

An Easier Approach for Nasal Vestibule Recanalization: Endotracheal Tube Tailored Nasal Stents

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How to cite this article:

Nayak Puneeth S, Debnath Paramita, Harugop Anil S et al., An Easier Approach for Nasal Vestibule Recanalization: Endotracheal Tube Tailored Nasal Stents. RFP J ENT Allied Sci 2020;5(1):25-27

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Abstract

Introduction: Following surgical procedures in the region of nasal vestibule and nasal valves majority of patients have risk of developing vestibular stenosis and face lifelong complications with the external and internal nasal valves; sequels of the repair. The use of endotracheal tube as nasal stent has been mentioned in various literature but it is not validated yet. In the present study we highlighted the use of this endotracheal tube tailored nasal stents for recanalization, prevention of recurrences vestibular stenosis and preserving nasal valves.

Keywords: Nasal vestibular stenosis; Endotracheal tube; Nasal stents.

Introduction

Majority of patients who undergo surgical procedures involving the nasal vestibule and nasal valves are at risk of developing vestibular stenosis and it affects their day to day life adversely.

Nasal vestibule is the narrowest portion of the nasal cavity hence it is the commonest area to undergo stenosis. The various causes that leads to its stenosis include trauma, burns, tumour, surgery infections. In cases of nasal trauma involving the nasal vestibule and internal and external nasal valves stent placement avoids sequels, adhesions,

contractures, synechia vestibular stenosis and fibrosis that occurs surrounding this anatomical structure. The use of endotracheal tube as nasal stent has been mentioned in various literature but it is not validated yet. The advantages of this endotracheal tube tailored nasal stents over the traditional readymade ridged nasal stents, and composite aural grafts are: a) Technical simplicity of use, b) Safety, c) Less morbidity, d) Custom moulded and e) Economical. In the present study we highlighted the use of this endotracheal tube tailored nasal stents for prevention of recurrences vestibular stenosis and preserving nasal valves.

Case report

A 55 year old male presented to the ENT OPD with complaints of bilateral nasal obstruction for 5 years, insidious in onset, gradually progressive associated with decreased perception of smell which progressed to complete loss of smell perception since last 2 years. Patient also had complaints of mouth breathing. For the same complaint's patient had undergone surgery, following which symptoms recurred within 2 months. On examination, the external appearance of the nose revealed bilateral vestibule stenosis. On anterior rhinoscopy, (Fig.1) synechia were present between inferior turbinate and septum in bilateral nasal cavities. Posterior rhinoscopy and the rest of the ENT examination were found to be normal.

Diagnostic nasal endoscopy revealed synechia in both nasal cavities.

The patient underwent excision biopsy (Fig.2) which revealed features suggestive of chronic inflammatory disease. The endotracheal tube was cut to appropriate lengths and placed in each naris extending minimally posterior to the bony piriform aperture in bilateral nasal cavity and sutured. (Fig.3). Patient was started on antibiotics and rifampin and antihistaminic postoperatively and called for regular follow up, the stents were removed on postoperative day 7. Patient was followed up for a month on weekly basis for removal of crusts and then on monthly intervals. After 3 months of follow-up bilateral vestibules were found to be patent and no signs of re-stenosis present.

Discussion

The nasal vestibule forms the lower most part of the nasal fossae, limited superiorly by the caudal edge of upper lateral cartilage. The vestibule is lined with skin consisting of squamous epithelium which contains hair and sebaceous glands. It is the narrowest portion of nasal cavity. Nasal vestibular Stenosis is a rare deformity that causes significant aesthetic and functional problems for the patient which in turn affects his day to day life.¹ It affects the upper and lateral aspects of the nasal vestibule and due to the lack of support of the alae compared with the more rigid septal and lower lateral cartilages. Injury to the vestibular lining is the main pathogenesis seen in this condition.² The various causes of nasal vestibular stenosis include: infection, trauma, burns, tumours, chemical agents, and surgery to the vestibular line. Traumatic injury to the nose as seen in cases of burns, fractures

and lacerations can lead to stenosis. Infectious conditions like chicken pox, tuberculosis, leprosy, syphilis, rhinoscleroma and atrophic rhinitis has also been implicated to result in nasal vestibular stenosis.³ Surgical procedures in the past including septoplasty and rhinoplasty, unnecessary use of chemical and electrocauterization and traumatic placement of nasal packing for control of epistaxis can also lead to the development of vestibular stenosis. The most common presenting complaint is unilateral or bilateral nasal obstruction. Diagnosis is mainly accomplished based upon physical examination.⁴

