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Case report

Abbe flap secondary reconstruction of the upper lip defect: A case report

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Abstract:

Background : *Gnatoschizis is a congenital disorder that affects the formation of cleft in lip and palate. Patients with gnathoschisis frequently need secondary reconstruction to enhance both the appearance and function of their lips even after labioplasty and palatoplasty have been completed Defects involving more than one-third of the lip require flap surgery.*

Purpose : *This case study aims to demonstrate the use of an Abbe flap along with rhinoplasty for the secondary restoration of the upper lip in a patient who had bilateral gnathoschisis.*

Case : *A 13-year-old female patient complained of bilateral cleft in her palate and gum. She had undergone labioplasty and palatoplasty a few years before. The patient is scheduled to undergo secondary lip reconstruction with an Abbe flap along with rhinoplasty.*

Case management : *A triangular flap involving the mucosa, muscle, and skin of the lower lip was made. Incision in the midline of the upper lip-subnasal served as the recipient site. The flap was then rotated and sutured to the upper lip, followed by reconstructing the alar region. The follow-up after 21 days post-operative shows satisfactory outcomes.*

Conclusion : *Improving patient's lip function and aesthetics is the primary goal of the Abbe flap technique as it is used for secondary reconstruction. This flap has been used widely and has shown to provides satisfactory results.*

Keywords: *Abbe flap, secondary reconstruction, gnatoschisiz*

Introduction

The lips are an important facial anatomical feature that serve both functional and aesthetic needs.[1] Various conditions resulting from congenital deformities (such as cleft lip and palate), as well as acquired conditions (trauma, oral cancer), can lead to lips dysmorphism that requires reconstruction to support both functional and aesthetic aspects. Secondary cleft lip deformities in children with cleft lip and palate frequently result from growth-related changes or distortion after the first surgical correction.[2]

Lip reconstruction is challenging due to the complex anatomy of the lip and the various layers that make up both the skin of the lips, the mucous membranes, and the muscles below it.[3]

The lips also serve as the dynamic center of one-third of an individual's face, making aesthetic considerations very important in

surgery.[4]

Oral competence, muscle integrity, and an adequate stomal aperture are critical factors in the functional reconstruction of the lips. In addition, from a cosmetic perspective, it is also important to pay attention to the anatomical landmarks of the lips, such as the vermilion-cutaneous junction and the philtrum line.[5] The reconstitution of these structures is critically important for oral competence, articulation, and facial shape.[3]

The use of flaps for reconstructing large defects on the lip with low risk of necrosis has become an important necessity in surgery to maintain blood supply to the lip.[6] One of the methods used in lip reconstruction is the Abbe flap. The principal indication for the Abbe flap is a full-thickness defect involving one-third to two-thirds of the lip with an intact oral commissure.[5] This case report describes a case of bilateral gnathoschisis that has undergone palatoplasty and labioplasty, followed by secondary reconstruction of the upper lip with an Abbe flap and rhinoplasty to achieve better aesthetic and functional outcomes.

CASE(S)

A 13-year-old female patient presented with complaints of bilateral cleft in the gums and palate. The patient was born to a 17-year-old mother with a history of P2A0 (Postpartum hemorrhagic). The patient was delivered normally at 9 months of gestation, assisted by a midwife in the Bojongsoang area, with a birth weight of 3 kg. The mother's history during pregnancy includes a history of falls (+) 2 times in the bathroom. History of medication/herbal consumption (-). Family history of cleft lip/palate (-). History of drug and food allergies (-). Complete immunization (+). Surgical history: Labioplasty (+) in 2010 at Borromeus Hospital, Palatoplasty in 2011 at Sentosa Hospital. The patient is scheduled to undergo upper lip reconstruction with an Abbe flap along with rhinoplasty

Figure 1. Extraoral condition of the patient.

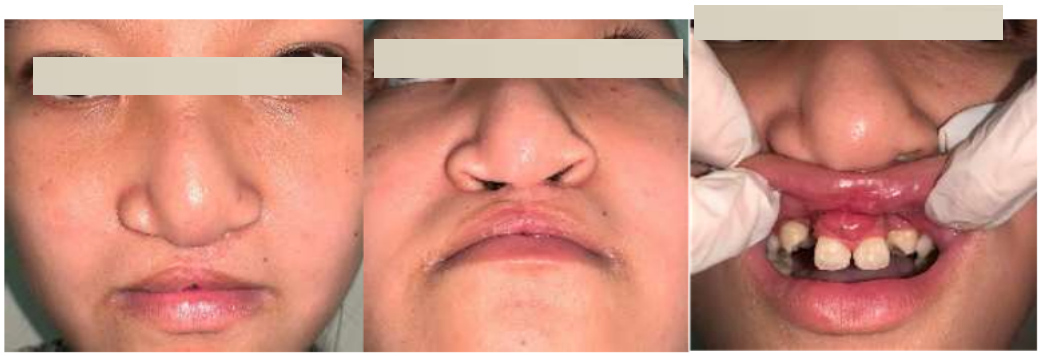

Figure 2. (a, b) The extraoral examination showed a thin, short, and asymmetric upper lip, absence of a philtrum, with narrow and asymmetric nostrils. (c) Bilateral cleft of the gum and palate.

