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ORIGINAL ARTICLE FACE AND NECK SURGERY

Earlobe Reduction with Minimally Visible Scars: The Sub-Antitragal Groove Technique

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Abstract

Background Ptosis of the earlobe is a common consequence of ageing, defined as an unappealingly large free caudal segment of over 5 mm. It is therefore important to consider reduction as a complement to rhytidectomy in selected patients. Moreover, facelifting operations can result in disproportionate or poorly positioned earlobes. Current earlobe-reducing techniques can leave a scar on the free lateral edge causing notching or involve complex pattern excisions with limited resection capability and the risk of deformities. The presented technique, on the other hand, is versatile and easy to use, as it follows general geometric principles.

Methods Excision of the designed area results in an earlobe flap which can be rotated in the excision defect. This results in ideal scar locations, situated at the sub-antitragal groove and at the cheek junction. The technique is adjustable, to incorporate potential piercing holes.

Results This technique takes approximately 15 minutes per earlobe to complete. The resulting earlobes have undisturbed free borders. No vascularization-related flap problems were noted.

Conclusions This technique is a viable method for reducing the earlobe with minimally visible scars.

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Keywords Earlobe · Ear deformities · Acquired · Age effect · Rejuvenation · Rhytidectomy

Introduction

The earlobe is a frequently overlooked facet when discussing aesthetics of the ageing face. However, indications for earlobe-rejuvenating surgery are multiple. Ageing can result in lengthening of the earlobe either by deflation and formation of deep creases or by volume increase with sagging. Moreover, facial rejuvenation surgery often causes earlobe deformities or alternatively induces disproportionately aged earlobes [1]. Loeb [2] acknowledged this and emphasized the importance of reducing the size of the earlobe as a complement to rhytidectomy for the ageing face.

The length of the earlobe is determined by measuring the distance from the intertragic incisure to the caudal tip. This earlobe length can be further subdivided by the lowest point at which the earlobe attaches to the cheek, the otobasion inferius (see Fig. 1). This divides the length in an attached cephalic segment [intertragic incisure (*I*) to otobasion inferius (*O*) distance or *I*-to-*O* distance] and a free caudal segment [otobasion inferius to subaurale

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Fig. 1 Earlobe segments. *Dashed line* sub-antitragal groove

(*S*) distance or *O*-to-*S* distance]. Mowlavi et al. [3] have shown that an *I*-to-*O* distance over 15 mm is considered unappealing called 'pseudoptosis' and the ideal *O*-to-*S* distance is 1–5 mm with 'ptosis' being an unappealingly large free caudal segment starting from over 5 mm. The average length of the earlobes increases with ageing [4]. However, only the free caudal segment is prone to lengthening with ageing, preserving the attached cephalic distance [5].

Another indication for performing earlobe corrections is in the case of deformities following facelift procedures, sometimes referred to as 'pixie' ears [6]. By an extrinsic pull of the cheek skin flap, the otobasion inferius migrates from a posterior cephalad position to an anterior-caudal position, giving it a 'stuck on' or 'pulled' appearance. As a result, the attached cephalic segment will lengthen causing pseudoptosis in severe cases, without significantly affecting the free caudal segment [7].

For the reduction of the earlobe, multiple techniques exist, ranging from simple wedge excision to complex shape-excisions. The use of a simple wedge excision for the reduction of an earlobe was first introduced by Miller [8] in 1924 and reintroduced by Guerrero-Santos [9] in 1970. Stark [10], McCoy [11] and Tipton [12] later presented a technique that simply involved excising the excess ptotic earlobe tissue with primary closure. However, this technique easily results in a distorted free lateral edge. Different lateral excision techniques emerged in the following decades [13–16]. While these excisions appear satisfying immediately postoperatively, adjuvant scar formation often leads to a small notch in the free lateral edge. In contrast, techniques dealing with the medial part of the earlobe avoid the lateral notching, as performed by Eitner [17], Loeb [18], Lassus [19] and Constant [20]. However, these are often hard to perform with limited resection capability.

We present a step-by-step description of a technique that is related to the technique described by Loeb in 1965, but with some very distinct differences [18]. We developed a simple strategy making the wound edges match, avoid over-resection and ensure maximal reduction of the earlobe whilst preserving aesthetic proportions and the smooth free lateral edge.

Materials and Methods

We describe a simple and versatile technique for reducing and rejuvenating the earlobe. The basis of the technique is the geometric marking of the earlobe. The lower extension of the helical trajectory presents the minimal size to which the earlobe can aesthetically be reduced (Fig. 2a: lower dark brown line). The upper extension is the sub-antitragal groove (Fig. 2a: upper dark brown line). Optionally, if an ear piercing is to be removed, the trajectory through the ear piercing towards the free lateral edge is marked.