Excision of the stenotic tissues followed by split-thickness skin graft remains the easiest technique for recanalization. The skin graft is wrapped around a moulded stent and is left in place for up to 6 months to prevent relapse.⁵

Various techniques have been mentioned in the literature for the repair of nasal vestibular stenosis. A study conducted by Karen et al. showed that excellent results were obtained by using composite aural graft without any nasal stent in cases of vestibular stenosis.^{6,7} Jablon and Hoffman in their study reported the treatment of case of nasal vestibular stenosis caused by obstetric forceps by successfully using mucosal graft from the hard palate.² Reconstructive options available include the modified Z-plasty skin grafts, local myocutaneous flaps, and septal cartilage flaps, mucosal flaps from the palate and composite cartilage grafts. Such techniques require general or prolonged monitored anesthesia.⁸ Another study done by Salvado and Wang concluded that vestibular stenosis can be corrected by using Mitomycin C as it inhibits fibroblast proliferation and collagen synthesis. The use of endoscopic lasers as a treatment option was described by Smith and Roy, the lasers cause lysis of the scar tissue along with application of mitomycin C and nasal stent placement.⁹

The demerits of above-mentioned procedures include - time consuming, delayed healing, not cost effective, longer healing curve, morbidity, recurrences. The recurrence rates are quite high and are adversely affecting the quality of life. However, recent literature supports management by endoscopic lysis, mitomycin application and stenting.

Endotracheal tubes moulded as nasal stents can be used as an effective method to prevent such recurrences following surgeries. The advantages include: a) Sparing the patient from prolonged anesthesia, and b) Major surgery with a better surgical outcome. Additionally, the stent placement

is technically simpler and it provides support to the external and internal nasal valves, and also helps achieve maximal anesthetic and functional results in a shorter duration. However, the use of such stents is not validated yet.

In this current case report, we highlighted the use of endotracheal tube tailored stents which is a very simple and inexpensive technique to attain nasal vestibule recanalization and also to prevent its recurrences.

Figure legends-

PreOperative Findings



Fig. 1: Figure showing synechia present between septum and inferior turbinate in both nasal cavities.

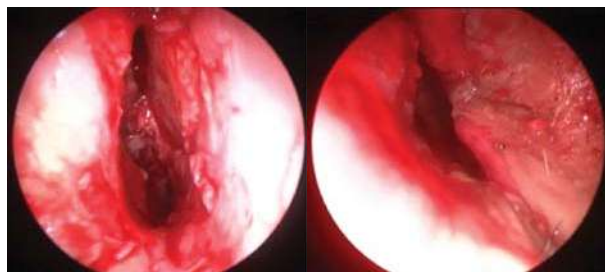


Fig. 2: Figure showing intraoperatively after taking excision biopsy.

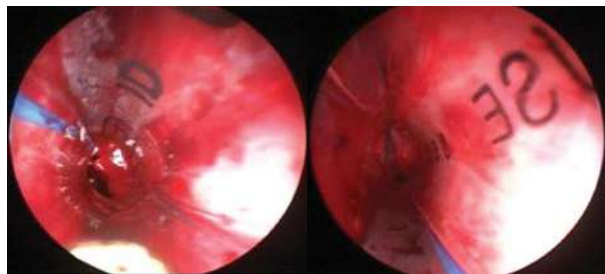


Fig. 3 :Figure showing endotracheal tube tailored stents placed in bilateral nasal cavities.

Conclusion

Thus, we conclude that endotracheal tube tailored nasal stents can be used successfully for avoiding sequels; adhesions, contractures, synechia, vestibular stenosis and fibrosis involving these anatomical structures, also they are easily available,

cost effective and can be custom moulded , patient compliance is better as healing time is considerably less as compared to the traditional methods.

Conflict Of Interest: None

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