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Customised Intranasal Stent fora Patient with Nasal Vestibular Synechiae: A Case Report

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Abstract:*Nasal vestibular synechiae is the adhesion formed when two moist, opposing surfaces inside the nose heal together, causing a scar[1]. These are a common complication of nasal or sinus surgery, nasal packing, trauma etc. Management of such cases require surgical and prosthetic intervention. Intranasal stent is the prosthetic choice of treatment after surgical release of nasal synechiae. This article describes a simple and cost effective technique for fabrication of a stent deriving retention from the unaffected nostril. The patient had a patent airway after 2 month follow-up and regained form and function.*

Keywords:Nasal vestibular synechiae, Nasal adhesions, Intranasal stent, Nasal conformer.

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I. Introduction

Face serves as an important part of one's identity and personality. It is thechannel for expressing a person's emotions apart from verbal communication.Hence, it is said to be our window to the world[2]. Any facial disfigurement can have extremely negative impact on the self-esteem and confidence of an individual. They may develop a sense of being ugly, disfigured and not worthy of social interaction. Living with changes in appearance of one's face resulting from congenital anomaly, acquired disease, trauma or malignancy is very challenging[2].

Nose is a prominent feature of the face and rehabilitation of this structure assumes great importance[3]. Internal defects of the nose results from congenital abnormalities, trauma,tumour excision and complications of cosmetic or airway enhancement procedures. Surgical correction followed by use of intranasal prosthesis, splints or stents have shown to improve both form and function. These prostheses (1) establish and maintain airway patency, (2) maintain tissue position, (3) reduce tissue contracture after surgery and (4) support mobile tissues in the construction and retention of facial prosthesis[3,4].

This article describes a simple and cost effective intranasal stent that was fabricated for a patient who had nasal vestibular synechiae (adhesion in the nose) following trauma which was released by surgical intervention.

II. Case Report

A 21 year old male patient was referred to the Department of Prosthodontics after undergoing plastic surgery for nasal vestibular synechiae following trauma (Figure.1).He had adhesions in his right nasal vestibule and had undergone plastic surgery 2 weeks before reporting to the Department (Figure.2).He had been referred for fabrication of a customised intranasal stent to maintain the patency of the airway and to allow healing without collapse of the nasal vestibule.

Figure.1. Frontal view

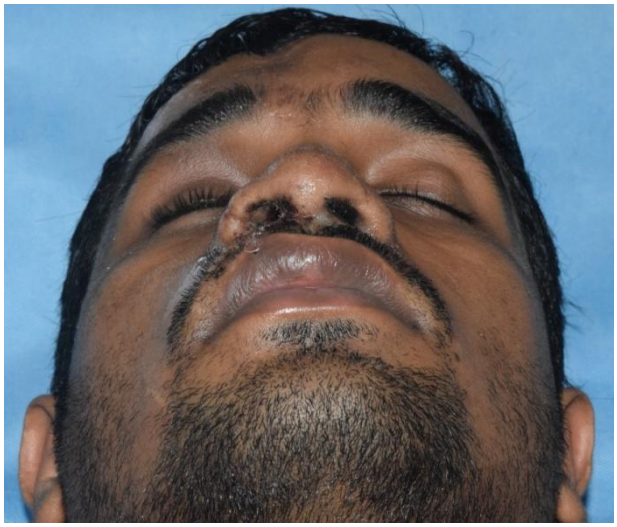

Figure.2. Nasal Synechiae surgically released

III. Technique

1. Cotton ear buds (Figure.3) were used to approximately measure the extent of the affected and unaffected nostrils and markings were made on the buds. The length was reduced leaving enough portion for the operator to hold it.

