



## Research Article

# Modified Posterior Triple Scoring as a Refinement Technique in Creating Aesthetic Anti-Helical Fold in Otoplasty

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## Abstract

**Objective:** To develop a precise and reliable technique in addressing lack of antihelical folds in patients with prominent ears.

**Background:** Prominent ears remain to be a common presentation in aesthetic surgery. Multiple otoplasty techniques have been developed but no single ideal technique is universally adopted. Creating a smooth, rounded and well-defined antihelical fold without retropulsion of helix can be at times challenging and difficult to achieve. This study describes a modified way of achieving desired antihelical fold by posterior triple scoring technique.

**Methods:** A posterior approach was developed to access the posterior surface of antihelix and apply strategic triple linear scoring in conjunction with conchal repositioning. Ten patients underwent this procedure and followed up in 1-month and 1-year periods.

**Results:** All patients were satisfied with the procedure. None of the patients developed complication or require secondary otoplasty.

**Conclusion:** This novel technique provides a simple yet reliable and precise technique in achieving the normal curves of the external ear. We suggest this technique as an option to address the lack of antihelical fold in patients with prominent ears.

## Introduction

Prominent or protruding ears are the most common congenital external ear deformity affecting approximately 5% of the population and are most often bilateral [1]. Ears that are protruded from the temporal surface are considered prominent. It can present with inadequately developed antihelical fold; overdeveloped deep conchal wall; anterior rotation of the concha or combination of these features resulting to lateral projection of the ear [2-4]. It usually presents with auriculo-cephalic angle of greater than 30 degrees and helicon-mastoid distance of more than 2 cm. Albeit consequences do not impair function nor compromise physiology, psychologically it can affect the self-esteem of the patient and can also lead to emotional trauma and psychological stress [5,6].

Otoplasty is a common procedure and different techniques have been used to correct prominent ear since the 19<sup>th</sup> century. The primary goal is creation of normal-appearing ear without evidence of surgical intervention. The specific goals are: (i) Develop a smooth, rounded and well-defined

antihelical fold; (ii) Conchoscaphal angle of 90 degrees and (iii) Conchal reduction or reduction of the conchomastoidal angle [7]. From the front view, the helix of both ears should be beyond the antihelix and should have a smooth and regular line throughout. From the lateral view, the conchoscaphal angle should be approximately 90 degrees. From the posterior view, the helix to mastoid distance should fall in the normal range of 15-18 mm in the upper third, 18-20 mm in the middle third, and 20-22 mm in the lower third of the ear [7].

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Treatment can be divided into 2 groups: Cartilage incision with anterior or posterior scoring techniques and cartilage sparing with suture placement techniques, with each technique having advantages and disadvantages [8-11]. A combination of these techniques has also been described [12].

Early complications can occur up to 8.4% and usually happens within first 30 days postoperatively. This includes bleeding, haematoma, infection (e.g., chondritis), pain and necrosis. Late complications occur beyond 30 days postoperatively which can be up to 47.3%. This includes asymmetry [13,14], keloid or hypertrophic scarring, recurrence or relapse due to cartilaginous memory [15,16], anti-helix irregularities, suture problems such as abscess and spitting sutures, retropulsion of helix [17-19] and patient dissatisfaction.

## Materials and Methods

Twenty prominent ears in 10 patients who underwent otoplasty with modified posterior triple scoring technique between January 2021 and December 2022 were included in this retrospective study. Written informed consent was obtained from all participants before surgery. This study was conducted in accordance with the principles of the Declaration of Helsinki. All patients are primary cases performed by the same author (MZ). All the patients were evaluated preoperatively through an examination of the status of the antihelix, helicon-mastoid distance, auriculo-cephalic angle, and the depth and projection of the conchal bowl. Inclusion criteria are patients with no or deficient antihelix; helicon-mastoid distance greater than 2 cm, and those with an auriculo-cephalic angle of > 30 degrees. Exclusion criteria were other congenital ear deformities, connective tissue diseases, bleeding or clotting problems, psychiatric disorders, and follow-up duration being less than 1 year.

