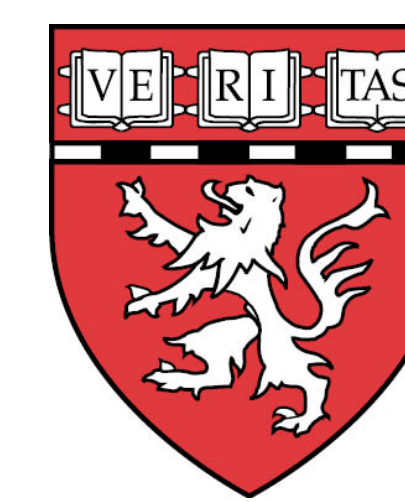


# A Novel Approach to Nasopharyngeal Stenosis

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## Abstract

**Objectives:** Nasopharyngeal stenosis is a rare and challenging problem that is difficult to treat successfully. We present a novel solution in managing a patient with idiopathic inflammatory nasopharyngeal stenosis by using a tracheoesophageal puncture prosthesis.

**Methods:** Case report and review of the literature.

**Results:** We present the case of a 51-year-old man with an aggressive idiopathic inflammatory process of the nasal cavity resulting in complete nasopharyngeal stenosis. Despite numerous surgical interventions and obturator placement, stenosis recurred. Eventually a tracheoesophageal voice prosthesis was placed through a controlled puncture in the nasopharyngeal stenosis; this has successfully relieved his symptoms. Various treatments within the literature are discussed.

**Conclusions:** The use of a tracheoesophageal puncture voice prosthesis in treating nasopharyngeal stenosis is a novel solution to a difficult problem and may be considered in recalcitrant cases.

## Introduction

Nasopharyngeal Stenosis (NPS) is defined as a partial to complete obstruction of the normal communications between the oropharynx and the nasopharynx by scar tissue. The obstruction between the nasopharynx and oropharynx may vary from a thin diaphragm to a mass of scar tissue obliterating the nasopharynx [1]. Patients may suffer from increasing nasal obstruction, rhinorrhea, mouth breathing, changes in voice and difficulty in swallowing. The mainstay in treatment continues to remain surgical. We report a case that illustrates the approach to a patient with recalcitrant NPS and present a novel solution and review of the literature.