- First, the attached cephalic segment of the earlobe is marked, from otobasion inferius to sub-antitragal groove, further referred to as the 'otobasion' (Fig. 2a: dashed line no 1).
- The second marking runs in the sub-antitragal groove, following its natural curve (Fig. 2a: dashed line no 2). It extends laterally until it is the length of the otobasion away from the free lateral edge (Fig. 2b: length B′). Be careful never to extend this any further, as the vascularization of the resulting flap will be compromised.
- The third marking runs parallel to the free lateral edge over the same length as line 2 (Fig. 2a: dashed line no 3), matching perfectly.
- The fourth marking connects the third marking to the free lateral edge of the earlobe in an angle that is similar to the one between markings no 1 and 2. In this respect, marking no 4 will be the same length as the otobasion (Fig. 2b: $A = A' = A''$), which will therefore match perfectly.

The marked area is excised with a no 15 scalpel blade, leaving an earlobe flap that is rotated into the defect, perfectly approximating the sub-antitragal groove and otobasion. First, a resorbable subdermal suture (Vicryl 4.0) is placed in the upper and lower corner of the flap to ensure tissue support after the dermal sutures are later removed. Three minimally reactive non-resorbable dermal stitches (Prolene 6.0) are placed on each side of the ear: one in the corner of the incisions and one on each incision line, making up six sutures in total. Afterwards, a simple self-adhering dressing (Mepore) is applied. The dermal sutures are removed after five days to avoid suture-point scars.

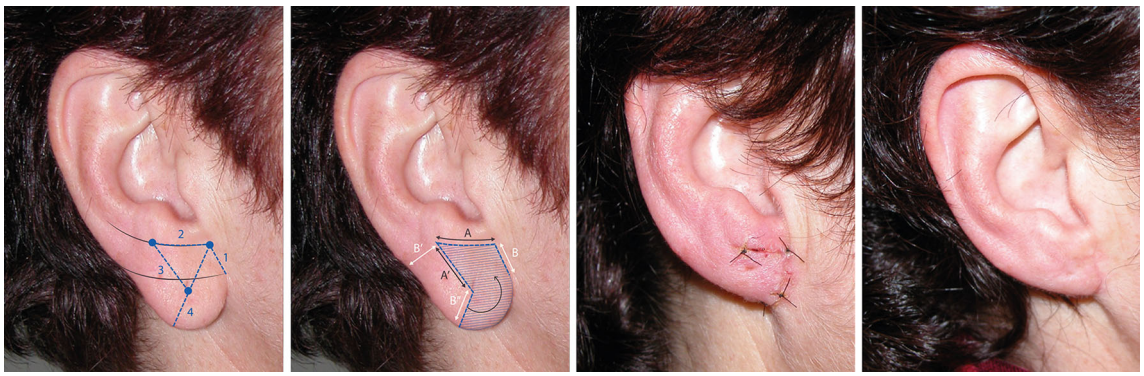

Fig. 2 Operative technique. **a** Excision pattern. *Blue lines* are the helical trajectory. **b** Geometrical relations and proportions. **c** Situation 5 days postoperatively. **d** Situation 30 days postoperatively

Six women were operated on using this technique, with a mean age of 55 years old. Four patients consulted with the request for earlobe-reducing surgery, and in two cases, the earlobe reduction was suggested by the surgeon in addition to a facelift procedure. No exclusion criteria were used.

Results

The procedure takes approximately 15 minutes per ear. The result 5 days postoperatively is depicted, as well as the result after 30 days (Fig. 2c, d). No vascularization-related flap problems were noted.

Discussion

This technique has numerous advantages. The medial technique ensures an untouched lateral edge without notching. The first scar hides in the natural crease of the sub-antitragal groove, the second lies at the base of the ear, which is commonly used in a facelift procedure due to its inconspicuousness. The single most important advantage is the geometrical reliability of the technique. As earlobe reduction is all about proportions, a logical excision pattern with congruent segments should be followed. As described, the markings are all based on the individual ear's otobasion length and then subsequently follow anatomic landmarks and geometrical ratio. Instead of relying on good judgement, only one possible marking for each individual ear will result from using this technique, making it utterly predictable. This way, the earlobes can be reduced as much as aesthetically possible, without risking over-resection.

Regarding the demographic features, we did not find any limitations of the technique. The technique is suitable for patients of all ages and for both volume-depleted as lipohypertrophic earlobes. In the case of simultaneous correction of pierced ears, the excision pattern should sometimes be slightly adapted to include the piercing hole, depending on the location of the original piercing in relation to the original excision pattern. However, in all cases, adaptation to include the piercing was either unnecessary or very limited, with aesthetically pleasing results.

Conclusions

In conclusion, we present a reliable and quick technique for reducing the earlobe with a preserved free lateral edge and minimally visible scars.

Compliance with Ethical Standards

Conflict of interest The authors declare that they have no conflict of interest.

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