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A Step by Step Approach Technique for Fabrication of Ear Prosthesis: A Case Report

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Abstract: The loss of facial structures can result from congenital conditions, physical trauma, or surgical intervention. Maxillofacial defects, such as missing ocular, nasal, or aural components, may be addressed via surgical reconstruction or prosthetic rehabilitation. While managing facial deformities presents significant clinical challenges, silicone prostheses offer a viable non-surgical alternative for patients seeking aesthetic improvement. The creation of these anatomical replacements integrates scientific precision with artistic skill, providing a cost-effective and socially acceptable camouflage for individuals who wish to avoid invasive surgery. This report outlines the step to step procedures required for the successful making of an adhesive-retained ear appliance.

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I. INTRODUCTION

The human pursuit of aesthetic restoration has been documented since antiquity, with historical records indicating early attempts to replace missing body parts with artificial substitutes (Bansal et al., 2009). Deformities—whether present at birth or acquired later in life—frequently hinder social interaction and diminish an individual's quality of life (Beumer et al., 1996). For patients who cannot undergo or choose to delay surgery, silicone auricular prostheses serve as a practical and aesthetic solution (Conroy, 1983).

To achieve a natural appearance, the prosthesis must be meticulously matched to the patient's surrounding skin in terms of texture, color, and contour. Ideally, the reconstruction should be lifelike enough to remain indistinguishable from natural anatomy during routine social contact (Gettleman, 1994). Beyond technical execution, clinicians must address the psychological impact of facial disfigurement on self-esteem and social integration (Lemon et al., 1996).

Silicone is the preferred material due to its realistic appearance, efficient treatment timeline, and the avoidance of invasive surgery (Khindria et al., 2009). However, patients must be informed of the daily maintenance required, specifically the application and removal of the device when using skin adhesives. While the primary goal is cosmetic, these prostheses can also aid in sound localization and protect the external ear canal (Parel et al., 1986).

II. CASE REPORT AND CLINICAL PROCEDURES

A 54-year-old male was referred to the Department of Oral and Maxillofacial Surgery at the Lagos University Teaching Hospital (LUTH). His primary concern was the aesthetic loss of his right ear following a previous accident. Clinical evaluation revealed a high hairline and small tissue remnants at the site of the defect; the left ear remained anatomically normal, and there was no patent external auditory canal. Prior to treatment, the patient received comprehensive counseling regarding the prosthesis's function and limitations. Following written informed consent, preoperative photographs were taken for baseline assessment.(fig 1-2)

- *Impression and Sculpting*

Initial impressions of both ears were captured using alginate (fig 3). To ensure patient comfort and an accurate mold, Vaseline was applied around the hairy area, and the ear canal was covered with cotton wool to avoid material flowing

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inside the ear,. The resulting impressions were poured using Type III and IV dental stones (Singh et al., 2013). Following an inspection of the master cast, a wax pattern was sculpted. The patient's healthy left ear served as a guide for all measurements to ensure the wax model accurately mirrored the natural anatomy.

Fig 1 Defective Side

Fig 2 Measuring the Ear for Effective Sculpting

Fig 3 Impression Taking Using Alginate Impression

➢ *Try-In and Laboratory Processing*

During the try-in stage, the wax pattern was evaluated for tissue adaptation, horizontal alignment, and anatomical positioning (fig 4-6). Once the orientation was confirmed, a three-part mold was created using Type II and Type III gypsum products, followed by dewaxing in a hot water bath.

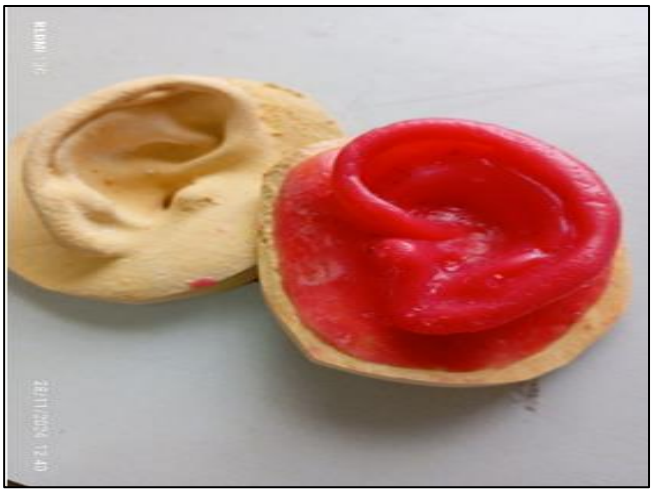

Fig 4 Sculpted Wax Pattern of the Ear

Fig 5 Try in Stage

Fig 6 Try in of the Wax Pattern

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➢ *Silicone Coloring and Retention*

Shade matching was performed before final packing. Basic silicone pigments (white, brown, yellow, and red) were blended to resemble the patient's color (Goiato et al., 2010). The matched silicone was then packed into the flask and cured. For retention, the patient was instructed on the use of medical-grade adhesives, allowing the adhesive to become transparent before positioning the ear.(fig 7-10)

Fig 7 Silicone Mixed to Check Against the Patient

Fig 8 Silicone Ear Prosthesis

Fig 9 Ear Prosthesis in Situ

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Fig 10 Final Assessment of the Silicone Ear Prosthesis

III. DISCUSSION AND CONCLUSION

The primary objective of maxillofacial rehabilitation is to restore a patient's confidence through aesthetic restoration (Wilkes & Wolfaardt, 1994). While acrylic resin Dwas once the standard, modern silicone-based materials provide superior flexibility and realism (Khindria et al., 2009). In this case, the use of Z004 Platinum silicone with intrinsic staining provided a stable and lifelike result. Intrinsic coloring is preferred as it is more resistant to environmental degradation compared to extrinsic methods (Goiato et al., 2010). For patients who are not candidates for implants, adhesive-retained prosthetics remain a highly effective non-invasive solution.

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