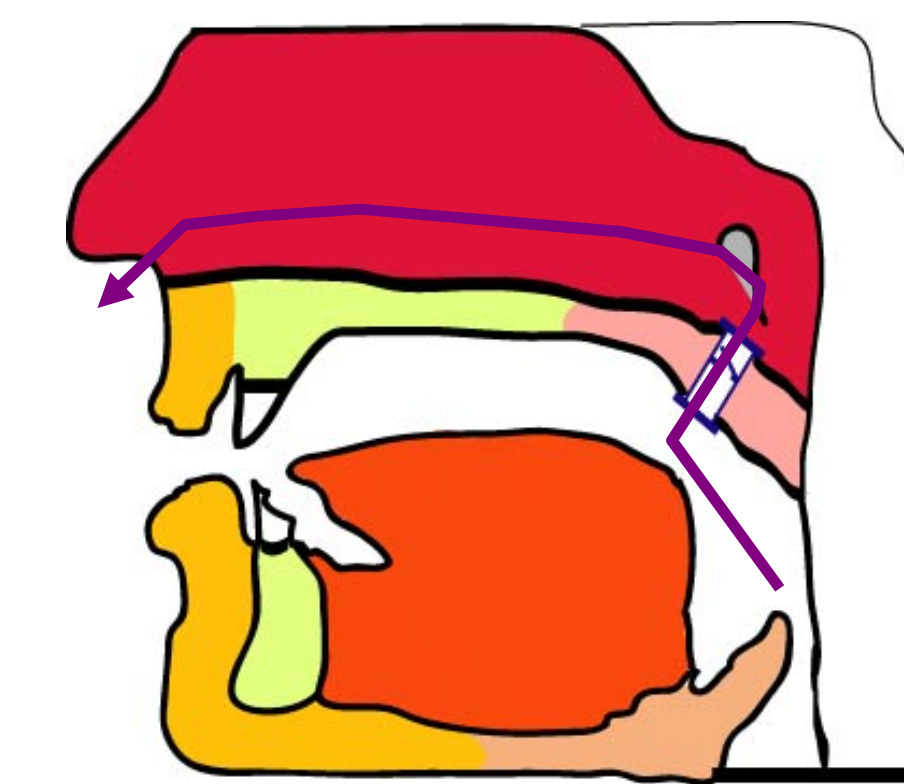
## Case

A 51 year old man presented with aggressive idiopathic inflammatory and necrotizing process of the nasal cavity. This required sequential endoscopic debridements and resulted in complete nasopharyngeal stenosis. He had previous sinus surgery and releases of palatal scarring. The scarring of the palate to the posterior pharyngeal wall on biopsy specimens revealed only acute and chronic non-specific inflammation. Despite oral steroid therapy his nasopharyngeal stenosis returned after attempted lysis. On examination he was found to have absence of the uvula with scarring of the soft palate to the posterior pharyngeal wall. Nasal endoscopic exam showed a large septal perforation and severe nasopharyngeal stenosis limiting passage of a fiberoptic endoscope. CT scan of his sinus revealed signs of previous extensive sinus surgery as well as his soft palate adhered to the nasopharynx with complete obstruction of nasopharyngeal airway.

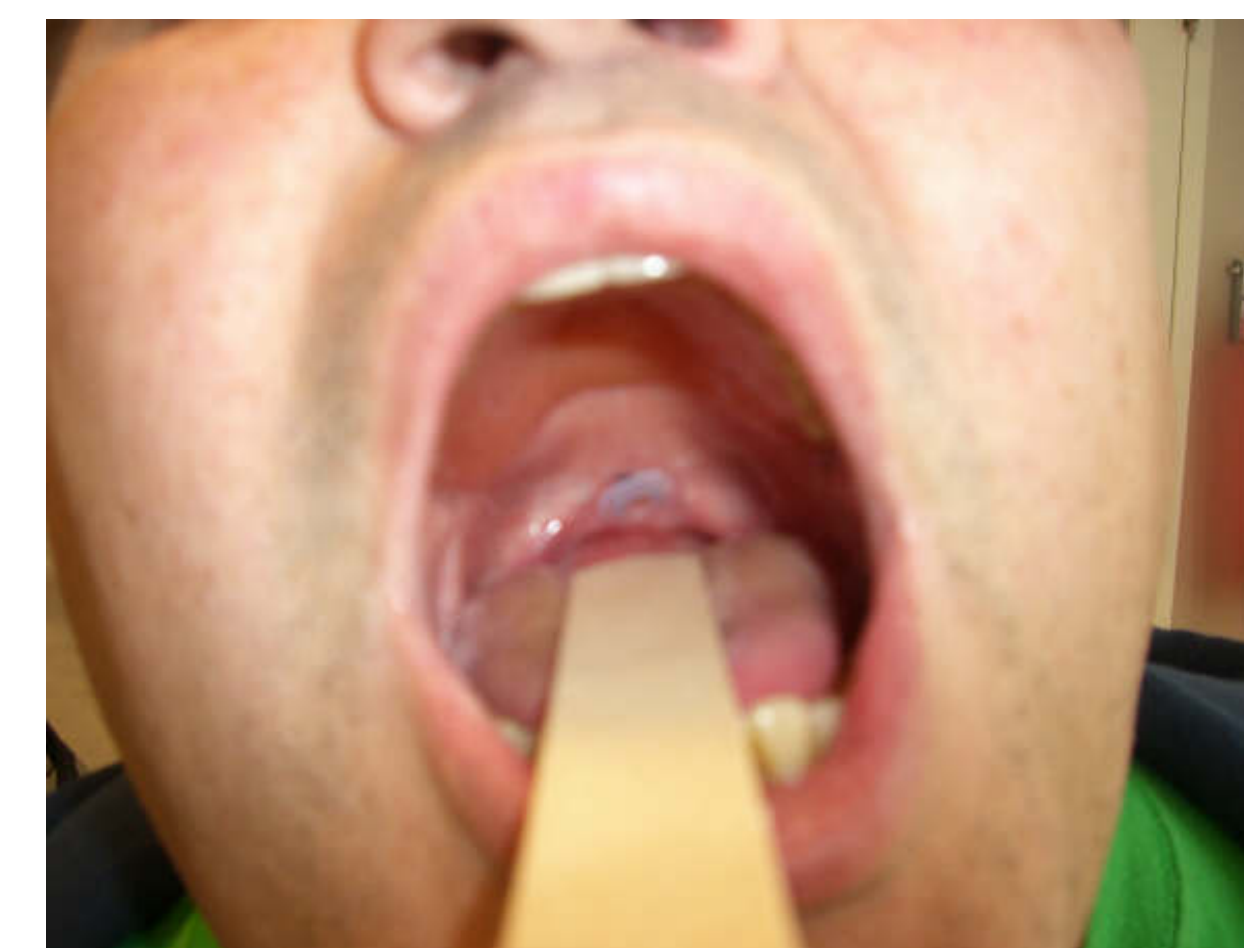
The patient underwent palatoplasty with placement of a nasal trumpet stent. The stent remained in place for 4 weeks after which it was removed. The patient later noted that he was able to breath well through his nose however he had persistent reflux of fluid into his nasal cavity. Postoperatively after approximately 3 months he began to demonstrate restenosis of the area. By month four he had complete restenosis. Given his restenosis, he underwent repeat division of his nasopharyngeal scar with placement of an obturator. Because of worsening discomfort, he discontinued the use of the obturator and began having restenosis.

