

CASE REPORT

Ear Stent Fabrication for Pediatric Patient with an Innovative Method for Retention.

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ABSTRACT

External ear anomalies can be caused by genetic or acquired disorders such as trauma or cancer. This flaw has a direct influence on the emotional, social, and psychological well-being of the afflicted. The flaws can be repaired in a number of methods, including prosthetic rehabilitation and surgical reconstruction. The two most challenging components of the treatment are preserving the ear projection during the first phases of auricle repair utilizing grafts and flaps, as well as avoiding the postauricular sulcus from re-epithelizing and obliterating the vestibule. Prosthodontists can address this issue by designing stents that retain the projection of a rebuilt auricle. This case study describes the production procedure as well as the method of retention for an ear stent.

Keywords: Ear stent, Maxillofacial prosthesis, Projection of ear, Stent retention, Auricular rehabilitation.

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INTRODUCTION

The ear is split into three regions that are important for hearing and balance: the exterior, middle, and inner ear. The external ear resonates, amplifies, and directs sound to the tympanic membrane. The ossicles of the middle ear transport sound waves from the tympanic membrane to the internal ear. The vestibule, semicircular canals, and cochlea constitute the internal ear. The cochlea's Corti organ converts auditory signals into brain messages. The vestibule and semicircular canals are in charge of maintaining balance.¹

Anomalies of the external ear can be caused by inherited or acquired conditions, such as trauma or cancer. Only three out of every 10,000 babies are born with these birth abnormalities. Less than 10% of those babies have bilaterally absent ears. This defect has an immediate impact on the patient's emotional, social, and psychological well-being.² The defects can be corrected in a variety of ways including prosthetic rehabilitation or surgical reconstruction. The difficulties of maintaining the ear projection during the initial phases of auricle restoration using grafts and flaps, as well as preventing the postauricular sulcus from re-epithelizing and obliterating the vestibule, are the two most difficult aspects of the procedure.⁵ The auricular projection, or its width when seen exclusively from the anterior, is, in contrast, largely consistent throughout a person's life. The average

ear protrusion is 20 mm, varying from 12 to 28mm. The average ear protrusion is 20 mm, varying from 12 to 28mm.^{3,4} This issue can be resolved by Prosthodontists by making stents that maintain the projection of a reconstructed auricle. This case study outlines the fabrication process and manner of retention for an ear stent.

CASE DESCRIPTION

A six-year-old female patient presented to the Department of Prosthodontics at Tamilnadu Government Dental College and Hospital. She had Brent's I ear reconstruction with auricular framework made of costal cartilage for her microtia associated with hemifacial microsomia. She was sent to the OPD for a stent in order to preserve the postauricular sulcus and the auricular projection.

Requirements of auricular splint

- Easy to fabricate
- Ease of retention
- Maintain adequate projection of ear
- Prevent post auricular sulcus obliteration
- Ease of cleaning
- Economical

Putty polyvinyl siloxane substance was used to make an impression of the post auricular sulcular area, providing an optimal projection of the auricle (Figure-1 and 2). The impression was flasked immediately and processed with heat cure

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transparent acrylic. Trimming and polishing were performed on the processed stent (Figure-3). It was tried on the patient to ensure proper fit, and any necessary final adjustments were performed (Figure-4). In order to retain the stent, a metal hair band of the patients choice was modified. Grooves were created in the stent to accommodate the metal hairband.



Figure 1: Appearance of the auricle

The patient reported after 7 months for modification of auricular stent after Brent II surgery for cephaloauricular sulcus. Cephaloauricular sulcus was created at an angle of 130 degree using SSG from thigh. The stent was modified to maintain ear projection and prevent obliteration.



Figure 2: Polyvinyl siloxane impression of the post auricular sulcus

DISCUSSION

The result of ear reconstruction, one of the most challenging procedures in plastic surgery, depends on the symmetry of the ear's size and projection, the adequacy of the ear's structure, and the presence of a suitable retro auricular sulcus. Various splints and ear guards have been employed to protect ear projection and the post auricular sulcus. Following



Figure 3: Fabricated ear splint



Figure 4: Appliance tried in the patient



Figure 5: Projection of the ear.

repair of an auricular defect, early treatment with an auricular stent is crucial for surgical success,



Figure 6: Ear stent retained with hairband.

upcoming definitive rehabilitation and psychological wellbeing of the patient. An auricular stent should be comfortable for the patient to wear, lightweight, strong enough to resist deformation, and easy to insert and remove. It needs to enable enough space to preserve the auriculocephalic angle, prevent post-surgical contracture, and allow for normal growth.⁶ Additionally, it ought to be cheap, easy to manufacture and effortless to clean. Numerous resins, rubber tubes, silicone tubes, thermoplastic materials and dressing techniques have been documented in the literature as solutions to this problem. In the case study, a stent was created utilising a quick imprint technique with elastomeric impression material and heat-curable transparent acrylic. This procedure is comparatively inexpensive, doesn't require several sessions, and has simple mode of retention.

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CONCLUSION

Auricular stents are valuable prostheses developed by a prosthodontist to support ear reconstructive surgery to restore normal shape and contour to the repaired tissue by preserving the auriculocephalic angle and reducing post-surgical tissue contraction.

CONFLICT OF INTEREST

There is no conflict of interest.

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