



## Bilateral massive nasal synechiae: a rare presentation of a common condition

<sup>1</sup>Andrés Alvoa, <sup>2</sup>Cecilia Sedanob, <sup>1</sup>Christian Olavarríaa

<sup>1</sup>Servicio de Otorrinolaringología, Hospital Clínico Universidad de Chile. Santiago, Chile.

<sup>2</sup>Facultad de Medicina, Universidad de los Andes. Santiago, Chile.

### Abstract

Intranasal synechiae are a relatively common finding in an otolaryngology practice. Frequently, the scar is focal and due to mucosal trauma. We present an unusual case of massive bilateral intranasal scarring, with negative etiologic studies except for the antecedent of an old nasal fracture. Differential diagnoses are discussed, as well as its management.

A 41-year-old male consulted with a long-term history of rhinorrhea, facial pain and nasal congestion. Physical examination revealed complete bilateral obstruction of the nasal fossae with fibrous synechiae.

We performed an endoscopic microdebrider-assisted resection of the synechiae connecting the septum to the lateral nasal wall, up to the choanae and soft palate. The posterior margin of the bony septum was resected to increase the transversal area at the choanae. Silicone stents were placed postoperatively to minimize the formation of new synechiae.

Massive bilateral scarring is infrequent and several differential diagnoses must be considered. Its management is difficult and not well standardized. Microdebrider-assisted resection may be considered in these cases.

## Introduction

There are several conditions affecting the nasal mucosa that may lead to granulation, ulceration and eventually scarring with formation of synechiae between structures of the lateral wall and the septum, including infectious (1,2), autoimmune/granulomatous (3-5) and traumatic (6-8) etiologies (Table 1).

Infectious	Rhinoscleroma Rhinosporidiosis Leishmaniasis Other: Mycobacteria ( <i>M. tuberculosis</i> , <i>M. leprae</i> ), Syphilis, Histoplasmosis
Autoimmune and Non-infectious granulomatous	Wegener's granulomatosis Cicatricial pemphigoid Epidermolysis bullosa acquisita Sarcoidosis
Traumatic	Accidental Iatrogenic ( <i>surgery, intranasal catheters, packing, etc.</i> )
Others	Cocaine abuse Physical and chemical burns Radiotherapy Natural Killer/T cell lymphoma-nasal type Intranasal eosinophilic angiocentric fibrosis

Table 1. Conditions affecting the nasal mucosa that may lead to granulation, ulceration, masses and eventually synechiae formation

Among these, the most frequent are probably secondary to iatrogenic trauma to the mucosa, which can occur in various otorhinolaryngologic procedures such as functional endoscopic sinus surgery (FESS), septoplasty, turbinoplasty, fracture reduction or nasal packings.

Although usually traumatic synechiae formation is limited to a few scars that can be managed conservatively or with in-office resection, they can produce chronic rhinosinusal symptoms and tend to recidivate after treatment. In inflammatory synechiae, symptoms can be more severe and progressive, and extend outside the mucosa causing nasal deformity.

Eventually, this scar tissue may occupy almost completely the nasal cavity and choanae, obstructing airflow and efficient mucous drainage. In our experience, this situation is very uncommon, and not well reported in the literature. Consequently, its diagnosis and management is not standardized.

## Case report

A 41-year-old Peruvian male presented at our otolaryngology service with a long-term history of mucous rhinorrhea, facial pain and nasal congestion. He worked in ecotourism, had no history of exposure to chemicals, drug abuse, nor medical illnesses and was otherwise asymptomatic. The only relevant antecedent was a nasal fracture that was managed with closed reduction and nasal packing, at the age of 16.

Physical examination revealed complete bilateral obstruction of the nasal fossae with fibrous synechiae, which did not allow passage for the nasal endoscope (Fig. 1). Sinonasal computerized tomography (CT) showed soft tissue adhesions occupying both nasal cavities and inferior meatus, plus bilateral maxillary retention cysts (Fig. 2).

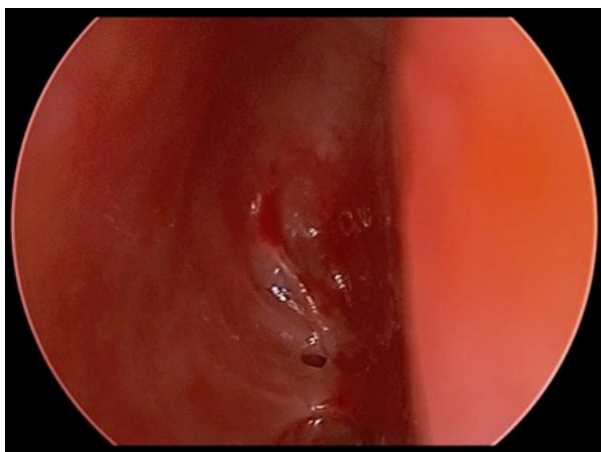


Figure 1. Endoscopic view of the right inferior meatus, with fibrous tissue occluding passage posteriorly



