stage of surgical treatment involves surgery of the lipo-nasal component of the cleft. In infancy, surgery for the primary closure of the cleft lip is performed [7]. Due to the shortage of soft tissues within the oral vestibule and nasal wings, the cleft closure can be performed by means of the turn-in flap technique using cheek tissue [6]. Alternatively, if the fissure is very wide, the complete cleft closure is preceded by orthopaedic treatment with a passive acrylic plate implemented soon after birth. The orthopaedic treatment aimed at directing the development of the jawbone to the desired position and reducing the width of the cleft made it possible to perform surgery within the soft tissues [5]. The final stage of surgical treatment in patients with oblique clefts is an autogenous bone graft to reconstruct the orbital wall when the patient is at least 5 years old [8]. Performing this procedure when the patient has reached the required age reduces the risk of graft resorption and provides a sufficient amount of bone tissue available to the surgeon.

However, an earlier autogenic graft may be necessary if the cleft fissure is wide [9]. The literature presents various methods for the surgical and orthopaedic treatment of patients with Tessier No. 3 facial cleft; however, few papers discuss the subsequent care of the patient. In particular, there are no reports relating to the rehabilitation of the masticatory system in such patients and orthodontic treatment planning. The available case descriptions devote little attention to the dental abnormalities and malocclusions, which often occur together with oblique facial clefts. Despite the many surgical and orthopaedic techniques used in the treatment, there are no specific therapeutic procedures with strict guidelines. In all the analysed works, the authors draw attention to

the importance of early surgical repair of the soft tissue of the cleft but the further stage of treatment involving autogenous bone grafts is undertaken in only a few described cases.

Conclusion

Tessier no. 3 facial cleft is a severe anomaly requiring multiple reconstructive operations and post-operative care that involve comprehensive cooperation by specialists in many fields of medicine. The goals of its surgical treatment include the closure of the lip and jaw cleft, reconstruction of the lower eyelid, repositioning of the lateral angle of the eye, and reconstruction of skeletal continuity using bone grafts. Through the effectiveness of this therapy is not entirely satisfactory, it seems necessary to collect and publish further data on patients with oblique facial cleft.

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