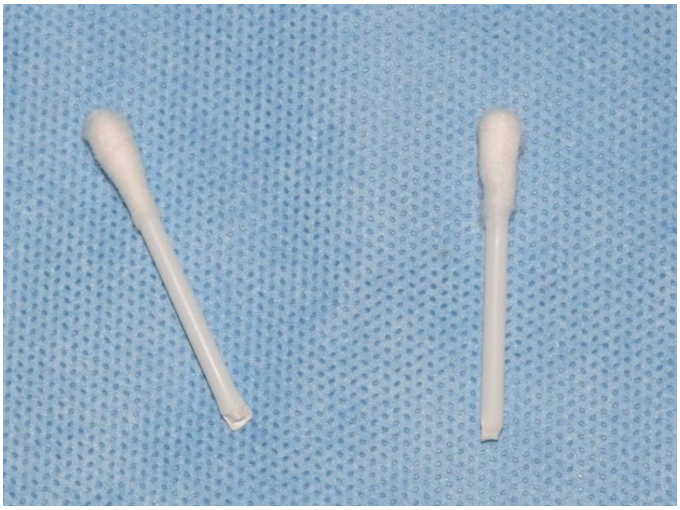

Figure.3. Cotton ear buds

2. Petroleum jelly was applied on the skin of nostrils and peri-nasal area.
3. Low fusing impression compound (DPI Pinnacle; Bombay Burmah Trading Corp) was used to record the contour of both affected and unaffected nostrils (Figure.4). The ear bud is moved in and out while moulding to prevent locking of the material in any undercuts.

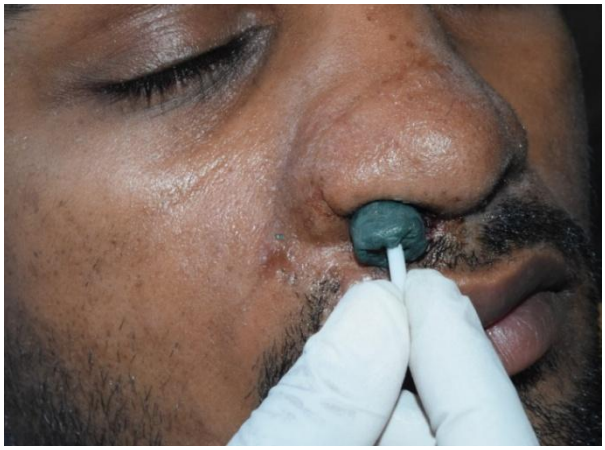

Figure.4. Contour of affected nostril recorded

4. The moulded impression was flasked, dewaxed and processed using heat polymerized clear acrylic resin (DPI; Bombay Burmah Trading Corp) (Figure.5).

Figure.5. Recorded contour of both affected and unaffected nostrils using low fusing impression compound

5. The nasal conformers were retrieved, trimmed, smoothened and polished. A hole is drilled through the longitudinal axis of both the conformers to maintain airway patency (Figure.6).

Figure.6. Nasal conformers with holes drilled in a longitudinal axis to maintain the patency of airway

6. The conformers were inserted into the nostrils to check the fit and airway patency.
7. The holes of the nasal conformer were blocked using cotton gauze and a 22 gauge wire loop was bent and placed into both holes connecting them (Figure.7).

Figure.7. Nasal conformers inserted

8. A peri-nasal alginate impression (Zelgan Plus; Dentsply India) was madeto pick up the intranasal orientation of the nasal conformers (Figure.8).

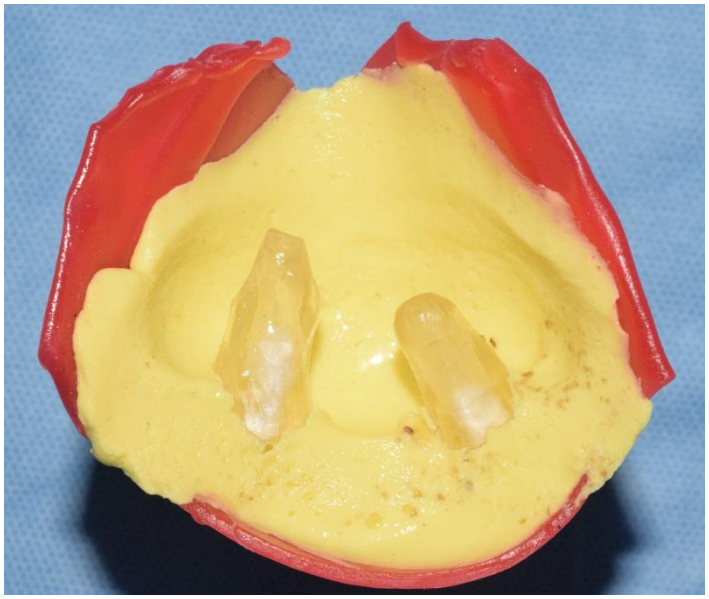

Figure.8. Pick-up impression with nasal conformers

9. The impression is poured in die stone (Gyprock India, Rajkot) after applying petroleum jelly on the surface of the nasal conformers.
10. The cast was retrieved and the nasal conformers were oriented on it. The conformers were connected using a 22 gauge orthodontic wire bent to adapt to the columella of nose in the cast (Figure.9).

