



ELSEVIER



The arterial blood supply of the helical rim and the earlobe-based advancement flap (ELBAF): A new strategy for reconstructions of helical rim defects

Isaac Zilinsky ^{a,e}, Sebastian Cotofana ^{b,*}, Niels Hammer ^c,
Christine Feja ^c, Christine Ebel ^d, Demetris Stavrou ^a,
Josef Haik ^a, Nimrod Farber ^a, Eyal Winkler ^a, Oren Weissman ^a

^a Department of Plastic and Reconstructive Surgery, Sheba Medical Center, Tel Hashomer, Israel

^b Institute of Anatomy, Paracelsus Medical University, Salzburg, Austria

^c Institute of Anatomy, University of Leipzig, Leipzig, Germany

^d Institute of Anatomy, Ludwig-Maximilians-University, Munich, Germany

Received 16 March 2014; accepted 22 August 2014

KEYWORDS

Reconstruction of the ear;
Helical rim defect;
Vascularization;
Advancement flap

Summary *Background:* Several techniques are currently available for reconstruction of helical rim defects including Antia and Buch's technique. Some of these techniques produce unsatisfying aesthetic results or are time consuming or technically challenging. Herein, we present the earlobe-based advancement flap (ELBAF) technique and its anatomical basis for reconstruction of helical rim defects.

Methods: A case series of 13 patients with helical rim defects of up to 3.8 cm in length were reconstructed using the ELBAF technique solely or with additional procedures. Patients were followed for the occurrence of complications and evaluation of aesthetic results for up to 8 years. An anatomical assay that included cadaver dissection and anatomical corrosion technique was performed in order to support the ELBAF technique.

Results: Thirteen patients (68.5 ± 9 years, two females) with full-thickness helical rim defects of up to 3.8-cm length caused by basal cell carcinoma in 92.3% underwent reconstruction surgery using the ELBAF technique solely or with additional procedures. No complications related to the ELBAF technique were encountered during follow-up. Cadaver dissections demonstrated a consistent arterial blood supply emerging from the earlobe area, producing arteries that run circularly along the helical rim.

* Corresponding author. Paracelsus Medical University, Strubergasse 21, 5020 Salzburg, Austria. Tel.: +43 662 2420 80410; fax: +43 662 2420 80409.

E-mail address: sebastian.cotofana@pmu.ac.at (S. Cotofana).

^e Both authors contributed equally to this work.

Conclusions: Based on the axial vessel pattern, the ELBAF technique seems to be a useful strategy to reconstruct full-thickness helical defects of up to 3.8 cm in length. This procedure can be regarded as a valid addition to the ear reconstruction repertoire, which can be used alone or in combination with other established techniques.

Level of evidence: Level 4, case series.

© 2014 British Association of Plastic, Reconstructive and Aesthetic Surgeons. Published by Elsevier Ltd. All rights reserved.

Introduction

The ear represents a reconstructive challenge for surgeons. It has a complex three-dimensional surface topography that is challenging to mimic during reconstructive surgery. Aesthetic postoperative results shall achieve an aesthetically pleasing ear shape, a symmetric and smooth outer contour, and (if possible) no drawing of the auricle.

Reconstruction of helical rim defects, whether caused by trauma or tumor extirpation, is a common problem that is encountered by plastic surgeons. Traditionally, the most commonly performed method for full-thickness helical rim reconstruction involves a triangular full-thickness excision of skin and cartilage continuous to the defect. This excision is wedge shaped and allows subsequent tensionless cartilage and skin approximation.¹ However, using this method, the outer diameter of the auricle can be significantly reduced and symmetry to the contralateral side is diminished.

Larger helical rim defects can be aesthetically reconstructed using the technique described in 1967 by Antia and Buch.² This technique is based on a chondrocutaneous advancement flap for upper pole defects. This method consists of helical rim incisions that go through the anterior skin and cartilage, whereas the posterior auricular skin is left attached to provide ample blood supply. The post-auricular skin flap is freed from the conchal cartilage to allow the advancement and approximation of the flaps. While this technique provides good aesthetic results, it tends to be time consuming and there is a long learning curve to mastering it.

Relying on previous anatomical description, the arterial blood supply of the ear is regarded as a spokes-like radial supply of the helical rim emerging from the superficial temporal artery. From our experience albeit, there seems to be reliable and consistent arterial blood vessels coursing along the helical rim, based inferiorly on the earlobe area. Hinging on this alleged blood supply, we suggest a simpler, easier-to-perform, and less time-consuming alternative to the Antia and Buch technique with comparable aesthetic results. We call this the *earlobe-based advancement flap* (ELBAF).

The aim of this study was to describe the ELBAF surgical technique, to report our results with a case series of 13 patients who underwent reconstructive ear surgery using the ELBAF technique, and to demonstrate the proposed arterial blood supply along the helical rim by anatomical assay in cadavers.

Material and methods

Patient selection

A case series of 13 patients (68.5 ± 9 years, two females) were included in this study who underwent reconstructive ear surgery in the Department of Plastic and Reconstructive Surgery, Sheba Medical Center, Tel Hashomer, Israel, between 2005 and 2014 (Table 1). Inclusion criteria consisted of all patients with full-thickness helical rim defects. All patients' defects resulted from tumor extirpation using the Mohs technique. In 12 of the 13 cases, the diagnosis for surgery was basal cell carcinoma and in one case it was Bowen's disease (Table 1). None of the included patients had previous ear surgery or scars upon inspection or other pathologies that might have compromised blood supply of the helical rim. Informed consent was signed by all patients prior to surgery. Follow-up period ranged from 6 months to 8 years.

Surgical technique

All patients were operated by a single surgeon (I.Z.). The surgical technique applied was as follows: Following local anesthesia, a full-thickness incision (through the anterior skin, cartilage, and posterior skin) was carried out from the defects' lower margin, along the scaphoid fossa, and down to the earlobe. The incision was performed using a number 15 blade over a sterile wooden tongue blade for stabilization or by using sharp Metzenbaum scissors. The inferior part of the incision was slightly angled medially ("curving out") at the base of the flap to provide a more robust vascular leash. The resultant flap is long and narrow and its blood supply is based on arteries originating from the earlobe inferiorly, thus rendering this flap an axial flap. The earlobe is flexible and supple and allows for easy advancement of the flap to close the defect (Figure 1). Closure includes cartilage approximation with braided absorbable sutures; anterior skin is sutured with nylon sutures that are usually well hidden in the helical crease and the posterior skin with monofilament absorbable sutures. Patients are instructed to take antibiotics (ciprofloxacin 250 mg p.o. twice daily). Sutures were removed after 1 week's time (see Figure 2).

If defect closure was critical with original flap length, a triangular excision was made at the base of the flap, close to or at the earlobe, imparting a degree of transposition to the proximal part in order to augment the movement of the advancement flap.

Download English Version:

<https://daneshyari.com/en/article/4118329>

Download Persian Version:

<https://daneshyari.com/article/4118329>

[Daneshyari.com](https://daneshyari.com)