An alternative prosthesis was sought. We utilized 20 Fr/ 10 mm Blom-Singer tracheoesophageal voice prosthesis. It was placed into the palatal fistula. This prosthesis allowed him to drink without nasopharyngeal reflux and pass air through his nose with nose blowing. On follow up visits he was noted to have some clogging of the prosthesis. On other visits he had some candidal inflammation and occasional discomfort. These issues were managed with periodic changing of the prosthesis to either a 10 mm or 12 mm prosthesis in clinic every 1-3 months. He has been tolerating the replacement of the prosthesis well. He has been followed for a period of 16 months and he continues to do well with occasional difficulty with discomfort and prosthesis obstruction.

## Case (continued)



**Figure 1:** (A) Blom-Singer Tracheoesophageal Puncture voice prosthesis. Inhealth Technologies. (B) Schematic of how TEP prosthesis is placed into nasopharyngeal scar. The path of air (arrow).



**Figure 2:** (A) Blom-Singer Tracheoesophageal Puncture voice prosthesis insitu.

## Discussion & Conclusions

- NPS is a rare disease that can be caused by an infectious or inflammatory process such as tuberculosis, rhinoscleroma, diphtheria, scarlet fever and lupus; or it can be a result of iatrogenic surgical injury. [2]
- The treatment of NPS is primarily surgical; the goal is to reestablish the airway. There is no one procedure that has been developed to address all patients with this rare disease.
- Surgical methods include simple lysis, mucosal flaps, z-plasty repairs, skin grafts, free tissue transfer, laser scar removal, stenting and scar division and utilization of customized obturators.[3-8]
- This is the first description of using a TEP to successfully treat a patient with recalcitrant NPS
- The advantages of the prosthesis are: (1) one prosthesis will allow for passage of air into the nasal cavity while limiting velopharyngeal insufficiency; there is no need for a specific day or night time obturator; (2) there are two available diameters and a variety of lengths to allow customization to patient anatomy; (3) the prosthesis can be easily removed and replaced in clinic; (4) preoperative and operative time saved because there is no need for obturator fabrication time; (5) an oral prosthodontist is not required; (6) there are minimal side effects to the having the prosthesis in place outside of the need for periodic replacement because of device malfunction likely from candidal colonization.

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