Figure 2. Coronal paranasal CT showing multiple soft tissue bands between the inferior meatus to the septum and lateral nasal wall, and bilateral maxillary retention cysts

Autoimmune, microbiologic and histopathologic tests were performed, considering the probable etiologies previously mentioned. The only positive findings were a culture for coagulase-negative Staphylococci, and anti-nuclear antibodies in a 1:80 dilution. Anti-neutrophil cytoplasmic antibodies were also negative. The biopsy only showed non-specific inflammation and fibrosis, without evidence of fungi, mycobacteria, granulomas, vasculitides or malignancies.

Treatment alternatives were discussed with the patient, who was warned that there was no etiologic diagnosis, and that synechiae could recidivate after surgery.

Finally, endoscopic surgery was performed to restore nasal airway patency. We chose to leave sinus surgery for a second instance, as the retention cysts had no preemptory surgical indication and ostiomeatal obstruction by post-surgical synechiae could worsen the symptoms.

Intraoperatively, under general anesthesia, the nasal mucosa was infiltrated with 1:200,000 epinephrine and 2% lidocaine. Then, nasal synechiae between the inferior turbinate and the anterior septum were incised with a #15 blade. Then, the turbinate was lateralized with a Freer elevator and synechiae extending posteriorly were removed using a microdebrider (Fig. 3a). This part was especially difficult as the anatomy was distorted and the airway was completely obstructed, but using the nasal floor, septum and the already liberated portions of the inferior turbinate as guidelines allowed us to securely follow a proper direction.

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Bleeding was moderate, probably due to the replacement of the normal mucosa with fibrosis. Upon reaching the choanae, we realized that was also obstructed by a fibrous membrane (Fig. 3b), which was carefully debrided taking care to avoid damage to the Eustachian tube and soft palate.

To improve results, the posterior margin of the bony septum was resected with Kerrison rongeurs (Fig. 3c), to further enhance the cross-sectional area of the choanal opening into the nasopharynx. Adequate hemostasis was achieved with gauzes soaked in a vasoconstrictor solution.

Finally, we stented the recanalized nasal fossae with silicone tubes that extended up to the choanae and silicone plaques applied to the septum, that were removed at 6 and 10 days, respectively. He was discharged on oral antibiotics while the stents were in place, and later was instructed to use nasal lavages as needed.

The patient evolved favorably, and 45 days later he had permeable airways with no signs of atrophic rhinitis (Fig. 3d). His quality of life improved considerably, with better breathing and less snoring than prior to surgery. Nasal patency was still conserved at 18-month follow-up, but a slightly hyponasal voice developed due to partial synechiae and stenosis between the soft palate and the torus tubarius (Fig. 3e-f), without any other symptoms.

