

Congenital Defect of Middle Third of Helix Reconstructed with an Eave's Skin Flap

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Abstract

Case Report

The pinna is a common site of malignancies and traumatic injuries. The topography of the pinna along with the cartilage with the auricle's tenuous blood supply, present a challenge in reconstructing partial defects of the pinna. The reconstructed ear must match the opposite ear in size, shape and the axis. The goal is to recreate a three-dimensional pinna that is symmetric to the opposite side and as normal as possible. The decision as to which technique is used depends on the size, the injured soft tissue components, and the location of the defect. In this paper, we describe the reconstruction of a congenital defect of the middle third of the helix using the Eave's skin flap.

Keywords: Congenital, Helical Defect, Eave's Skin Flap, Aesthetic.

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INTRODUCTION

Reconstruction of partial auricular defects presents as one of the most difficult challenges in head and neck reconstructive surgery. The pinna is a frequent site of injury due to tumours and trauma, but can also be a congenital defect resulting in a deformity. This deformity can cause significant psychological issues for the patient as it alters the facial aesthetics [1]. The psychosocial benefit of reconstruction in congenital or acquired defects has been well-documented [1, 2]. Each case of auricular reconstruction is unique and dictates an individualistic approach keeping in mind the defect size and location, but also the quality of the surrounding skin, patient preference, and surgeon experience.

CASE REPORT

A 24 year old male presented to us with a deformity of the middle of the left ear since birth. He

was born to parents of a non-consanguineous marriage by a full term normal vaginal delivery. The antenatal history was uneventful. He had normal milestones of development. There is no history of any hearing loss and no other deformities elsewhere including the opposite ear. Now he has come for cosmetic correction of the ear deformity. On examination, there was a defect of the middle third of the left helical of about 2.5cm (Fig 1). ENT opinion was obtained and it showed normal hearing. We planned to reconstruct the defect with an Eave's skin flap from the post-auricular region. Under general anaesthesia, the defect edges were freshened. A transverse skin flap was raised from the post-auricular region and inset to the anterior lip of the pared defect with 4-0 nylon sutures (Fig 2, 3). Dressing was done especially under the bridge segment and a loose head bandage was applied. Post-operative period was uneventful. Sutures were removed on the 10th post-operative and the flap was divided under local

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anaesthesia after 3 weeks and inset to the posterior lip with 4-0 nylon. Sutures were removed on the 7th post-operative day. The patient was under regular follow-up for 1 year (Fig 4).



Fig 1: Clinical picture showing the defect of middle third of left pinna



Fig 2: Photograph showing the freshened edges and the skin flap raised



Fig 3: Early post-operative picture



Fig 4: Late post-op picture showing a well formed helical rim

DISCUSSION

The knowledge of the anatomy of the pinna with the contours, convexities, and concavities is fundamental in reconstructing the auricle. The elastic cartilage of the ear provides a structural framework that is flexible but resilient. Parts of this cartilaginous framework are critical for maintaining structural support and proper contour, whereas parts like the concha and triangular fossa can be excised without significant deformity [3, 4]. The other key anatomic aspects are that the normal adult ear height ranges from 5.5 to 6.5 cm, the width being approximately 55% of its length, the vertical height of the auricle is

approximately equal the distance from the lateral orbital rim to the root of the helix, the helix protrudes 1 to 2.5 cm from the skull with an angle of 25 to 30 degrees, the superior aspect of the ear is at the level of the tail of the eyebrow or upper eyelid and the auricle is tilted posteriorly 20 degrees and is parallel to the dorsum of the nose [3, 5, 6]. The general principles to be considered prior to undertaking middle third auricular reconstruction are that successful reconstruction requires appropriate restoration of the cartilaginous deformity as well as providing soft tissue support, small defects of the medial surface can be closed given the mobility of the subcutaneous tissue and defects of the lateral skin can rarely be closed given the lack of subcutaneous tissue. Small defects (<1.5 cm) of the helix and antihelix can be repaired by conversion to wedge-shaped full-thickness excision with primary anastomosis. This will lead to a shortening of the ear and to avoid ear distortion and to allow tension-free closure, a portion of the concha needs to be included in the wedge resection in some cases. The defect is closed in layers including reapproximation of cartilage edges [3, 4]. Medium defects (1.5 to 2 cm) can be repaired by composite grafts from the contralateral ear but the graft should be half the size of the defect to allow for symmetry between the ears [3, 4]. For small- to medium-sized helical defects upto 2cm, helical advancement flaps can be used to repair the defect. For larger defects, a tube flap or postauricular advancement flap can be used. The lateral skin and cartilage are incised superiorly and inferiorly; the medial skin can be kept intact or incised depending on the degree of mobility needed. Burrow triangles are used if greater mobility is required [7-9]. Helical rim defects greater than 2.5 cm can be closed using bipediced tubed flaps. The bipediced tubed flap can utilize pre- or postauricular skin. large middle-third defects can be closed with postauricular advancement flaps to cover the autologous cartilage. This difference is due to the thinner, non-hair-bearing postauricular skin in this area as compared with more superiorly [3, 4]. Large middle-third defects can be reconstructed with a two-stage posteriorly based retroauricular flap and autologous cartilage graft. They can also be repaired by using a temporoparietal fascial graft (TPFG) to cover autologous cartilage and serve as bedding for a second-stage skin graft. In cases of large defects with prior failed reconstructive efforts, a total auricectomy can be done followed by total auricular reconstruction or prosthetic rehabilitation with excellent results.

CONCLUSION

Reconstruction of partial ear defects is always challenging to the reconstructive surgeon. The goal is to recreate an ear symmetric to the opposite side, which restores form and function. The reconstructive option should be based on the defect size, location, quality and availability of the surrounding tissues. The Eave's skin flap is a versatile flap for reconstructing small to medium middle third defects of the pinna with acceptable aesthetic outcome.

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