## Surgical Technique (Technique Video Link)

Skin incision is placed in the postauricular sulcus sparing the most cephalic and caudal ends to hide the scar. Blunt dissection is then used to expose the full posterior cartilaginous surface of the pinna. The pinna is pushed backwards to show the natural position of the antihelical fold which should be gently curving.

First longitudinal scoring is placed on the posterior surface of the antihelix where the fold is intended to be. Another 2 longitudinal scorings are placed about 3 mm on either side of the first scoring. Care is taken not to cut through the cartilage as this may create sharp edges which may be both aesthetically unpleasant and may cause discomfort on direct pressure. Up to three temporary 5-0 prolene sutures are placed on the anterior surface of the antihelix over the skin to form the desired antihelical shape. These temporary sutures act as a guide for the permanent 4-0 Ticron sutures which are then placed on the posterior surface of the cartilage. It is important to make sure the permanent sutures do not catch the anterior surface of the skin. Once secure, temporary 5-0 prolene is then removed.

Conchal bowl setback is achieved by first excising the postauricular soft tissue create space for conchal setback. Then conchomastoid sutures using 3-0 vicryl is applied to secure position. Skin is closed with 5-0 vicrylrapide. Paraffin gauze dressing is applied on both anterior and posterior surfaces of the ear. Combine dressing and crepe bandage are used to secure the dressings.

## Result

There were no major complications post-operatively including haematoma, seroma or infection. There were no reported skin necrosis, auditory canal deformities, hypertrophic scars, paresthesia or contour irregularities. Position of helix and antihelix were satisfactory on all patients. None of the patients complained about significant asymmetry. Postoperative scars healed well and hidden behind the ears. None of the patients had relapse requiring reoperation. Extrusion of sutures did not occur in any of the patients during the follow up period.

## Discussion

There are 2 main categories on otoplasty techniques for correction of prominent ears: cartilage-cutting and cartilage sparing [20]. Over 200 different techniques have been described in the surgical correction of prominent ears [12,21-23]. Multiple studies have described complication rates involved in different techniques [21]. In view of multiple deformities and their combinations leading to prominent ear, it is clear that no single surgical procedure can be recommended for all patients but the desired outcome is universal [24]. McDowell described goals of otoplasty in 1968: (1) The protrusion in the upper third of the ear must be corrected; (2) The helix should also be visible beyond the antihelical fold of both ears from the anterior view; (3) There should be a smooth antihelical fold and (4) No overcorrection; (5) Postauricular sulcus should be maintained, and (6) Results should be symmetrical, meaning that the helix to mastoid distance should not be more than 3 mm at any point in both ears [1,9].

Strategic scoring on the cartilage provides a soft natural contour to the antihelical fold without leaving palpable sharp cartilaginous ridges. This was performed after careful exposure of the subperichondrial plane on the posterior surface of the antihelical cartilage. The scoring was curved following where the antihelical fold is supposed to sit. Another 2 linear scorings were created on either side to provide smooth transition.

Three horizontal permanent horizontal sutures were placed to maintain the newly created antihelical fold. Conchal bowl setback was achieved by developing a space in the mastoid region and securing with absorbable sutures. This method of conchal bowl setback also allows repositioning of the ear to the desired level. Care must be taken not to stretch the external auditory meatus to avoid narrowing of the canal. In our study, suture extrusion or helical retropulsion did not occur in any of the cases. Hassanpour, et al. described scoring of posterior scapha as a refinement in aesthetic otoplasty [12]. Horlock, et al. described raising a fascial flap from the

mastoid area and advance it to cover the sutures reducing the risk of recurrence and suture extrusion [25].

## Conclusion

Our modified posterior triple scoring technique provides an option to refine aesthetic otoplasty. It is a simple, reliable and safe procedure creating a smooth and natural looking antihelical fold. The size, shape and contour are maintained after long term follow up without recurrence requiring reoperation. We propose this technique as an option to consider as stand alone or in combination with other otoplasty techniques in managing the antihelical complex to create an aesthetically pleasing result.