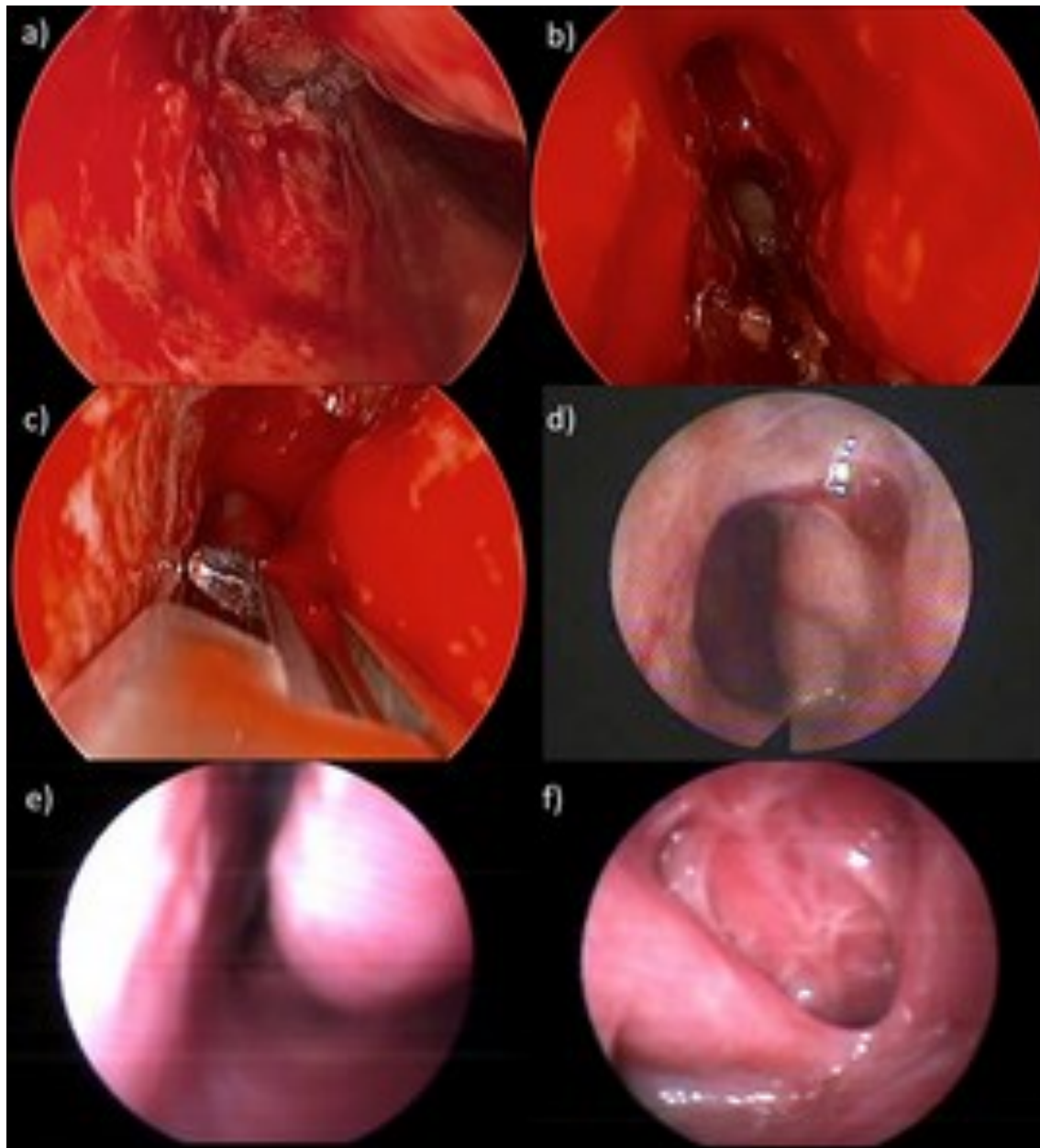


Figure 3. a) Microdebrider-assisted resection of nasal synechiae on the left nasal fossa; b) Initial opening of the fibrous obstruction of the left choana; c) Partial resection of the posterior margin of the bony septum using a Kerrison rongeur; d) Nasofibrosopic appearance of the left nasal fossa 45 days after surgery; e) Patent left nasal cavity at 18-month follow-up; f) Recurrent synechiae between the torus tubarius and the soft palate at 18-month follow-up

## Discussion

Nasal synechiae is not an uncommon problem in rhinology, but information in the literature is diffuse and usually addressing prevention after FESS or other procedures.

A systematic approach to the patient with significant intranasal scarring can enhance the diagnostic precision, and rule out potentially treatable conditions. When there is no traumatic explanation, another etiologies should be considered and studied. In most of these cases damage is not limited to mucosal scarring, and other signs like tumoral growth, cartilage destruction or external compromise can be found, so synechiae are not the only or most prominent feature, as opposed to our case. Besides infectious, autoimmune and traumatic causes, adhesions secondary to radiotherapy, drug abuse, burns, neoplastic and idiopathic (9-10) etiologies should be considered when clinically appropriated.

As our laboratory and pathological studies were mostly negative, and the only positive results were not diagnostic for any specific condition, we proceeded assuming a stable, non-progressive nasal obstruction by synechiae, probably secondary to nasal trauma. The isolated finding of positive anti-nuclear antibodies were interpreted as a non-specific result by us and the rheumatologist, but nonetheless prompts us to keep an active observation for the eventual apparition of autoimmune symptomatology in the future. Most of the infectious diseases associated with intranasal synechiae are uncommon in Chile, but relatively more frequent in other South American countries including Perú, where our patient was born and lived until the age of 16, so special care was taken to try to rule out these etiologies.

If a medically treatable cause is not found or has been already treated, and the patient suffers significant sinonasal symptoms attributable to synechiae, a surgical solution should be offered, warning the patient about the tendency of synechiae to reappear after excision. We have not found a similar case of complete bilateral nasal obstruction by synechiae reported in the literature, and microdebrider-assisted resection proved to be an effective solution to the problem.

Several strategies have been reported to avoid formation of scars after endoscopic sinonasal surgery, including silastic sheets (6) and topical mitomycin (7). We chose to use silicon stenting of the nasal airway, in a similar fashion than after surgery for choanal atresia.

## Conclusion

Intranasal scarring can be explained by several conditions affecting the mucosa, and probably iatrogenic trauma is nowadays the most frequent cause. In massive synechiae, a surgical solution for the nasal obstruction should be offered after discarding specific etiologies different than trauma. Microdebrider-assisted endoscopic resection is a good approach, which yielded satisfactory long-term results in our patient.

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