Figure.9. Nasal conformers oriented on the cast

11. These conformers were connected by a bridge of auto-polymerizing clear acrylic resin (DPI; Bombay Burmah Trading Corp) embedding the wire component (Figure.10).

Figure.10. Nasal conformers connected by a bridge of clear acrylic resin

12. The stent fabricated was retrieved from the cast, polished and inserted in the patient's nostrils (Figure.11).

Figure.11. Insertion of the prosthesis- Frontal view

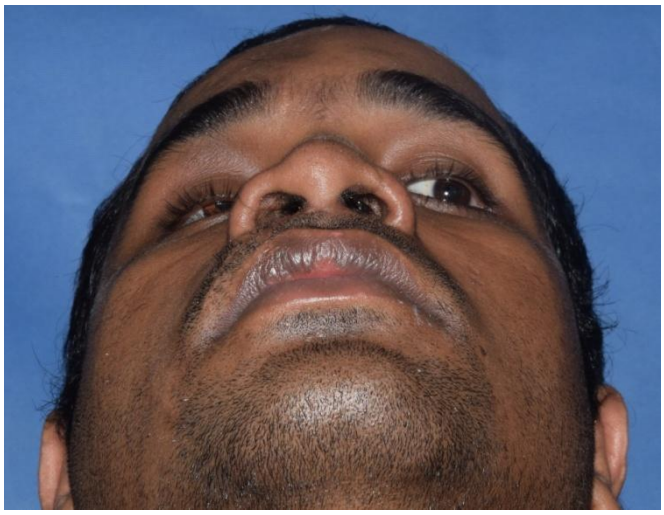

Figure.12. Remarkable improvement in aperture size of affected nostril and maintenance of airway patency on 2 month follow-up

The patient was instructed regarding the insertion and removal of the prosthesis and hygiene maintenance. He was recalled periodically and adjustments were done during follow up. Improvements were noticed in the contour of the nose and adhesions were remarkably reduced. The patient had a patent nasal vestibule after two months follow-up (Figure.12) and was advised to discontinue the use of intranasal stent.

IV. Discussion

Nasal deformities due to congenital or acquired causes present complicated reconstructive problems, and the correction of this structure is crucial for acceptable facial rehabilitation[5]. Nasal vestibular synechiae following trauma caused obstruction of airway and esthetic concern to the patient, correction of which required surgical as well as prosthetic intervention.

Surgical procedure was done following the trauma to correct the collapsed nasal vestibule followed by prosthetic intervention as an adjunct to maintain the post-surgical results obtained. Unfortunately even a well fabricated nasal conformer is often esthetically unappealing and ill-fitting due to lack of retention[6]. Implants have been used for retention in prosthetic rehabilitation of nasal prosthesis[7]. However, implants are not a cost-effective option and it is not preferred due to complexity of the procedure. Hence this article describes fabrication of an intranasal stent using heat polymerized acrylic resin that was simple and acceptable to the patient. The retention was obtained from the unaffected nostril and the need for implants or adhesives were eliminated. This prosthesis was easy to use, ensuring good hygiene and allowing any future adjustments in the course of healing.

The patient was recalled for periodic check-up andit was observed that the internal and external contour of the nose was maintained improving esthetics.The patient had reduced adhesions in the airway and the patency was maintained helping him to breathe easily. The aperture of the affected nostril was observed to be of same size as that of the unaffected nostril upon follow-up. He was asked to discontinue the prosthesis after two months as there was remarkable improvement in form and function.

IV. Conclusion

A customised nasal stent was fabricated for a 21 year old male patient with nasal vestibular synechiae. Heat polymerized acrylic resin was used which was biocompatible with the nasal mucosa, hygienic and economic. Retention was obtained from conformer in adjacent nostril by connecting it with a 22 gauge wire component embedded in autopolymerized clear acrylic resin. This eliminated need for any expensive implants or adhesives. It was user friendly to the patient and resulted in commendable improvement in form and function.

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