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Prosthetic Rehabilitation of Orofacial Donor Site Fistula Following Surgical Reconstruction: A Clinical Report

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Abstract

Orofacial defects can be either congenital or acquired. Rehabilitation of these patients can be done using a surgical and/or a prosthetic approach. In situations where surgical reconstruction is not possible, prosthetic management becomes the only option. This clinical report describes a simple, economical, and effective technique for the prosthetic rehabilitation of a patient with oro-cutaneous fistula due to donor site dehiscence following tumor defect reconstruction.

Surgical reconstruction to fill defects after tumor surgery is a part of the patient's rehabilitation. Surgical reconstruction techniques include skin grafting, local flaps, regional myocutaneous flaps, and composite flaps.[1,2] In the local flap method, the tissue is transferred completely along with major blood vessels from a nearby site with immediate restoration of circulation to the transferred tissue;[2] however, this technique can at times result in an unesthetic facial defect at the donor site. Surgical retreatment may not be indicated due to the prognosis and systemic status of the patient, potential size and site of the defect, adjunctive therapy (e.g., chemotherapy or radiation), availability, accessibility, and cost of rehabilitative procedures. In these circumstances, maxillofacial prosthetic rehabilitation is the treatment option for improving esthetics and the functional and psychological states of the patient.[3]

The clinical report presented below describes the prosthetic rehabilitation of a patient with an oro-cutaneous fistula due to donor site dehiscence following tumor defect reconstruction.

Clinical report

A 78-year-old female patient was diagnosed with squamous cell carcinoma of the mandibular left alveolus and gingiva. She was treated with 60 Gy external beam radiotherapy at Cancer Institute, Chennai, India. Immediate surgical reconstruction was not recommended due to the need for further treatment with radiation therapy. Six years later she developed a second primary tongue lesion involving the lateral border of the tongue and floor of the mouth. The patient underwent hemiglossectomy followed by closure of the wound with a nasolabial flap. This resulted in an oro-cutaneous fistula at the donor site (Fig 1). Surgical reconstruction of the defect was not recommended, considering the patient's age, prognosis, and systemic status. She was referred to the Department of Prosthodontics, Ragas Dental College and Hospital, Chennai, India, for possible prosthetic reconstruction.

The patient's chief complaint was the escape of food and fluids through the fistula.

On examination, a dehiscence defect measuring 2×3 cm^2 and involving the nasolabial sulcus was found on the left cheek. The dehiscence was situated approximately 1 cm distal to the angle of the mouth. The patient expressed her desire to have a prosthesis that would improve function and esthetics and also be cost-effective. Therefore, a heat-polymerizing acrylic resin cheek prosthesis was planned. A functional relining process was also planned for the close adaptation of the rigid prosthesis to the underlying tissues during function.[4,5,6] Prior to impression making, the boundary of the area to be impressed was outlined on the face, and boxing wax was adapted to this outline to confine the impression material. The defect was packed with lubricated gauge to prevent intrusion of the impression material into the oral cavity. Light body addition silicone impression material (Flexitime Correct Flow, Heraeus Kulzer, Hanau, Germany)

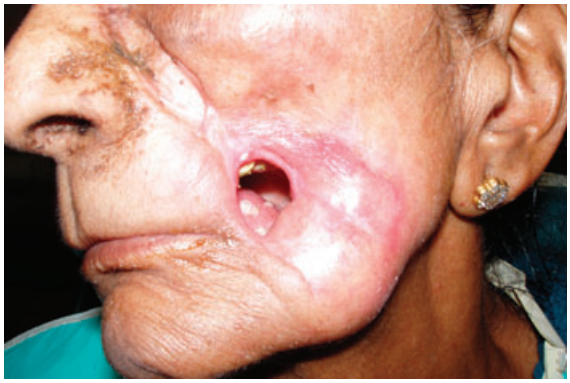

Figure 1 Patient with oro-cutaneous fistula of the face.

