

Management of the Congenital Cleft Earlobe with a Conchal Cartilage Graft

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Abstract

Keywords

- ▶ congenital
- ▶ cleft
- ▶ earlobe
- ▶ conchal
- ▶ cartilage

Congenital earlobe clefts are the most common lower auricular malformations. They represent a unique reconstructive challenge. The goal of surgery includes restoration of a natural lobular contour and volume as well as a fine surgical scar. Several surgical techniques have been described, most of which only address the cleft deformity but not the soft tissue deficiency. We hereby describe a technique which addresses both the cleft and improves soft tissue deficiency through a conchal cartilage graft.

Congenital lobular malformations occur in 1:15,000 live births.¹ Earlobe clefts are the most common lower auricular malformation and are often unilateral.² They result from a failure of fusion or insufficient accretion between hillocks 1 and 6, which contribute to the anterior and posterior earlobe.³ In contrast to acquired traumatic earlobe defects, the congenital cleft earlobe poses a unique challenge: addressing the cleft as well as any soft tissue deficiency. Presentations range from simple notching to extensive soft tissue deficiency. The goal of surgery includes restoration of a natural lobular contour and volume as well as a fine surgical scar. Several surgical techniques have been described, most of which only address the cleft deformity. We hereby describe a technique which addresses both the cleft and improves soft tissue deficiency through a conchal cartilage graft.

Surgical Technique

The design of the surgical approach to the cleft earlobe depends on presenting anatomy (▶**Fig. 1**). The soft tissues of the cleft earlobe are shared and redistributed so that the abnormal contour is corrected creating an unbroken curve and often lowering the point at which the lobe meets the

cheek. A graft of conchal cartilage is harvested from the same ear via an anterior approach (▶**Fig. 2**). The donor site is closed with 6/0 Monocryl (Ethicon Inc., Somerville, NJ) and 6/0 Vicryl Rapide (Ethicon Inc.) sutures and a bolster of paraffin-gauze dressing is used to reduce the chance of hematoma formation and to help ensure the resulting concavity. The conchal cartilage is shaped to maintain the soft tissues. A portion of the cartilage is removed from the center (▶**Fig. 3**) to facilitate future ear lobe piercing which may be performed 3 months following reconstruction. The cartilage graft is then placed within the lobe and the skin is sutured anteriorly and posteriorly (▶**Fig. 4**) with 6/0 Monocryl (Ethicon Inc.) and 6/0 Vicryl Rapide sutures (Ethicon Inc.).

Discussion

The auricle begins development during the end of the fourth week of embryonic life from the first and second branchial arches. By the fifth week, six prominences or hillocks develop. The anterior three hillocks develop from the first branchial arch and the posterior three hillocks develop from the second branchial arch. Hillock 1 contributes to the anterior part of the lobule and hillock 6 contributes to the

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Fig. 1 Preoperative view of the congenital cleft earlobe.



Fig. 3 Central portion of conchal cartilage removed.

posterior part of the lobule. Failure of fusion of these two hillocks may result in a cleft earlobe.¹

Several classifications of congenital cleft earlobes have been described. Kitayama et al⁴ categorized deformities into four anatomical groups: longitudinal cleft, transverse cleft, triple lobe type, and defective lobe. Yamada et al⁵ classified deformities into three subtypes: anterior, posterior, and double-lobe types. Kurihara⁶ classified cleft lobes into four groups: type I (vertical cleft with anterior and posterior parts), type II (horizontal cleft with superior and inferior

parts), type III (mixed-type cleft), and type IV (lobular hypoplasia, dysplasia, or agenesis). In our experience, we believe that these classifications serve a descriptive purpose primarily and contribute little to our surgical approach to the cleft earlobe.

Hypoplastic or defective type cleft earlobes demand surgical techniques which recruit extra tissue to address the volume-deficient earlobe. Several techniques to repair congenital cleft earlobes have been described. Ultimately, the common surgical goal is to reconstruct a naturally appearing



Fig. 2 Harvesting of conchal cartilage graft through anterior approach.



Fig. 4 Final postoperative result.



Fig. 5 Visible helical notch (white arrow) from lack of conchal cartilage graft.

lobule with a smooth unbroken contour and thin volume, associated with a fine surgical scar. Simple cleft defects with little soft tissue deficiency can be repaired with Z-plasty, 7-plasty (or inverted L-plasty), or local flaps such as triangular flap, V-Y advancement flap, rectangular flap, or a hinge flap.¹ More complex techniques include preauricular tissue such as the cheek-neck flap, a two-stage reconstruction using a tubularized preauricular flap, and a preauricular bilobed



Fig. 6 Safe earlobe piercing postoperatively.



Fig. 7 Postoperative photographs at 2 weeks showing inconspicuous scars.

flap or postauricular tissue such as a chondrocutaneous postauricular flap.^{1,7-9} Several of these techniques result in extensive scar contractures and a bulky earlobe, often with noticeable donor sites. Our technique provides a simple and reliable way of using readily available conchal cartilage for grafting and avoiding preauricular scarring. The thin conchal cartilage assists in augmenting a volume-deficient cleft earlobe and more importantly assists in maintaining the shape of the repaired lobule by helping to create and maintain an unbroken curve. A visible notch may develop in cases where a hypoplastic cleft earlobe is repaired without the use of a conchal cartilage graft (►Fig. 5). It provides structural support to the new earlobe and permits safe earlobe piercing (►Fig. 6). Finally, it results in an acceptable surgical scar on the earlobe and an inconspicuous donor scar (►Fig. 7). We, however, acknowledge that it may result in a stiffer earlobe in certain cases, although this improves over time.

Conclusion

Congenital cleft earlobe deformities are rare and represent a unique reconstructive challenge. Presentations vary from simple cleft to severe volume-deficient hypoplastic earlobes. All cases, however, share common reconstructive goals of a natural-looking lobule with minimal scarring. We present a simple, reliable technique to reconstruct a volume-deficient cleft earlobe through the use of conchal cartilage grafting.

Conflict of Interest
None declared.

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