

## Surgical Approach of an Oronasal Communication Secondary to Septoplasty

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### Abstract

Oronasal communications after septoplasty are extremely rare, the authors found only 6 cases after careful literature review, including some with underlying previous conditions that might have predisposed the outcome (PUBMED search engine).

The authors describe an oronasal communication after septoplasty, with oronasal reflux starting immediately after the procedure which was performed 2 years prior to the first encounter with the patient. The patient had already been submitted to communication closure attempt, with no success. The authors chose a palatal flap which was successful in closing the communication, and no postoperative complications were reported.

When planning and executing septoplasty it is necessary to take all precautions in order to prevent this sequelae. In the instance that they might occur measures to contain it must be immediately implemented. When permanent sequelae occur they must be object of careful surgical planning, to avoid multiple interventions.

**Keywords:** Oroantral Communication; Oronasal Communication; Oronasal Fistula Septoplasty

### Introduction

Congenital or acquired defects of the palate are often associated with communication between the oral cavity and adjacent structures, namely the maxillary sinus and the nasal cavity.

An oronasal communication involves an abnormal opening between the oral and nasal cavities. The most common cause is complications arisen from cleft palate or lip and palate surgical procedures. Other causes include chronic inhalation of illicit drugs and, less frequently, traumatic etiology. Depending on the size of the communication, the associated symptoms vary, from asymptomatic/non-existent to difficulties in speech, nasal voice, difficulties in swallowing, fluid reflux or rhinorrhea in various degrees of severity [1,2].

The same way an oronasal communication can occur, so does an oroantral fistula, that consists in a communication between the oral cavity and the maxillary sinus cavity. The most common cause is superior molars extractions, in consequence of their anatomic root proximity to the sinus cavity [3,4]. However it can also occur as an implant surgery complication, after cystic or tumor enucleation and after orthognathic surgery [3]. Oroantral fistulae must be closed to avoid salivary and food contamination of the sinus, which can lead to bacterial infection and chronic sinusitis [4].

Nasal septoplasty is a surgical procedure commonly performed to improve nasal breathing and, consequently, the patient's quality of life. Despite being a relatively simple procedure, it can lead to complications, such as nasal obstruction, bleeding, perforation of the septum, and even perforation of the palate, although extremely uncommon and rarely reported in scientific literature [5,6].

The aim of the present article is to report a case of one of the rarest complications of septal surgery, an oronasal communication, with emphasis on the successful surgical approach performed to close the palatal defect, providing a possible solution when direct closure is ineffective.

## Case Report

AMJB, female, 37 years old, Caucasian, who presents with a left paramedian perforation of the hard palate, with approximately 10mm in its major axis (Figure 1). The patient had a history of nasal septoplasty performed 2 years prior (2018), with oronasal communication sequelae due to surgical trauma, and no other relevant pre-existing conditions. It should be noted that, before she was referred to our care, the patient went through two unsuccessful attempts to close the defect through direct closure, the first time, two months after the septoplasty, under local anesthesia, and the second time, four months post-septoplasty, under general anesthesia.

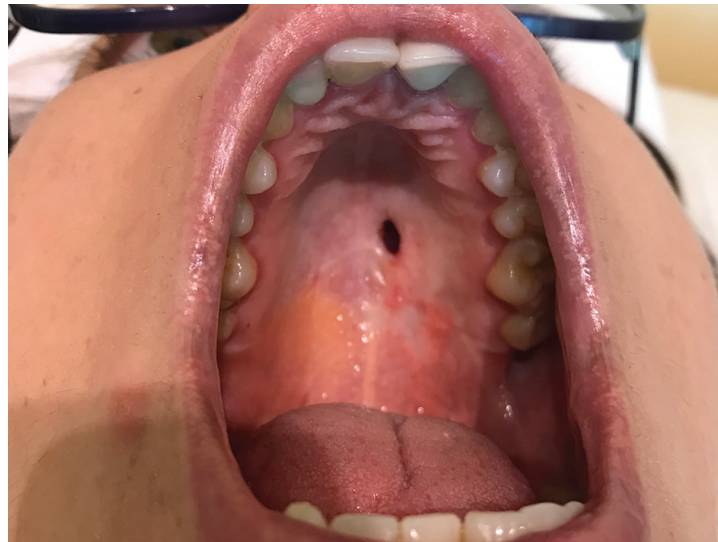


Figure 1: Left paramedian palatal fistula

Computed tomography (CT) imaging revealed a bone defect on the floor of the left nasal cavity, resulting in a communication with the oral cavity.

