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Nasal Stent Fabrication For Surgically Corrected Collapsed Nose - A Case Report

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Abstract: ***Nasal stent is a removable acrylic device used routinely in the postoperative treatment phase for the correction of collapsed nose, to avoid scarring between mucosal surfaces in the internal valve of the nasal cavity or between turbinates and the septum. They are also used to mould nasal cartilages in neonates with cleft lip nasal deformities. Alar splints would be recommended in the postoperative stage to maintain correction after surgery, to repair a collapsed external valve with sutures or grafts.***

The surgical correction of nostril stenosis and external nasal valve collapse typically involves the addition of tissue to widen and strengthen these areas. However, over the ensuing months, postoperative scar contracture may act to reverse the surgical modifications. Nasal stent is a safe, convenient, and economic treatment option for the prevention of contracture after surgical correction of nostril stenosis or nasal valve insufficiency. This case report describes the various stages in the fabrication of nasal stent for a surgically corrected collapsed nose.

Keywords: Nasal sent, alar stent, nasalvalve collapse.

I. INTRODUCTION

The nasal valve is the narrowest part of the nasal cavity, located in the middle to lower portion of the nose. Since the valve is such a narrow area, any alteration in the structure of the nose that affects this area can result in increased resistance or even block of airflow. The surgical correction of nostril stenosis and external nasal valve collapse typically involves the addition of tissue to widen and strengthen these areas. Nasal valve collapse is a term that refers to any weakness or narrowing of this region.

A key objective after surgical opening of any nasal obstruction is preventing the newly established airway from closing again due to granulation or shrinkage processes (Subash Chander et al. 2015). A variety of strategies have been proposed to treat this type of condition, including preoperative nasoalveolar moulding, overcorrection of the nostril and alar cartilage, Tajima method of rhinoplasty, and postoperative nasal splinting (Yeow et al. 1999).

It is current practice to use a nostril retainer for a period of at least 6 months to maintain the corrected position of the nose (Chang Gung. 2006)

II. NASAL STENT

Nasal stent is a removable acrylic device which is safe, convenient, and economic treatment option used routinely in the postoperative treatment phase for the prevention of contracture after surgical correction of nostril stenosis or nasal valve insufficiency.

Objectives of Nasal stent:

- ✓ For the correction of collapsed nose.

- ✓ To avoid scarring between mucosal surfaces in the internal valve of the nasal cavity or between turbinates and the septum.
- ✓ For comfortable breathing by maintaining patency of the nasal passage after the surgical procedure.
- ✓ Improves speech and esthetics.

This paper is a case report of a patient with congenital bilateral nasal deformity for which nasal reconstruction was done and customized nasal stents were placed postoperatively.

CASE REPORT

A 24 year old male patient who had undergone a nasal reconstruction surgery for collapsed nose in the Department of Oral and Maxillofacial Surgery was refered to the Department of Prosthodontics and Crown &Bridge, Azzezia College of Dental Sciences for the fabrication of nasal stent (fig 1a). Patient was seated in an upright position, properly draped and surgical site was adequately disinfected using betadiene.

PROCEDURE

Nasal cavities were lubricated with petroleum jelly before making the stent. A plastic syringe cap which was roughened using acrylic trimming bur was used for the fabrication of the stent. Autopolymerising resin powder and monomer were mixed following standard procedure. The roughened syringe cap was then coated with the resin dough and molded to the approximate shape of the nasal cavity (fig 1b). The plastic cap with the coated dough was inserted into the patient's nasal cavity (fig 1c). Pumping action was done for proper moulding and also to reduce the exothermic heat. The external portion of the stent that was visible outside was merged with the skin (fig 1d). Nasal stent was removed once the moulding was complete and before the resin sets. The apex portion of the stent was trimmed with acrylic bur to obtain a patent airway (fig 1e). In order to make the stent comfortable for

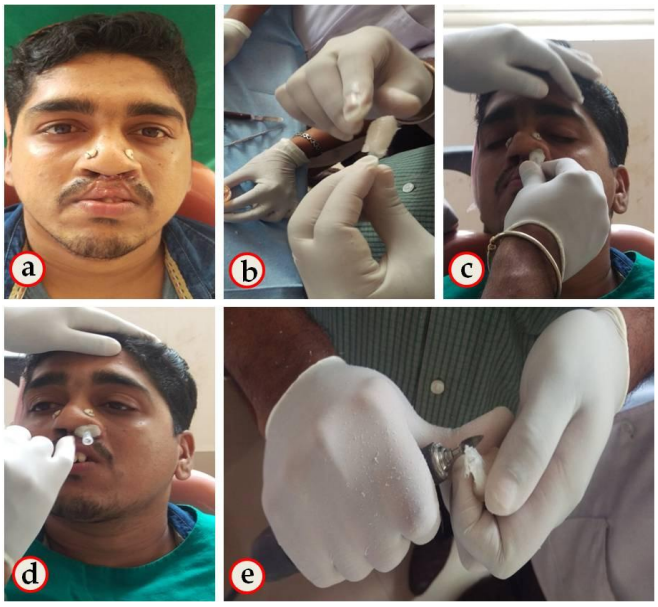

Figure 1: various stages of the fabrication of nasal stent for a surgically corrected collapsed nose

