ISSN: 2581-5989
PubMed - National Library of Medicine - ID: 101738774

International Journal of Dental Science and Innovative Research (IJDSIR)

IJDSIR : Dental Publication Service

Available Online at: www.ijdsir.com

Volume – 2, Issue – 6, November - December - 2019, Page No. : 532 - 536

Prosthetic Rehabilitation of Nasal Defect by Using Poly Methyle Methacralate and Artificial Nose Ring For Retention: A Case Report.

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Type of Publication: Case Report

Conflicts of Interest: Nil

Abstract

Facial defects resulting from developmental defects, congenital malformation, infection, trauma/accident or neoplasm, can be restored with prosthesis using different materials and retention methods/aid to achieve life-like appearance and aesthetics. Reconstruction of the defected part by prosthesis for to re-establish aesthetic, form and anatomic contours is often more effective than by surgical reconstruction especially in immobile structure like nose and ear. For successful results of such prosthetic reconstruction, various factors such as harmony, colour matching, texture and blending of tissue interface with the prosthesis are important. The aim of the present case report is to describe prosthetic rehabilitation of part of the nasal defect due to unknown aetiology where surgical reconstruction was not feasible by the patient the only non-surgical rehabilitation by prosthesis was the treatment option.

Keywords: Nasal clip, Nasal prosthesis, Poly methyl methacrylate, unknown etiology.

Introduction

Many acquired conditions as well as congenital and developmental deformities of the craniofacial skeleton are now treated using the principles and techniques of craniofacial surgery or prosthesis for to re-establish aesthetic form and anatomic contours. The method of rehabilitation depends upon the site, size, aetiology, severity, age, and the patient's wishes [1]. However, Prosthetic rehabilitation has considerable advantages of, technical simplicity, and inexpensive care, with good aesthetics compare to the surgical rehabilitation.

Various biomaterials and techniques have been used in the fabrication of maxillofacial prostheses. Each material has advantages and shortcomings. Silicones are generally the preferred materials for fabrication because of lightweight and life-like appearance. [2]However, silicone materials have some limitations, as adhesives do not work well with silicones, and these are difficult to polish, have low tear resistance, and have microbial growth promoting characteristics.[2,3]Another most commonly used material is Methyl methacrylate resin, it is easy to work with, hygienic, durable, and economical. Also, it can be satisfactorily coloured to match individual skin tone. However, its use is limited because of its rigidity. [4]

The Facial prostheses fabricated either by Silicon or Methyl methacrylate resins have been retained by various methods through the years, from simple glue to modern day implants, the method of retention is considered by various factors like the extent of prostheses, availability of bone, patient's compliance, dexterity of patient, location, amount of soft tissue, etc. The retentive aid in a nasal prosthesis can be adhesive, elastic tapes, wires, suture materials and metal bands, Spectacle frames, anatomical undercut, magnets and/or recently introduced implants retained. [5-13]Each retentive method has its own advantage and limitation.

This clinical report describes a simple and economical method for prosthetic rehabilitation of a patient who lost her nose at the age of 2 years due to infection of unknown aetiology by using Methyl methacrylate resin and pressable nose ring and anatomical undercut as a retentive aid.

Case Report

An 18 year old girl was referred to the Department of Prosthodontics, HKES SN Dental College & Hospital, for prosthetic rehabilitation of the Nasal defect (fig 1). History revealed that patient had nasal discharge and high grade fever at the early age of 2 year with a small bleb on the dorsum of the nose tip and which was gradually shed off within a year with black punctum, with no other systemic disorder the sign and symptoms represents the syphilis or leprosy, but following investigation it was revealed that both leprosy and syphilitic tests were negative. Now patient wants her nasal deformity should be corrected for aesthetic reason. Considering the cost and complexity of the surgical treatment it was decided for the prosthetic rehabilitation of the defect by using Methyl methacrylate resin and pressable nose ring and anatomical undercut as a retentive aid.

The prosthetic treatment plan was as follows

The boundary for the impression was outlined on the face. Petrolatum was applied on the eyebrows and eyelashes to prevent entrapment with impression material. Primary impression of face was made using an irreversible hydrocolloid material (Algitex; Dental products of India, Mumbai). The irreversible hydrocolloid was reinforced with gauze and dental plaster. The impression was poured in dental stone/hydrocal (Kala stone; Kala bhai Pvt Ltd, Mumbai, India). The wax pattern of the nose was made. The pattern was tried on the patient to access the size, shape and contours of the prosthesis, before fabrication of final prosthesis the retention and the final position of the retentive nasal clip in the prosthesis and marginal adaptation were verified by self cure acrylic resin. Heat

cure acrylic resin with intrinsic oil colour (camel oil colour for artists) dissolved in the monomer was used for the prosthesis. The monomer polymer mixture was matched to the basic skin tone. The nasal clips were transferred to the tissue surface of the prosthesis by direct technique by using self cure acrylic. The processed prosthesis was finished with minor corrections to blend with the anatomy of the adjacent structures.

Figure 1: Patient with nasal defect

Figure 2: Stone model with wax pattern

Figure 3: Trial of wax pattern

Figure 4: Retentive ring in its final position

Figure 5: Final prosthesis with retentive ring in prosthesis

Figure 6: Patient with final prosthesis

Discussion

When surgical reconstruction is not possible for patients with facial deformities, the choice of treatment is prosthetic rehabilitation. The chief problem with prosthetic rehabilitation is of retention of the prosthesis, it should be considered at the time of treatment planning and limitations of the prostheses should be explained to the patient. Retention methods include mechanical, anatomic, adhesives and more recently, with osseointegrated implants. Mechanical methods include use of eyeglasses, thread, wire loops, stainless steel studs, tubes, pins, and magnets. Anatomical methods include projections and/or depressions of tissue and surgical constructed skin bridges. Adhesives include medical adhesives, cements and double-coated polyethylene tape.

In the present case considering soft tissue undercuts of patient's nose, both anatomic and mechanical methods of retention were selected. Pressable nose ring (jewellery made from copper coated with gold or silver colour, easily available in artificial jewellery shops) which was modified according to need and anatomical undercuts of the nose have been effectively used for the retention, maintenance, and stabilization of nasal prostheses.

Advantages of using nose ring are ease of availability, economical, small size with reliable retention, can be placed within the prostheses, and ease of cleaning so, nose ring were considered for retention. A limitation of mechanical retention by nose ring is that it can't use when there is no tissue to support and retain the ring.

Conclusion

Nose is a projecting midline structure, a prosthesis fabricated from either silicon or methyl methacrylate will reflect light in a fashion different from the surrounding skin. Therefore, even the most aesthetic implant retained nasal prosthesis will appear dissimilar from the adjacent tissues. This can be minimized by having the patient wear eyeglasses with an appropriate frame design to distract the observer away from the mid face and the border between the skin and the prosthesis.

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