Surgical resection of malignant tumors of the midface pose esthetic and functional rehabilitative management challenges and psychosocial difficulties for the patient. Defect reconstruction can be completed via surgical reconstruction, prosthetic rehabilitation, or a combination of the two, with retention of midface prostheses posing a particular challenge. Optimal retentive outcomes are more readily obtained when anatomical undercuts or implant prostheses are used.

This clinical report describes the prosthetic rehabilitation of a patient with a nasal deficiency after partial rhinectomy due to squamous cell carcinoma of the nasal cavity with a novel internal nasal keeper piece for retention. Consent from the patient to be photographed was acquired.

MATERIALS AND METHODS

Clinical Report

A 64-year-old man was diagnosed with T4N0M0 squamous cell carcinoma of the nasal cavity and proceeded to undergo partial rhinectomy, surgical resection, radiation therapy, and postoperative chemotherapy. A preliminary nasal prosthesis was fabricated and delivered to the patient. At the 8-year follow-up, the patient returned to the clinic with a chief complaint of poor breathing quality due to anterior drooping of the residual dorsum and apex of the nose.

During the clinical exam, it was noted that the intact nares tissues could be utilized as anatomical retentive elements for the new prosthesis. The primary goal of the reported prosthetic treatment was to improve the patient’s breathing ability and facial esthetics by fabricating a new nasal prosthesis elevating the ala of the nose.
drilling of 1.5-mm–diameter holes in the acrylic to provide mechanical retention, wiping with acetone, and applying a gold and platinum primer (Factor II). Two intrinsically stained silicone mixtures were layered onto the investing stone model and fixed acrylic piece. The flask was capped and placed in a dry oven set at 150°F for 2 hours, removed from the oven, and allowed to sit overnight. The following day, the silicone prosthesis was de-invested and trimmed, as portrayed in Figs 2 and 3.

Final Staining, Margin Adjustment, and Delivery
On delivery day, extrinsic stains were created via mixing FE extrinsic stain solvent with an extrinsic raw stain of choice (Factor II). Two intrinsically stained silicone mixtures were layered onto the investing stone model and fixed acrylic piece. The flask was capped and placed in a dry oven set at 150°F for 2 hours, removed from the oven, and allowed to sit overnight. The following day, the silicone prosthesis was de-invested and trimmed, as portrayed in Figs 2 and 3.

Impression, Working Model, and Wax-up
During the impression, cotton rolls were placed in the nares to elevate the retained tissue to a physiologic position, as seen in Fig 1.

On the stone model, a wax-up of the prosthesis was crafted with a mixture of baseplate and white utility wax (Modern Materials, Kulzer). Utilizing polymethyl methacrylate clear hygienic acrylic (GC), a nasal keeper piece was fabricated to aid in elevating the fibrofatty tissue of the ala of the nose corresponding to the degree of elevation obtained with the cotton rolls during the impression procedure. The acrylic nasal keeper piece was incorporated into the wax prosthesis.

Investing and Silicone Layering
Upon completion of the wax try-in, the defect site of the stone cast was removed and replaced with dental impression putty (ESPE, 3M) to hold the fabricated keeper piece in the desired location. The acrylic nasal keeper piece was prepared for silicone bonding via drilling of 1.5-mm–diameter holes in the acrylic to provide mechanical retention, wiping with acetone, and applying a gold and platinum primer (Factor II). Two intrinsically stained silicone mixtures were layered onto the investing stone model and fixed acrylic piece. The flask was capped and placed in a dry oven set at 150°F for 2 hours, removed from the oven, and allowed to sit overnight. The following day, the silicone prosthesis was de-invested and trimmed, as portrayed in Figs 2 and 3.
RESULTS AND DISCUSSION

Partial resective surgical procedures pose their own esthetic difficulties for reconstructive clinicians due to the inability to hide margins bordering anatomical structures. Previous literature has reported achievement of retention via the incorporation of numerous components, but none have reported use of a similar acrylic nares keeper piece. Utilization of implants as retentive elements for the employed prosthesis was not possible because of the dosage of radiation therapy delivered.

At the 1-month follow-up, the patient reported no use of adhesive paste due to the satisfactory retentive capabilities of the acrylic button nares projection, margin adaptation, and spectacle frame anchor of this silicone and acrylic nasal prosthesis. The described prosthesis was retained via a unique combination of soft tissue undercuts and border adaptation and provided a psychosocial and functional benefit to the patient.

CONCLUSIONS

Novel retentive mechanisms adapted to the individual patient, such as that in this report, serve as a beneficial means of enhancing both function and esthetics of midfacial prostheses.

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REFERENCES


Literature Abstract

Titanium Dental Implants with Different Collar Design and Surface Modifications: A Systematic Review on Survival Rates and Marginal Bone Levels

The aim of this study was to compare clinical and radiographic outcomes of dental implants with different neck characteristics. A protocol-oriented search aimed to answer the question: In patients subjected to tooth replacement with screw-type dental implants, does the modification of the implant neck macro- or microgeometry contribute to the improvement of survival rates and maintenance of the peri-implant marginal bone levels? Primary outcomes were survival and marginal bone level (MBL) changes evaluated in randomized controlled trials with > 10 participants and a follow-up > 1 year. Risk of bias was evaluated using the Cochrane Collaboration tool. The review followed the PRISMA statement. A total of 43 studies compared one- vs two-piece implants (n = 7); two-piece implants with different neck characteristics (machined and rough collars, microthreads, LASER microtexturing) (n = 21); and two-piece implants with macrogeometry modifications (tapering, back-tapering, and scalloping) (n = 6). One- and two-piece implants showed similar survival (risk ratio [RR] = 0.45, 95% confidence interval [CI] 0.12 to 1.66, P = .23) and MBL changes (weighted mean difference [WMD] = 0.09 mm, 95% CI –0.27 to 0.45, P = .64) at 1-year postloading. Machined collar implants had a higher risk of early failure than rough collar implants (RR = 3.96, 95% CI 1.12 to 13.93, P = .03) and 0.43-mm higher bone resorption (95% CI 0.0 to 0.86, P = .05). Microthreads (WMD = 0.07 mm, 95% CI –0.12 to 0.15, P = .10) and LASER microtexturing (WMD = 0.15 mm, 95% CI –0.35 to 0.65, P = .56) did not reduce bone resorption. Scalloped implants had 1.26-mm higher resorption (95% CI 0.72 to 2.00, P < .001). One- and two-piece implants had similar survival and MBL changes. Rough collar implants had lower MBL changes than machined collar implants. Additional modifications to rough collars are irrelevant.


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