the patient, a silicone based soft liner was mixed and the stent was coated with the soft l liner (fig 2a). Nasal stent with the liner was inserted into the nasal cavity and waited until it sets. Once the soft liner sets, the stent was removed from the nose and excess liner trimmed off (fig 2b). Similarly stent was fabricated for both nasal cavities**.** 19 gauge stainless steel wire was bend into U shape with retentive tags on either ends (fig 2c). With stent in place, the position of the wire loop was checked and altered accordingly (fig 2d). Retentive tags were then stabilized by means of autopolymerising resin (fig 2e). The ends of the plastic syringe cap extending outside the prepared stent was then trimmed off carefully and surface was polished. Place the nasal stent into the patients nose (fig 2f).

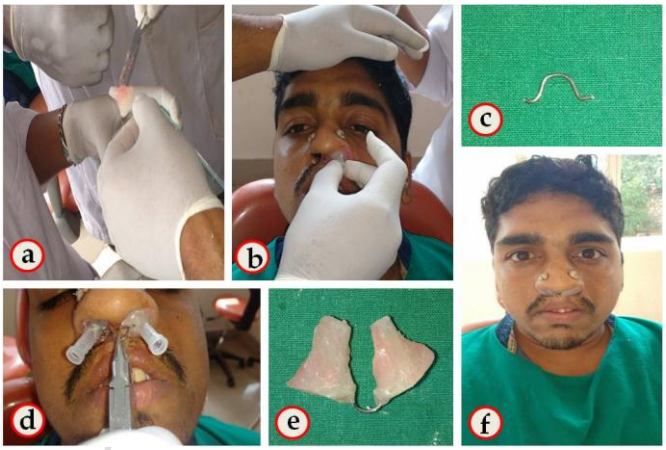

Figure 2: various stages of the fabrication of nasal stent for a surgically corrected collapsed nose

III. DISCUSSION

Nasal valve collapse may lead to oral breathing and unesthetic appearance thereby reducing the quality of life of the individual and affecting their confidence. It may be caused by tissue loss, scaring and/or contracture for numerous reasons, representing single or multiple deformities of the lobule- columella -ala complex. In this case, the therapeutic goal was to maintain a patent nasal airway during the healing process while minimizing the risk of pressure necrosis and maximizing comfort for the patient. Custom-made acrylic or silicone stents are indicated when the obstruction is in the region of the external valve and vestibule.

Hard acrylic resin stents have the advantage that they can be precisely shaped, trimmed, and polished to a smooth finish. Furthermore, they can accommodate slight undercuts and reportedly provide a scaffold for mucosal regeneration and minimize scar formation. Soft flexible stents are more difficult to modify after processing. On the other hand, some authors have argued that soft stents are more susceptible to fungal growth than hard (e.g. acrylic) stents.

Intranasal stents are fabricated with heat or self cure acrylic resin to revive nasal airways and to keep up patency of the air passage, after rehabilitative nasal surgery for the congenitally missing or collapsed external nose. These stents restore support for the nasal tissues and permit free passage of air through the nasal cavities. The benefits of the nasal stent which is fabricated by the above mentioned technique is that

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it is non-invasive, cost-efficient, easy to fabricate, less time consuming.

IV. CONCLUSION

This paper provides a novel method for fabrication of intranasal stent after nasal reconstruction and maintaining the patency of nostrils. The intranasal stent fits quite accurately, maintains and moulds the shape of nostrils, allows comfortable nasal breathing, is self-retentive and maintains aesthetics.

REFERENCES

[1] K Subash Chander et al, Prosthetic Rehabilitation of Bilateral External Nasal Valve Area after Nasal Reconstruction for a Congenitally Missing Nose: A Clinical Report, J Int Oral Health. 2015; 7 (Suppl 1): 80–82
[2] Yeow VK, Chen PK, Chen YR, Noordhoff SM. The use of nasal splints in the primary management of unilateral cleft nasal deformity. Plast Reconstr Surg. 1999; 103:1347–54.
[3] Chang Gung, Primary Correction of the Unilateral Cleft Lip Nasal Deformity: Achieving the Excellence Med J 2006; 29:262-7.