## References

1. Adamson PA, Strecker HD (1995) Otoplasty techniques. *Facial Plast Surg* 11: 284-300.
2. Guyuron B, DeLuca L (1997) Ear projection and the posterior auricular muscle insertion. *Plast Reconstr Surg* 100: 457-460.
3. Panettiè P, Marchetti L, Accorci D, et al. (2004) Otoplasty: A comparison of techniques for antihelical defects treatment. *Aesthetic Plast Surg* 27: 462-465.
4. Scuderi N, Tenna S, Bitonti A, et al. (2007) Repositioning of posterior auricular muscle combined with conventional otoplasty: A personal technique. *J Plast Reconstr Aesthet Surg* 60: 201-204.
5. Horlock N, Vögelin E, Bradbury ET, et al. (2005) Psychosocial outcome of patients after ear reconstruction: A retrospective study of 62 patients. *Ann Plast Surg* 54: 517-524.
6. Schwentner I, Schmutzhard J, Deibl M, et al. (2006) Health-related quality of life outcome of adult patients after otoplasty. *J Craniofac Surg* 17: 629-635.
7. La Trenta G (1994) Otoplasty. In: Rees TD, LaTrenta GS, *Aesthetic plastic surgery*. (2<sup>nd</sup> edn), Philadelphia, Pa, Saunders, 891-921.
8. Stenstrom SJ, Heftner J (1978) The Stenstrom otoplasty. *Clin Plast Surg* 5: 465-470.
9. McDowell AJ (1968) Goals in otoplasty for protruding ears. *Plast Reconstr Surg* 41: 17-27.
10. Mustarde JC (1963) The correction of prominent ears using simple mattress sutures. *Br J Plast Surg* 16: 170-178.
11. Mogl AG, Palackic A, Cambiaso-Daniel J, et al. (2022) Conchal excision techniques in otoplasty. *Plast Reconstr Surg Glob Open* 10: e4381.
12. Hassanpour SE, Moosavizadeh SM (2010) Posterior scoring of scapha as a refinement in aesthetic otoplasty. *J Plast Reconstr Aesthet Surg* 63: 78-86.
13. Caouette-Laberge L, Guay N, Bortoluzzi P, et al. (2000) Otoplasty: Anterior scoring technique and results in 500 cases. *Plast Reconstr Surg* 105: 504-515.
14. Yuen A, Coombs CJ (2006) Reduction otoplasty: Correction of the large or asymmetric ear. *Aesthetic Plast Surg* 30: 675-678.
15. Rubino C, Farace F, Figus A, et al. (2005) Anterior scoring of the upper helical cartilage as a refinement in aesthetic otoplasty. *Aesthetic Plast Surg* 29: 88-93.
16. Sevin K, Sevin A (2006) Otoplasty with Mustarde suture, cartilage rasping, and scratching. *Aesthetic Plast Surg* 30: 437-441.
17. Elliott RA Jr (1990) Otoplasty: A combined approach. *Clin Plast Surg* 17: 373-381.
18. Erol OO (2001) New modification in otoplasty: Anterior approach. *Plast Reconstr Surg* 107: 193-205.
19. Spira M (1999) Otoplasty: what I do now - a30 year perspective. *Plast Reconstr Surg* 104: 834-841.
20. Nazarian R, Eshraghi AA (2011) Otoplasty for the protruded ear. *Semin Plast Surg* 25: 288-294.
21. Limandjaja GC, Breugem CC, Mink van der Molen AB, et al. (2009) Complications of otoplasty: A literature review. *J Plast Reconstr Aesthet Surg* 62: 19-27.
22. Dieffenbach JF (1848) Die ohrbildungotoplastie. In: Zeis E, *Die Operative Chirurgie*. Leipzig: F. A. Brockhaus, 395-397.
23. Adamson PA, Strecker HD (2006) Otoplasty technique. *Facial Plast Surg Clin North Am* 14: 79-87.
24. Campbell AC (2005) Otoplasty. *Facial Plast Surg* 21: 310-316.
25. Horlock N, Misra A, Gault DT (2001) The postauricular fascial flap as an adjunct to Mustardé and Furnas type otoplasty. *Plast Reconstr Surg* 108: 1487-1490.

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