The communication was approached under general anesthesia and orotracheal intubation. The procedure started with a subperiosteal infiltration of 1 ampoule of local anesthetic (2% lidocaine containing epinephrine) into the surgical site, which reduces local bleeding during surgery and results in hydraulic dissection facilitating flap elevation. Subsequently, a bilateral incision was made about 6 mm apart from the defect (Figure 2) and full thickness mucoperiosteal flaps were lifted, followed by transposition of both flaps to the nasal fossa floor, covering the communication on the nasal side (Figure 3). Afterwards, closure of the oral aspect of the communication was performed using a transposed left mucoperiosteal palatal flap based on the greater palatine artery (Figure 4) and fibrin glue was placed in the donor region, left to heal by secondary intention. All sutures were performed using 3 and 4/0 polyglactin 910 thread (Vicryl™).

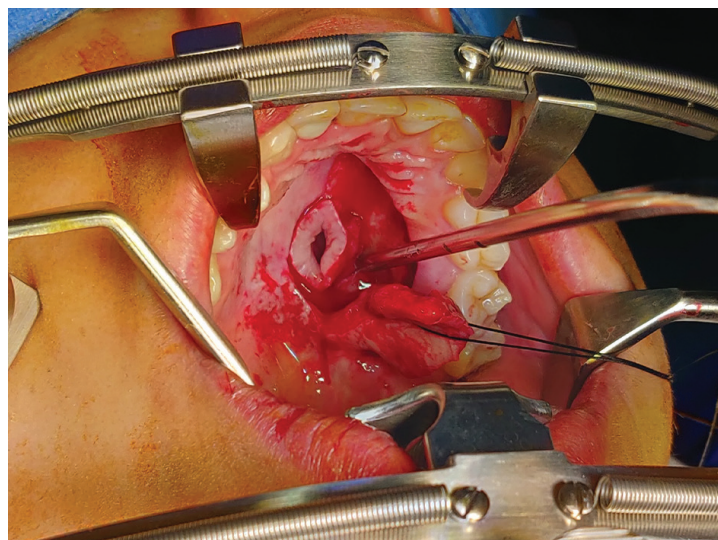
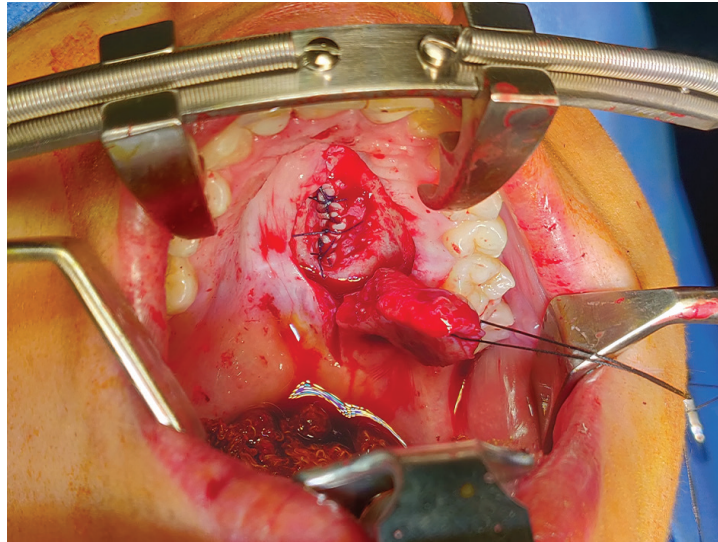
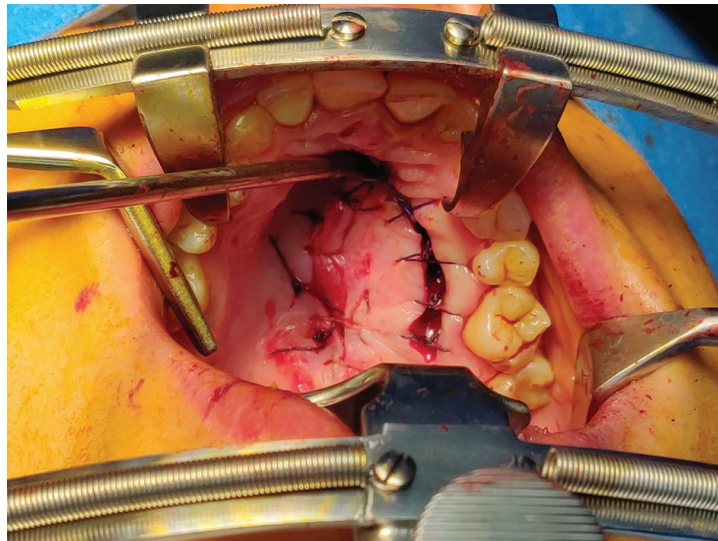


Figure 2: Bilateral incision, 6mm away from the communication and flap elevation from the periosteal plan



**Figure 3:** Flap transposition to nasal fossae floor



**Figure 4:** Wound closure with left palatal flap

Clinical follow-up was performed at one week, one months and two months after surgery. Adequate surgical site evolution was observed, with complete disappearance of the fluid regurgitation complaints (Figure 5).