CASE MANAGEMENT(S)

Discussion

Gnatoschisiz is a congenital defect that occurs due to the failure of the fusion of the nasal prominence from the frontonasal process with the maxilla during the embryogenesis process. The condition has a complex etiology that involves both environmental and genetic variables.[7] This cleft can present either bilaterally or unilaterally in a variety of ways. Primary surgery using various methods and procedures is performed to close the cleft while simultaneously shaping the anatomy of the lips and nose to be symmetrical and as close to normal conditions. In contrast to original cleft lip, secondary cleft abnormalities can originate from prior main surgical procedures or from chronic residual malformations that develop as the facial structure grows.[8] Deformities in the lips, such as asymmetrical free mucosal border, misaligned vermilion-cutaneous junction, or too short or broad, can result from cleft palate and bilateral cleft lip, resulting in an improperly shaped central lip vermilion, inadequate gingivolabial sulcus, or wider philtrum.[9]

An asymmetrical form of the free mucosal border, misalignment of the vermilion-cutaneous junction, and too short or too broad lips are examples of this type of deformity. Deformities of the lips due to cleft palate and bilateral cleft lip can manifest as an improperly shaped central lip vermilion, inadequate gingivolabial sulcus, or a philtrum that appears wider due to traction from two directions during surgical closure of the cleft.[10] The thickness, size, and nature of the underlying structural defect determined the reconstruction options for the upper lip deformity.[1]

Lips are a complex structure made up of mucosa, muscle, and skin. The primary lip muscle, the orbicularis oris, receives sensory and motor input from the trigeminal nerve and facial nerve branches.[11] Blood flow is primarily provided by the inferior and superior labial arteries.[10] Lip reconstruction presents unique challenges for plastic surgeons due to their vital role in deglutination, communication, facial expression, and aesthetic balance.[12] Function and aesthetics are the main objectives of lip restoration. The goals of lip reconstruction are to retain or restore lip sensibility and movement, as well as to maintain aesthetically pleasing features. In cases with extreme lip tightness, a more protruding lower lip, or inadequate lip height, an Abbe flap may be necessary for correction.[3] The Abbe flap can be used to reconstruct the full thickness medial upper lip, covering one-third to two-thirds of the defect area. This flap is useful in correcting secondary deformities resulting from bilateral or unilateral cleft lip that do not involve the labial commissure. [13,14] In this case, the surgery was performed along with nasal reconstruction. This procedure aims to correct asymmetry or other nasal deformities resulting from the initial surgery.

The Abbe flap was initially described in 1898.[4] The lack of a cupid bow, thin lips with no lip tuberculum, and deficiency or scarring of the central part of the upper lip are all indications for using an Abbe flap. This 2-stage lip-switch procedure involves creating a flap based on the labial artery of the opposing lip (lower lip) which is smaller than the defect region that has to be closed—about half of its width.[4] A triangle-shaped pedicle flap incision involving the mucosa, muscle, and skin in the lower lip is harvested, and an incision along the midline of the upper lip as the recipient.[15] The flap is rotated 180 degrees and sutured to the muscle, mucosa, and skin. This would result in equal width lips both upper and lower after repair. The purpose of this flap is to preserve the orbicularis oris muscle's competence.[11] The goal is to maintain lip function and aesthetics while avoiding complications like microstomia, effacement of the buccal commissure, lip adynamia, alterations in lip sensitivity, and lip incompetence.[12]

Postoperative care following Abbe flap surgery focuses on maintaining the health and functionality of the newly reconstructed lip. By adhering to wound care protocols, managing

pain effectively, following dietary and activity restrictions, and monitoring for complications, patients can support optimal healing and achieve the best possible outcomes. With appropriate management, many patients experience substantial improvements in both cosmetic and functional outcomes.[2]

Conclusion

The Abbe flap is a valuable technique in secondary reconstruction, particularly for repairing lip defects. It leverages local tissue to achieve a natural and functional reconstruction, enhancing both appearance and functionality in the area of the defect. The success rate of the Abbe flap in secondary reconstruction is generally high. It largely depends on surgical technique, patient health, and careful postoperative management. Overall, the technique is well-established for achieving favorable aesthetic and functional outcomes in lip and facial reconstruction.

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