ISSN NO. 2320-5407

Journal homepage: http://www.journalijar.com

INTERNATIONAL JOURNAL OF ADVANCED RESEARCH

RESEARCH ARTICLE

POST SURGICAL INTRANASAL STENTS FOR NOSTRIL STENOSIS

Manu Rathee[1], Poonam Malik[2]
Senior Professor[1],Demonstrator[2],
Department of Prosthodontics, Post Graduate Institute of Dental Sciences, Pt. B.D.Sharma University of Health Sciences, Rohtak, Haryana, India.

Manuscript Info

Manuscript History:

Received: 12 November 2014
Final Accepted: 22 December 2014
Published Online: January 2015

Key words:

Nasal septum, Heat Cured acrylic resin, nostril stenosis

Corresponding Author

DR.POONAM MALIK

Abstract

Intranasal defects lead to functional and cosmetic deficiencies and timely rehabilitation improves patient's quality of life. This article presents a simple method for the fabrication of heat-cured acrylic resin intranasal stent for the nasal septal defect created as a result of post-surgical complication for the correction of deviated nasal septum.

INTRODUCTION

Intranasal defects lead to functional and cosmetic deficiencies and timely rehabilitation improves patient's quality of life. Intranasal defects of the nose result from tumor removal, Congenital abnormalities, iatrogenic procedures complications of cosmetic or air enhancement procedures, acquired defects-secondary to trauma, burns or surgical procedures and Circumferential retraction after infection. Consequences of nostril stenosis includes- Reduction in nasal diameter ,Reduced efficiency in nasal breathing, asymmetrical nostrils, Oral breathing, 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.[1]

Case report

A 25-year-old female was referred to the Department of Prosthodontics, for the fabrication of an intra-nasal stent to maintain the patency of the nostril. The patient had been referred by an ENT(Ear-Nose-Throat) surgeon after she had undergone a surgery for correction of deviated nasal septum one week before(Fig-1) An Intra-nasal stent was prepared for mataining the patency of the nostril. Patient consent and ethical approval from the ethical committee of the institution was taken before starting the treatment. On examination, healing of the wound was seen with no discharge and inflammation sign. Therefore it was decided that to start the procedure on the same day.

Fig-1 pre-operative

Procedure

1. The patient was sitted upright on the dental chair and the inner surface of the nostrils was gently coated with petroleum jelly to facilitate the subsequent ease in insertion and removal of the nasal impression with no local Anesthesia given.
2. An impression of the nasal cavity was made with addition silicon putty and light body elastomeric impression material.
3. The material was manipulated and moulded into a rope-like form of the approximate length of the nasal cavity, and it was then inserted into each nasal vestibule of the patient. Care was taken not to push the material beyond the nasal cartilage. 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.
4. When the impression was set, the impression was retrieved from the nose (Fig 2a and 2b). The excess material was trimmed, so that when the nasal impression was reinserted, the margins of the nostrils could be seen.
5. Then, the impression after beading and boxing done was invested in Type III dental stone in a dental flask (Figures 3 and 4).
6. The impression was removed from the flask and processed in heat polymerizing clear acrylic resin.
7. After deflasking, a 3 mm hole was drilled through the prosthesis to maintain the patency for the airway, followed by trimming and polishing (Figure 5). The prosthesis had a smooth outer surface to provide comfort to the nasal mucosa during insertion and removal and prevent the growth of microorganisms.
8. The prosthesis was inserted into the nasal vestibule (Figure 6). 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.

