

## Letter to the Editor

# International Consensus Recommendations on Microtia, Aural Atresia and Functional Ear Reconstruction

Shihi Chang , Qingguo Zhang 

Plastic Surgery Hospital, Chinese Academy of Medical Sciences and Peking Union Medical College, Reconstructive Surgery Center, Beijing, China

ORCID IDs of the authors: S.C. 0000-0001-9658-305X; Q.Z. 0000-0001-8054-0741.

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In the recently published article "International Consensus Recommendations on Microtia, Aural Atresia and Functional Ear Reconstruction", by Zhang et al. <sup>[1]</sup>, international recommendations have been provided, by giving plastic surgeons an insightful and extremely useful review on functional ear construction. The advantages of this article is that it provides a collective expert opinion from a team of experienced professionals worldwide that can provide guidance and advice on controversial or less common occurrences to the intended users. Additional topics could have been tackled in the paper. However, adult patients were overlooked in the treatment of microtia, and the reason stated by the author is surgery is not optimal in adulthood.

Based on our clinical experience of many years, a considerable number of patients with microtia delayed treatment until adulthood owing to various clinical and social reasons, such as unfamiliarity with the anomaly by their primary doctor. Adults differ from children in psychosocial and physiological states, and this should affect the treatment approach followed by the surgeon. Although challenging, ear reconstruction by the autologous costal cartilage method was performed successfully in our institution with good use of the following techniques, which we believe demand further discussion.

1. Pre-operation: Preoperative evaluation is critical in harvesting cartilage for adult patients with cartilage calcification. As recommended by the author, costal cartilage B-ultrasound can be used to determine whether the costal cartilage is hollow or calcified<sup>1</sup>. Preoperative three-dimensional scanning combined with additive manufacturing techniques to observe the extent of calcification may reduce the surgical time and enhance surgical results <sup>[2, 3]</sup>.

2. Inter-operation: Basic physiological differences in adult cartilage require modifications in the technique when fabricating. Minimization of the operative stages was reported to improve early social return of patients <sup>[4]</sup>. However, some adult patients may need more pieces of cartilage to cut out from to assemble the anatomical structures of the ear because calcified cartilage is harder to bend and manipulate. The size and shape of adult cartilage can also provide advantages to make up for the calcification <sup>[5]</sup>.

3. Post-operation: Adults are at risk of cartilage graft deformation because the calcified cartilage is brittle and rigid. Patients need to be followed up for a longer period of time to detect issues regarding the absorption and deformation of the reconstructed auricle. More information is yet found regarding corresponding measures in cases of post-operational deformation owing to the brittleness of cartilage.

Although current surgical techniques, such as the ones mentioned above, have shown to be satisfactory, the search for the most appropriate management choice for adult patients is still ongoing, and a guideline with respect to this criterion is still lacking. Expert recommendations and opinion on this topic would enhance the value of this article and greatly benefit the target population.

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**Corresponding Author:** Qingguo Zhang E-mail: doczhang2017320@sina.com

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## Author's Reply

The ossification of costal cartilage in adulthood makes the carving of auricle scaffolds difficult. We make some comments as listed below.

1. Costal cartilage B-ultrasound can be used to determine whether the costal cartilage is calcified.
2. It is important to sculpt the framework as one piece to maintain structural stability.
3. Power tools such as mechanical burr or drill should be avoided for carving the cartilage to prevent excessive damage to the cartilage.
4. We can remove the calcified part, but preserve the outer layer of the cartilage as the cortex of cartilage does not ossify and process nice flexibility even though it is difficult. In severe calcified cases, power tool was still one viable option. We think the artificial material

scaffolds especially tissue engineered solutions could be the direction in the future <sup>[1-5]</sup>.

Tian-yu Zhang, Neil Bulstrode, Kay W. Chang, Yang-Sun Cho, Henning Frenzel, Dan Jiang, Bradley W. Kesser, Ralf Siegert, Jean-Michel Triglia

Department of Facial Plastic and Reconstructive Surgery, ENT institute, Eye & ENT Hospital of Fudan University, Shanghai, China (TZ)

Department of Plastic and Reconstructive Surgery, Great Ormond Street Hospital, London, United Kingdom (NB)

Department of Otolaryngology, Lucile Packard Children's Hospital, Stanford University, San Francisco Bay Area, USA (KWC)

Department of Otolaryngology, Samsung Medical Center, Sungkyunkwan University, Seoul, Korea, Republic Of (YSC)

Department of Otorhinolaryngology and Facial Plastic Operations, University Hospital Schleswig-Holstein, Lübeck, Germany (HF)

Department of Otolaryngology, St Thomas' Hospital, London, United Kingdom (DJ)

Department of Otolaryngology, University of Virginia School of Medicine, Charlottesville, USA (BWK)

Department of Otolaryngology, Prosper-Hospital, Ruhr University, Recklinghausen, Germany (RS)

Department of Otolaryngology, La Timone Children's Hospital, Aix-Marseille University, Marseille, France (JMT)

**Corresponding Address:** Tian-yu Zhang E-mail: ty.zhang2006@aliyun.com

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