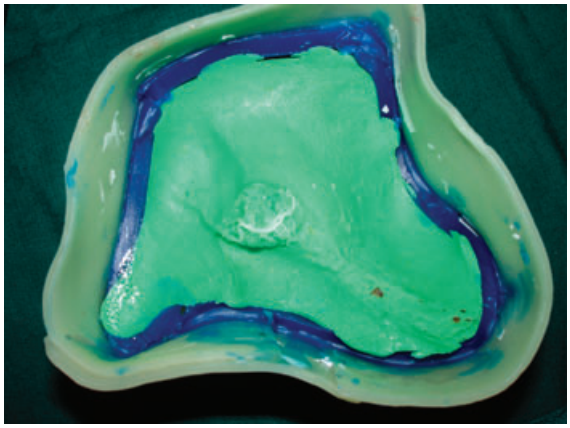

Figure 2 Completed impression of the defect.

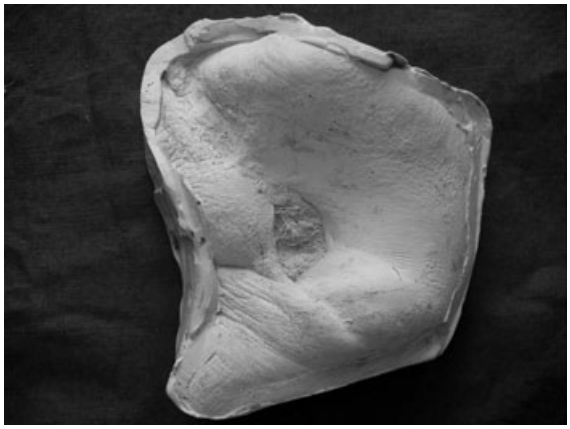

Figure 3 Dental stone cast of the defect.

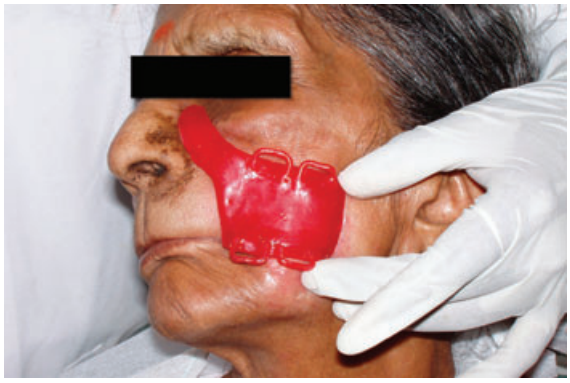

Figure 4 Wax prosthesis at try-in.

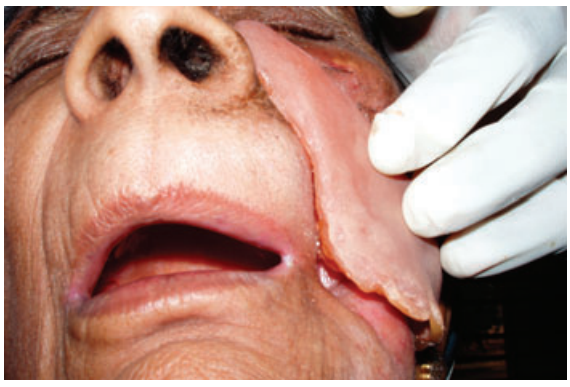

Figure 5 Gap between antero-inferior margin and underlying skin present during mandibular movements.

was injected onto the defect and adjacent areas. Simultaneously, addition silicone putty (Flexitime Easy Putty, Heraeus Kulzer) was mixed manually and placed over the light body in the defect area with minimum pressure. Grooves were placed on the putty with a blunt instrument for retention of the plaster backing. Dental plaster was mixed and applied over the putty and allowed to set. The impression was removed without any distortion (Fig 2).The impression was poured in type III dental stone (Gold stone, Asian Chemicals, Rajkot, India) (Fig 3). The prosthesis was waxed to form. It was verified on the patient's face during the try-in appointment, and minor corrections to the wax-up were made as required. The patient's suggestions were also considered, and her approval was obtained.

Wax loops were incorporated on the surface at the superior and the inferior borders of the waxed prosthesis to aid in attachment of straps for future retention (Fig 4). The wax form was invested, and the wax was eliminated and mold space created. Acrylic colors (Camel Artist's oil color, Camlin Ltd., Mumbai, India) were mixed in a glass dappen dish to match the skin color of the patient. The mixture of acrylic colors was then incorporated into the heat-polymerizing acrylic resin monomer, and heat-polymerizing acrylic resin polymer powder was mixed.

