

# Intranasal Stent Device to Prevent Post Operative Nasal Stenosis: A Case Report

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## ABSTRACT

Present article presents a newer method for the fabrication intranasal stent for prevention of post surgical stenosis after the cosmetic surgery done for acid burns.<sup>(1,2)</sup> Nasal stenosis can result from post surgical complications in cases of tumors, acid burns, deviated nasal septum, as a consequence of congenital abnormalities, trauma, as a complication of air enhancement procedures. All the above conditions may contribute to cosmetic and functional deficiencies and require a preventive post operative procedures such as post operative splint prosthesis. Splint prosthesis is required to prevent consequences includes- decreased efficiency in nasal breathing, cosmetic defects related to shape and diameter of nostrils, mouth breathing due to nasal stenosis, mouth dryness, susceptibility of oral mucosa to inflammation and Disturbance in cranial growth and development. This article presents a simple method for the fabrication of heat-processed acrylic resin intranasal stent for the large nasal septum defect created as a post-surgical complication for the correction of deviated nasal septum.<sup>(3)</sup>

**Key words:** intranasal stent, acid burns, post surgical stenosis.

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## INTRODUCTION

### CASE REPORT

A 25-year-old male was referred by the Department of Plastic Surgery to the Department of Prosthodontics, PGIDS, Rohtak for the fabrication of an intra-nasal stent to prevent post-surgical nostril stenosis. The patient had undergone a surgery for acid burns due to ingestion (Fig1). An intra-nasal stent was fabricated to prevent the post-operative stenosis. On thorough examination, wound has shown signs of healing with no signs of infection. Therefore it was decided to start the procedure with the impression making on the same day.



Fig-1 pre-operative



Fig-2 nasal impression

## PROCEDURE

### The following procedure was followed:

The patient was made comfortable to sit upright on the dental chair and petroleum jelly was applied in the nostrils to facilitate the subsequent ease in insertion and removal of the tubings and impression material to be used as stents without harming the healing wound. No anaesthesia is usually required. After the tubings of appropriate length inserted till the patient can tolerate usually not extending beyond the bony nasal septum. The light body addition silicon material injected around the external nares and tubing and patency of the tubing ends are maintained. After that putty material is moulded and adapted over it. Thus, a band of material was continued across the columella to join the two sides of the nasal cavity. It also avoids the accidental posterior displacement of the prosthesis. When the impression was set, the impression was retrieved from the nose with the tubings that maintained the angulation (Fig 2). The excess material was trimmed, so that when the nasal impression was reinserted, the margins of the nostrils could be seen. The impression was then disinfected in 2% glutaraldehyde and poured after beading and boxing in Type IV dental stone.

Catheter tubings were inserted into the cast with the same angulation as in the patient. Autopolymerising acrylic resin was adapted around the external nares and columella keeping the patency maintained (Fig 3 and 4). Nasal stent then obtained was then finished, polished and inserted into patient's nasal vestibule. The patient was trained to orient the prosthesis correctly and to insert and remove the prosthesis from the nose by simple digital pressure. The patient was instructed to wear it continuously, removing it only for a short period for cleaning. The stent had adequate retention, and patient could perform the inhalation and exhalation process conveniently.



**Fig 3- nasal moulage and stent**



**Fig 4- nasal stent inserted**

## DISCUSSION

Restoration of facial defects is a difficult challenge for both surgeon and Prosthodontist as both have their distinct limitations. Since nose is a prominent feature of the face, without a comprehensive diagnosis of the nasal defects and the anticipated reconstructive treatment plan re-establishment of facial balance and nasal breathing cannot be achieved. Most facial prostheses like nasal prostheses are retained with adhesives and mechanisms including anatomic undercuts, or an external attachment.<sup>(4,5)</sup> Each of these methods has its own pros and cons. Various techniques have been reported in the literature for the repair of nasal vestibular stenosis. Rodrigues et al. reported excellent results by using composite aural graft without any nasal stent. Jablon and Hoffman reported a case of nasal vestibular stenosis caused by obstetric forceps they treated by mucosal graft from the hard palate.

Nasal septal obturators are constructed of materials that includes medical grade Silastic silicone rubber or heat processed acrylic resin. Both materials are described as biocompatible; but the, Silastic silicone rubber of the medical grade cannot be highly polished, and also it is porous and friable which might lead to sorption of fluids, irritation of tissues from adhesion of mucus crust, and tearing of the material. But in contrast to this, heat-processed acrylic resin can be highly polished, has also have lesser tendency for water sorption, and mucus crust seldom adheres to its highly polished surface. Meanwhile, this material has lack of flexibility, and thus cannot be used in small non-stretchable nostrils. Uses of Nasal stents includes to support the nasal alae that collapse on inspiration, to support cartilage transplants, Maintains contour and minimizes scar contracture after skin grafting procedures to the nostrils, to counteract previously formed scar tissue and to widen the nostrils of trauma or burn patient.<sup>(6,7)</sup>

Thus in this case a simple method for the fabrication of acrylic resin intranasal stent with soft catheter tubing extensions into nasal vestibule for maintaining the patency post surgically.

### **CONCLUSION**

Since nose is a prominent feature of the face, its rehabilitation assumes great importance. Nasal stents help in the expansion and release of intranasal scar bands. It acts as a pre-surgical alignment and corrective device to expand tissues and produce a more consistent post operative result. Intranasal stent therapy is a more conservative method to expand nostril tissues and successfully maintain the nostril diameter for acquired and congenital nostril stenosis.

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