**Figure 5:** Post-op after 2 months (fully healed)



## Discussion

There are several surgical techniques described for closing oronasal or oroantral communications, including: soft tissue flaps (such as Rehrmann or Móczár vestibular flap, palatal flap, tongue flap); autologous bone grafts (e.g., harvested from the mentonian region); adipose tissue grafts (such as the Bichat Ball); grafts with allogeneic materials (such as fibrin glue); xenografts (such as collagen); among other techniques [3,7].

Many scholars believe that soft tissue wound closure is the indicated and adequate procedure in most cases. On oroantral communications the most common technique used is the Rehrmann flap. However palatal flaps are preferred as they don't reduce vestibular depth and are thicker which renders them more vascularized and less vulnerable to failure [3,7].

When these technics are insufficient, a soft tissue tongue flap or a fat flap are also an alternative and have great successful outcomes [3,7].

In the presence of a large oroantral defect, or after unsuccessful soft tissue closure attempt, some scholars recommend autologous bone graft. This technique is also preferred when an implant rehabilitation is desired in the future [3,7].

Regarding oronasal communications, treatment selection should be based on the size of the defect and its location on the palate [1,2]. When the defect is small (inferior to 10mm) local tissues should be used for the closure flap. Recent defects with a small diameter (inferior to 5mm) may eventually close spontaneously, therefore an expectant attitude might be the recommended approach. Chronic or larger defects will need surgical intervention, which may require micro-anastomosed flaps, or corrective orthoses, such as obturating prostheses [1,6,8].

When surgical intervention is recommended the Axhausen's principles must be considered for local flaps: the flap must be mobilized without traction or tension, the flap must be adapted to the defect margins and there should be no residual dehiscence in the surgical site [1].

Given the scarcity of clinical reports of oronasal communications after septoplasty found in the literature, we will proceed to describe them.

The case reported by Tilaveridis *et al.* [6] describes an oronasal communication in a 46-year-old patient, after a septoplasty which had been performed 3 days prior. The patient reported feeding difficulties as the main complaint subsequent to the flow of fluids between the oral and the nasal cavities. In this particular case, we highlight the presence of an ectopic bone fragment that maintained viability since it was attached to the periosteum and, consequently, to the palate mucosa. The treatment involved simply placing the fragment in its original place and suturing the adjacent mucosa. Tilaveridis and his collaborators report that complaints of fluid regurgitation from the oral to the nasal cavity did not completely disappear until 20 days postoperatively [6].

Regarding the Alhedaithy *et al.* case [5], a 55-year-old patient complained of nasal regurgitation and nasal voice after a septoplasty preformed 2 months prior. Upon examination there was a millimetric oronasal communication, which was resected endoscopically by trans-oral and trans-nasal approach. Then, an allographic graft [Irradiated fascia lata Tutoplast® (RTI Surgical, Inc., USA)] was placed on the oral aspect of the communication, which in turn was covered with a palatine muco-periosteum flap. A layer of fibrin glue was also applied over the sutured palatal flap [5].

Thompson *et al.* [9], describe a 36 year-old patient with an oronasal communication after septoplasty, associated to mycotic infection of the wound. Four months after surgery a lump appeared on the palate, which progressed to palatal perforation. Biopsy confirmed the presence of *candida albicans*, and antifungal therapy was instituted. Surgical closure with oral mucosa flap was performed and there was no evidence of recurrence at 17 months follow-up [9].

Ersoy *et al.* [10], report a palatal fistula following nasal septoplasty on a 17 year-old patient with an undiagnosed submucosal palatal cleft. The fistula was repaired using a nasal mucosal flap for the nasal layer, and a rotational mucoperiosteal flap from the oral cavity for the oral layer, with no reported recurrence [10].

Gokdemir *et al.* [11], describe an oronasal communication after septoplasty on a patient that presented ogival palate, which was repaired using a mucoperiosteal flap.

Motazedian *et al.* [12] presented a similar case on a 31 year-old patient with an anatomically normal palate, with no history of chronic diseases, whose communication derived from an aggressive and incautious osteotomy of the septum. The palatal perforation was repaired with mucosal hinge flap as nasal lining and a mucoperiosteal rotational flap for oral coverage, which was successful in repairing the defect [12].

In the presented case, there were no underlying palatal malformations or pathological abnormalities, therefore, it is presumed that this rare septoplasty complication resulted from surgeon error and might have been overlooked intra-operatively due to limitations in surgical field visualization. The communication diameter was not superior to 10mm and had a 2-year evolution span, thus requiring surgical approach with a local flap. The chosen technique demonstrated satisfactory results, achieving a complete closure of the oronasal communication, without postoperative complications.

## Conclusion

In conclusion, oronasal communications derived from septoplasty are an extremely rare complication. It is crucial that preventive measures are taken, both in planning and executing the surgical technique in order to prevent this type of sequelae. In the event of such a complication occurs, measures to prompt identification and correction should be taken. In addition, if surgical approach is deemed necessary it must be carefully planned based on a thorough clinical and imaging evaluation, in order to avoid unsuccessful treatment attempts.

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