CASE REPORT

Postauricular flap based on dermal pedicle for reconstruction of congenital earlobe cleft

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Summary Failure of fusion of auricular components is the probable cause of cleft ear. Many surgical techniques such as Z-plasties and local flap surgeries have been proposed for the reconstruction of an earlobe cleft. We reported an innovative and simple method for the reconstruction of a congenital earlobe cleft by elevating a random postauricular flap based on the dermal pedicle at the indentation of the cleft under local anesthesia. The flap was folded inward along the diagonal line to repair the defect and then was closed primarily along the margin of the cleft after deepithelialization. During the postoperative course, there was neither cyanotic change nor flap partial loss. The donor site was closed primarily, with a good aesthetic result. The auricle shape remained well at the 4-year follow-up. Therefore we suggest this procedure as an alternative choice for the reconstruction of a congenital earlobe cleft with a large defect.

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1. Introduction

Congenital cleft earlobe deformity is caused by the arrest of fusion, or by accretion insufficiency, between the mandibular (1st) and the hyoid (6th) lobular hillocks.1 The variable degrees of the deficiencies are thought to represent an expression of arrest at different periods. Park1 also deduced from the territory of excellent periauricular circulation that the region of the superficial temporal artery is compatible with the region of the mandibular hillocks and that the region of the posterior auricular artery is compatible with the hyoid hillocks. Many correction methods have been reviewed for variable degrees of the defect, such as direct suturing,2 Z-plasties,3,4 and reconstruction techniques using L-shaped flaps5 and chondrocutaneous flaps.6

Sometimes, closure of a large defect of the congenital earlobe cleft by direct suturing creates a longitudinal long scar, leading to lobe contraction and notching. Despite

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various Z-plasties and local flap modifications, the volume of the reconstructed earlobe remains limited. Chondrocutaneous flaps, combining conchal cartilage graft and postauricular flap coverage, are reserved for the reconstruction of an auricular defect between helix and earlobe extending to the antihelix. Because our patient had a unilateral congenital earlobe cleft, we elevated a random postauricular flap based on the dermal pedicle to reconstruct the earlobe defect in terms of both contouring and volume restoration.

2. Materials and methods

A template with the double area of the earlobe cleft defect was designed for a random postauricular flap based on the dermal pedicle at the indentation of the cleft. Following elevation of the flap under local anesthesia, the flap was folded inward along the diagonal line to fill up the defect and was then closed primarily along the margin of the cleft after de-epithelialization (Fig. 1).

Here, we report an 18-year-old healthy young female with a unilateral congenital earlobe cleft, who underwent a surgical repair by the random dermal pedicle-based postauricular flap to restore earlobe contour (Fig. 2).

3. Results

During the 4-year follow-up, the earlobe cleft defect was filled up with auricle shape preservation and acceptable trapdoor deformity, which could have been corrected easily.

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**Figure 1** (A) A rhomboid postauricular skin flap based on the deepest part of the indentation site of the cleft (black arrow) was designed to fill up the triangular defect. (B) The postauricular random skin flap was elevated and folded along the diagonal line, keeping the dermal layer inside, into a triangular one (blue area depicted the donor site defect). (C) The triangular skin flap was sutured along the de-epithelialized margin of the cleft. The donor site was repaired primarily.

**Figure 2** An 18-year-old healthy young female with a unilateral congenital earlobe cleft who underwent reconstructive surgery with a random dermal pedicle-based postauricular flap to restore earlobe contour: (A) preoperative photograph and (B) immediate postoperative photograph. The random dermal pedicle was based only on the deepest part of the indentation site of the cleft (arrow).
by a V-Y advancement flap, a fat graft, or other fillers; however, our patient turned down our suggestions. The donor site was closed primarily with minimal morbidity and a good aesthetic result (Fig. 3).

4. Discussion

The choice of the reconstructive method for a cleft earlobe depends on the size of the defect. A small cleft can be corrected by direct suturing, Z-plasties, and L-shaped flaps; chondrocutaneous flaps are used for larger defects. Because of the relatively large cleft and excellent circulation around the auricle, we designed the postauricular flap based on a random dermal pedicle using a template double the size of the defect, to fill up the earlobe cleft. Although the entire earlobe was not totally isolated from the postauricular skin after reconstruction, we consider it was the preexisting adhesion between the native earlobe and postauricular area rather than the drawback of this flap. Under local anesthesia, the large earlobe cleft defect could be reconstructed in a simple, one-stage operation. Neither a flap-compromising event nor a donor site morbidity was reported. The patient was satisfied with the aesthetic result, and only a minor revision such as a Z-plasty at the flap margin will be needed in the future for correcting the trapdoor deformity. After large earlobe volume restoration, the patient can wear earrings and even have ear piercings. Thus, we suggest that this innovative surgical technique is an alternative choice for correcting congenital earlobe cleft with a large defect.

References