The heat-polymerizing acrylic resin material (DPI-Heatcure, Dental Products India Ltd., Mumbai, India) was packed into the mold space in the dough stage and polymerized in a water bath at 74°C for 8 hours. The prosthesis was recovered after polymerization, and finished to requirement. Borders were developed using an acrylic bur to blend with the surface of the skin. The prosthesis was evaluated on the patient. The prosthesis

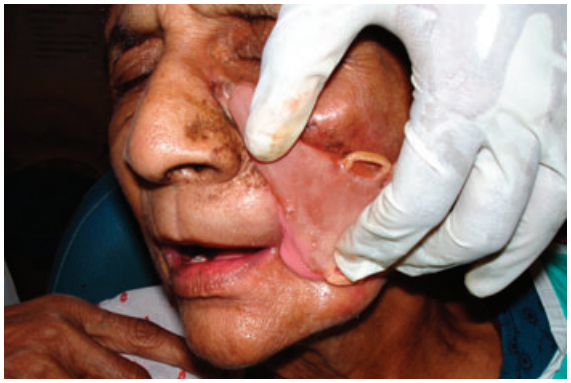

Figure 6 Functional relining done with soft reliner at antero-inferior margin of the prosthesis.

Figure 7 Adaptation of antero-inferior margin of the prosthesis maintained with underlying skin during mandibular movement.

was found to be satisfactory when the patient was at rest; however, as planned during the treatment plan stage, a gap was found between the antero-inferior margin of the prosthesis and the underlying skin during functional movements (Fig 5). To overcome this, functional relining was done using soft reliner to seal the gap during function. The area of the prosthesis to be relined was roughened with a carbide bur. The resin primer (GC Reline Soft, GC Corporation, Tokyo, Japan) was applied to the bonding surface with a clean brush and gently dried with clean, dry, and oil-free air. Immediately after drying the primer, a soft reliner (GC Reline Soft) was applied directly onto the area of the prosthesis to be relined, and the prosthesis was inserted in the defect area. After placing the prosthesis, the patient was asked to perform functional movements (Fig 6). The material was allowed to set for 5 minutes. The prosthesis was removed and evaluated, and excess material was trimmed. The elastic straps were attached to the acrylic loops on the prosthesis to aid in retention. The prosthesis was checked on the patient, and the effectiveness of the seal was confirmed during functional movements (Fig 7). Extrinsic water resistant colors were used to enhance esthetics. To obtain a matte finish, the surface of the prosthesis was coated with a thin layer of autopolymerizing acrylic resin (DPI-RR, Dental Products India Ltd). The prosthesis provided a life-like appearance with matched skin color and texture and restored function. The prosthesis was inserted onto the defect, and the patient was instructed on home care and prosthesis maintenance.

On the first postinsertion appointment after delivery of the prosthesis, the defect was observed to check the health of the tissues. The prosthesis was reevaluated for effectiveness of seal during function and esthetics. The intaglio surface of the prosthesis was checked for the condition of the soft reliner. The patient was placed on a 1-month recall for evaluation of the prosthesis and the reliner.

Discussion

Despite improvements in reconstructive and plastic surgery, replacement of the more intricate facial structures still requires the use of manmade materials as external prostheses.[8] Maxillofacial prosthetic rehabilitation aims to restore anatomic function when serious tissue defects are present, as a result of congenital factors, trauma, or surgery.[9] Five major materials available commercially are poly(methyl methacrylate), latexes, vinyl polymers and copolymers, polyurethane elastomers, and silicone elastomers. None is considered an ideal material.[8] The patient desired a prosthesis that would be inexpensive, yet help her overcome the functional shortcomings. A poly(methyl methacrylate) prosthesis was planned as it is extremely stable, will not discolor in ultraviolet light, exhibits remarkable aging properties, and provides excellent cosmetic results.[3,7] A functional relining method was planned for adequate adaptation of this rigid prosthesis to the movable underlying tissues; this helped in close adaptation to the movable tissue bed and improved the functional outcome of the prosthesis.

Conclusion

This clinical report describes an effective, noninvasive, and inexpensive method for the prosthetic rehabilitation of a patient with oro-cutaneous fistula due to donor site dehiscence following tumor defect reconstruction. A relining technique has been described that records the underlying soft tissues of the face in a functional position. This procedure eliminated the gap between the antero-inferior margin and underlying skin during mandibular movements and helped improve the function and esthetics for the patient.

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