Case Report

University J Dent Scie 2023; Vol. 9, Issue 4

Prosthetic Rehabilitation of an Orocutaneous Mid Facial Defect Patient with an Adhesive Retained Silicone Prosthesis: A Case Report.

Abstract:

Mid-facial defect causes immense disfigurement of the facial features and poses a great challenge to the practitioner to reinstate the normal form and aesthetics of the patient. An adequate prosthesis can restore the patients' self-esteem and confidence thus improving their quality of life. Hence, the present case report describes the rehabilitation of an orocutaneous mid-facial defect patient with an adhesive retained Silicone prosthesis in a 55-year-old female patient. The primary prosthesis was fabricated using Room Temperature Vulcanizing (RTV) silicone material after proper shade matching with patient's skin and using intrinsic colors that was finally retained on patient's face using water-based tissue adhesive. The final outcome of the procedure was well-accepted by the patient.

Key-words: Adhesive, Midfacial Defect, Osteoradionecrosis, Silicone

Introduction:

Midfacial defects or midline midfacial defects encompasses the nose and/or upper lip (*midline defect)*; and *lateral defects*, involving the orbital contents and cheek either individually or in combination.[1] There occurs severe disfigurement and functional damage in cases with acquired midfacial defects.[2] Such mid-facial defects consist of an intra-oral communication. Surgical reconstruction or a facial prosthesis are the only mode of management procedures for such defects.[3] There have been several modern innovative techniques of surgical reconstruction methods, yet, this field still poses great challenge in dentistry. It is of prime importance to reinstate the intricate three-dimensional anatomy and morphology of the lost structures with an appropriate cover, lining and support that usually necessitates multi-stage technique and the availability of healthy local tissue.[3]

Facial prosthesis is mostly preferred over surgical reconstruction to re-establish the form and function of the patients with facial defects owing to cancer resection.[1,4] An intraoral prosthesis like that of an obturator is frequently needed to re-establish mastication, speech, and appearance of the patient.[5] It is indeed a challenging task to fabricate an extraoral facial prosthesis as it evaluates the creative ability of the practicing prosthodontist. There are certain factors that governs the choice of material for extraoral prosthesis, including the need to engage desirable undercuts, mobility of tissue bed, defect size and the weight of the prosthesis. Owing to the size and weight of the prosthesis, adequate retention often becomes a matter of concern and is difficult to achieve. Thus, the use of medical grade adhesives, resilient attachments, clips and osseointegrated implants have been

Access this article online

Website: www.ujds.in

Quick Response Code

DOI: https://doi.org/10.21276/ujds.2023.9.4.9

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Received : 17 July, 2023, **Published :** 30 November, 2023

How to cite this article: Banerjee, T. N., & Banerjee, R. (2023). Prosthetic rehabilitation of an oro-cutaneous mid-facial defect patient with an adhesive retained silicone prosthesis: A Case report. UNIVERSITY JOURNAL OF DENTAL SCIENCES, 9(4). 44 - 49

adopted for appropriate retention of the prosthesis. It can also be connected to obturator with the help of magnets.[6] Hence, the present case report describes the rehabilitation of an orocutaneous mid-facial defect patient with an adhesive retained Silicone prosthesis in a 55-year-old female patient.

Case Report:

A 55-year-old, female patient reported to the Department of Prosthetic Dentistry, with a large defect on the left side of the face. Her chief complaint was inability to chew or drink due to leakage of food through the defect. A detailed case history revealed that the patient was diagnosed with Adenoid Cystic Carcinoma (ACC) of left maxillary alveolus extending to infratemporal fossa 3 years ago. Patient had undergone left partial maxillectomy with *enbloc* wide excision of the growth with clearance of infratemporal fossa along with supraomohyoid neck dissection. Surgical resection was followed by a course of radiotherapy over a period of 2 months with 60Gray/30 fractions. The healing of surgical site was uneventful and stable for the following 1 year. After one year during follow-up, the patient presented with a slowly developing orocutenous defect on the left side of face (Figure 1and 2). A fluorodeoxyglucose (FDG)- positron emission tomography (PET) scan was done which revealed no metastatic or recurrent disease. Computed tomography (CT) scan of face revealed multiple areas of cortical erosions, destruction of maxillary bone, presence of necrotic sequestrum suggestive of osteoreadionecrosis (ORN) . The necrotic tissue was resected and defect was packed with Whitehead's varnish. Packs were changed over subsequent weeks and the healing was found to be satisfactory. The clinical examination of the orocutaneous defect revealed an irregular size defect on the left side of the face measuring approximately 30 x 30 mm. There was loss of facial contour on the left side. Skin on the margins of the defect appeared normal. The patient was concerned about the defect and loss of facial contour. She lacked self-esteem and avoided social interactions due to facial disfigurement. As surgical reconstruction of the defect was not possible due to history of irradiated tissue bed, Prosthetic rehabilitation with adhesive retained silicone prosthesis was planned. This prosthesis was thought to prevent the leakage of food, restore the loss of facial contour, improve the esthetics and self-esteem of the patient.

