Surgical Otoplasty
An Evidence-Based Approach to Prominent Ears Correction

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KEYWORDS

• Otoplasty • Prominent ear • Evidence • Posterior suturing • Anterior scoring • Suture • Complications • Incisionless

KEY POINTS

- Prominent ear correction techniques can be distinguished in cartilage-sculpting (incision or scoring) versus cartilage-sparing (suture techniques).
- Cartilage-sculpting techniques can occasionally result in sharp edges and difficult-to-treat deformities.
- Posterior suturing recurrence and suture-related complications are minimized by the adoption of a fascial flap technique with vest-over-pants wound closure.
- Posterior suturing has lower risks of noncorrectible cartilage distortion or disruption.

INTRODUCTION

In the Western world, requests for interventions to improve the appearance of the ears are common. Otoplasty accounted for 1.3% of plastic surgical interventions performed in 2016 by US plastic surgeons,[1] 3.2% in the United Kingdom,[2] and 2.6% worldwide in 2015.[3] These statistics do not consider procedures performed by specialists other than plastic surgeons. In general, these procedures present low risk with favorable patient outcomes. However, significant complications and litigations can and do occur.

For many plastic surgeons, otoplasty techniques are often learned early in training. A myriad of techniques and nuances of surgical techniques exist in the literature. Many have merit, some are ineffective, some are destructive, and some are frankly fanciful. For the resident in training and the newly established independent practitioner, adopting an effective and safe technique should not merely be secondary to the influence of her or his trainers but should be based on proven efficacy and effectiveness to avoid early disappointments. Above all, beware the latest fad or the latest marketing campaign.

PATIENT ASSESSMENT

Patients present across the entire age range requesting correction of prominent ears. Some degree of ear deformity is common at birth, affecting 55.2% of newborns in a Japanese study examining 1000 infants.[4] However, only 0.4% of ears are regarded as prominent at birth. A Canadian study on 800 newborns identified a much smaller incidence of general deformity (6%), but a similar 0.75% incidence of ear protrusion.[5] Although ear deformities largely self-resolve, ear prominence increases to 5.5% at 1 year.[4] Parents, often driven

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by Internet searches or on recommendation of professionals, will present with enquiries about ear splinting.[6–8]

The ethics of operating on children are complex. Parents will frequently request intervention before school to "prevent teasing and bullying," yet we have no evidence that early intervention provides any protection against the psychological rigors of childhood. Others will argue that children should have reached an age of competence so that they can be an arbiter of their own ear fate. To operate on all children who present with prominent ears is, without doubt, to operate on many unnecessarily. For some, prominent ears will eventually become problematic enough to warrant intervention. Others will cope perfectly and will not be affected in their social, educational, or occupational interactions. A review of successful individuals in public life quickly negates the notion that prominent ears are a barrier to success.

Some have extrapolated the cleft palate debate to otoplasty. Early intervention in cleft palate is necessary, but is clearly associated with poorer midfacial growth. And, thus, early intervention before ear growth may adversely affect growth. However, evidence suggests early otoplasty does not significantly interfere with ear growth. Balogh and Millesi[9] reported on 76 patients having undergone antihelical fold correction by cartilage excision and suturing at the age of 5 to 8 years and reexamined them at 20 to 30 years old. No evident deficiency in ear growth out of normal ranges was noticed when compared against standard measures and against a control cohort. Gosain and colleagues[10] described a case series of 12 patients undergoing otoplasty by cartilage incision and suturing before age 3 and similarly found no effect on ear development at follow-up ranging from 21 months to 7.5 years.

However, a lack of effect on growth does not justify the practice of early otoplasty. Our personal experience suggests a higher incidence of postoperative difficulties in young children, and a higher adverse psychological burden related to the traumatic event is a possibility.

We have tried, and probably failed, to add some sense to the difficult question of the "ideal age" for ear surgery.[11] In truth, long-term outcome studies do not exist to substantiate a preferential benefit of surgery at any particular age. Current work to develop standardized ear-related patient-reported outcome measures, such as the EAR-Q, will at least give us the tools to develop such studies.[12,13]

In adults, in theory, no such anxieties exist regarding competence in decision making, yet pitfalls abound. We have all met patients who have exploited the wonders of double-sided sticky tape or superglue to self-correct. Such self-prescribed interventions may not necessarily indicate body dysmorphic disorder (BMD) in as much that the well-groomed young man with bleached teeth, bronzed skin, and ripped muscles necessarily harbors such a diagnosis. Yet studies suggest that the incidence of BMD in facial plastic surgery cases is relatively high. Certainly young surgeons should avoid the temptation to be flattered by patients who have traveled a long way to get to their office. Surgical itinerants wearing hats to hide their ears, who disparage every other surgeon they have met, rarely make good surgical candidates.

ANATOMY

A careful evaluation of the anatomy of each ear is essential. Excessive ear projection is the most common complaint. A nonmargined ruler is used to measure the distance between the mastoid and the most prominent point of the helix. Typical findings in aesthetically attractive ears are between 17 and 23 mm. Beyond 25 mm, ears are more frequently regarded as prominent.

Evaluation of ear length and symmetry is necessary. In our ear reconstruction practice, we regard the normal range as between 50 mm and 70 mm in length. Numbers are not all. An appreciation of how the ear fits to the face is critical: greater ear length may more readily complement a longer face. Individual components of ear length are also relevant. Excess ear lobule size or length in particular should be noted. Finally, the normal tendency for ears to elongate in later life should be appreciated.[14] Older patients may request ear reduction as a rejuvenation procedure.

The anatomic anomalies contributing toward ear prominence should be assessed. The most frequent finding is a relatively obtuse antihelix and superior crus. The inferior crus is less frequently implicated but should be evaluated. In the past, a "deep" conchal bowl was implicated as a common culprit for ear prominence, and conchal reduction surgery was frequently practiced. We now believe this represents an overdiagnosis of conchal bowl excess. We and others have observed that in the vast majority of cases the conchal bowl is normal in size but is rather rotated in an anterior direction.

Our understanding of the contribution of the various extrinsic and intrinsic ear musculature to ear prominence is in its infancy. A significant proportion of patients with acquired facial palsy develop acquired ear prominence, and it will be interesting to elucidate the role of auricular musculature in the development of prominent ears.