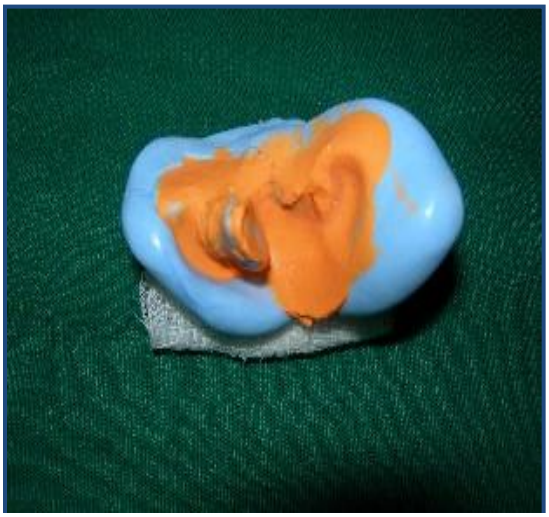

Fig -2a Impression made with Putty and light body

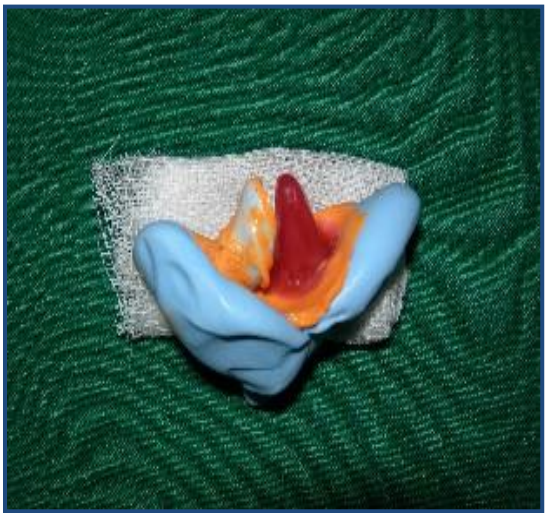

Fig -2b Impression made with Putty and light body

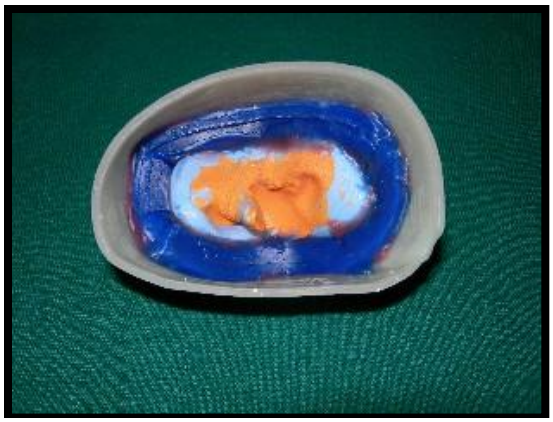

Fig-3 Beading and boxing done

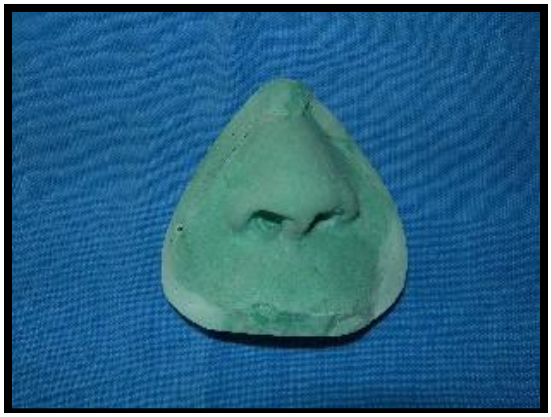

Fig-4 Final Impression poured in die stone

Fig-5 Final prosthesis

Fig-6 Post-Operative

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. Each of these methods has its own pros and cons. [2-3]

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. [4] Jablon and Hoffman reported a case of nasal vestibular stenosis caused by obstetric forceps they treated by mucosal graft from the hard palate.[5] Other suggested reconstructive options include the use of Z-plasty grafts of skin , flaps of local myocutaneous tissue and flaps of septal cartilage , also mucosal flaps taken from the palate. These all require general or prolonged monitored anesthesia. [6]Salvado and Wang have reported the use of mitomycin C for the correction of vestibular stenosis by the inhibition of fibroblast proliferation and collagen synthesis which is a itself one of the preventive measures.[7] While Smith and Roy described about the endoscopic lyses of the scar tissue with application of mitomycin C and nasal stent placement.[8]

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, to support nasal tips to improve facial appearance and to maintain nasal airway. [9]

Constructing the nasal septal obturator from an accurate impression of the defect has proved to be the most logical approach in managing these defects. Thus in this case 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. The advantages of the stent are that technique is non-invasive, cost-effective, and easy to fabricate. Stent is also described as tissue tolerant, esthetic to the patient, comfortable to use, maintains the patency and the contour of the nasal cavities, and effectively restores nasal septal perforation. [10]

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.

References

1. Tatjana D, Jiri K, Milan H, Jiri H, Pavel K, Jakub S, et al. Implant dentistry: A rapidly evolving practice. Intech publications:Manhattan; 2011; 7:451-64.
2. Beumer J, Cyrtis TA, Marunick MT. Maxillofacial Rehabilitation; Prosthodontic and Surgical Considerations. St. Louis: Ishiyaku Euro America; 1996: 387-408.
3. Nagaraj E, Shetty M, Krishna PD. Definitive magnetic nasal prosthesis for partial nasal defect. Indian J Dent Res 2011;22: 597-9.
4. Rodrigues S, Shenoy VK, Shenoy K. Prosthetic rehabilitation of a patient after partial rhinectomy: A clinical report. J Prosthet Dent 2005;93:125-8.
5. Jablon JH, Hoffman JF. Birth trauma causing nasal vestibular stenosis. Arch Otolaryngol Head Neck Surg 1997. Sep;123(9):1004-1006.
6. Corey CL, Most SP. Treatment of nasal obstruction in the posttraumatic nose. Otolaryngol Clin North Am 2009. Jun;42(3):567-578 .
7. Salvado AR, Wang MB. Treatment of complete nasal vestibule stenosis with vestibular stents and mitomycin C. Otolaryngol Head Neck Surg 2008. Jun;138(6):795-796.
8. Smith LP, Roy S. Treatment strategy for iatrogenic nasal vestibular stenosis in young children. Int J Pediatr Otorhinolaryngol 2006. Aug;70(8):1369-1373.
9. Menger DJ, Lohuis PJ, Kerssemakers S, Nolst Trenité GJ. Postoperative management of nasal vestibular stenosis: the custom-made vestibular device. Arch Facial Plast Surg 2005. Nov-Dec;7(6):381-386.
10. Brooks MD, Carr AB, Eckert SE. Nasal stent fabrication involved in nasal reconstruction: Clinical report of two patient's treatment. J Prosthet Dent 2004;91:123-7.