Procedure:

The patient was seated upright in dental chair and a facial moulage (Figure 3) was made with irreversible hydrocolloid (Algitex, DPI). After proper boxing and beading the Impression was poured with type IV die stone (Kalrock, Kalabhai) and the final cast (Figure 4) was obtained. The defect was outlined on the cast and a wax pattern (Figure 5) was made using modeling wax DPI products). The trial of the wax pattern (Figure 6 & 7) was done on patient's face to check proper seating of the pattern and proper adaptation of the margins. The wax pattern was invested in type III dental stone and mold preparation was done followed by dewaxing. Processing of the pattern was done by packing the mold cavity with Room Temperature Vulcanizing (RTV) silicone (A-2000, Factor II, USA) after proper shade matching with patient's skin and using intrinsic colors. After following proper curing cycle, the final prosthesis was retrieved from the mold and finishing and polishing was done. The prosthesis was tried on patient's face for proper fit, marginal adaptation and color matching. After satisfactory trial the prosthesis (Figure 8&9) was finally retained on patient's face using water-based tissue adhesive (Probond Adhesive G609, Technovent, United Kingdom). Patient was instructed to apply the adhesive (Figure 10) on the margins of the prosthesis allowed it to dry for 3-5 minutes before applying it on the skin. The prosthesis could be removed using soap and water. The patient was very satisfied with final esthetic outcome.

Figure 1. Extraoral preoperative frontal view

Figure2. Extraoral preoperative lateral view

Figure 3.Impression of the defect

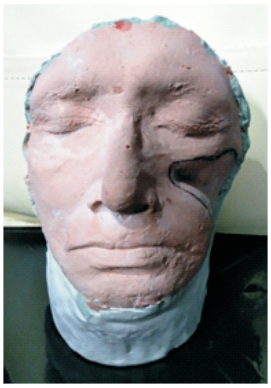

Figure 4. Final cast

Figure 5. Wax pattern

Figure 6 . Wax Pattern trial frontal view

Figure 9. Postoperative extraoral lateral view

Figure 10. Tissue Adhesive

Discussion:

Large orofacial defects lead to functional and aesthetic problems that affects the quality of the life of the patient and has substantial impact on the socio-psychological aspect. The patient reported in this manuscripthas a large midfacial defect due to osteoradionecrosis that had detained the patient to lead a normal healthy life. It is indeed a challenging situation to restore large facial defects prosthetically owing to the lack of anatomic undercuts, restricted means of retention, soft tissues mobility, size and weight of the prosthesis.[7] Hence, the application of auxiliary retention methods have been adopted by practitioners.[8,9] It has been documented that although osseointegrated implants may deliver the maximum consistent retention of the prosthesis yet the large size of the defect, poor mucosal quality and negligible bony support, supplementary surgical interventions and huge expenses might lead to poor prognosis of the patient in the long-run.[1,10] The primary materials that have been frequently used for fabrication of facial prostheses include acrylic resins, copolymers, vinyl polymers, polyurethane elastomers, and silicone elastomers, but none of them fulfils all the essential requirements for an acceptable prosthesis. Thus, the dawn of

the era with the use of silicone was adopted that approximately fulfils all the requirements of an ideal prosthetic material as was outlined by Bulbulian.[11]

The size and weight of the prostheses determines its retention for a prosthetic rehabilitation procedure of large midfacial defects and is considered to be a tedious work.[12] A constant communication develops between the oral and the nasal cavities due to Orofacial defects, that poses difficulty in deglutition, nasalregurgitation, loss of speech fluency, and leads to an unpleasant appearance, resulting in substantial psychological complications. There might be instances wherein in order to achieve acceptable aesthetics the retention capacity of the prostheses is jeopardized.Certain factors that require attention include method of impression, materials to be used in laboratory trials, design of the prosthesis, connection method, direction of insertion and/or removal, aesthetic factors, and maintenance protocol. The intraoral or extraoral prostheses that jointly hold each other can be constructed with proper the knowledge of the remaining anatomic structures. There are several techniques of retention for facial prostheses including the eyeglasses, eye patches, extensions from the denture engaging desirable tissue undercuts, medical grade adhesives, magnets, and osseointegrated implants.[13,14,15]

In the present case, the patient had a history of radiation exposure and surgical intervention for Adenoid cystic carcinoma and there was presence of ORN of the left maxilla. It is reported in previous literature that sequestrectomy and segmental osteotomy with flap reconstruction is the recommended treatment for advanced ORN in appropriate cases, yet there are chances of high complications.[16] The prosthesis in the present case was prepared using Room Temperature Vulcanizing (RTV) silicone (A-2000, Factor II, USA) material as it is easy to customize and fabricate, has less weight, tissue compatible, extrinsic and intrinsic coloring, and has good dimensional stability. Several other methods of supporting the cheek prosthesis are available that includes magnets, headgears and spectacles which enhance the seal and aesthetics of the patient.[17,18] In this present case, an extraoral prosthesis was given due to irregular size of the defect, loss of facial contour and lack of self-esteem and negligible socio-psychological acceptance. The seal and adaptability of the prosthesis was monitored by instructing the patient to drink water during which no leakage of water was observed and there was good acceptability and satisfaction in the patient regarding the prosthesis. In order to achieve a successful prosthetic acceptability and adaptation by the patient, factors like good retention, user friendliness, and reinstating the form and function of the patient are of utmost importance.[3,4,19] Owing to the presence of irradiated bony tissue and ORN, implant placement was ruled out in the present case. The silicone prosthesis that has been used in the present case was retentive and easy to fabricate with appropriate color matching and well-acceptability by the patient.

Conclusion:

The surgical reconstruction and rehabilitation of a large mid-facial defect is a challenging and interesting procedure. Hence, designing a facial prosthesis for such patients with huge defects and who has lost his/her self-esteem and confidence poses a great challenge and responsibility on the clinician. The unilateral mid-facial defects involving the nose and cheek constituting part of the movable structures are ought to be unstable unless extremely retentive elements or techniques are applied. In the present case report, a patient, who received radiotherapy following resection of ACC of the maxilla followed by ORN and facial defect, was rehabilitated with silicone prosthesis that produced successful and well-accepted results. Thus, it can be advocated that the use of facial prosthesis using silicone material and adhesive technique produces improved aesthetics, boosts the confidence, and enhances the quality of life of the patients with severe mid-facial defects.

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