

# Nasal Septal Mucocele Causing Saddle Nose Deformity

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## Abstract

Nasal septal mucoceles are a rare occurrence, and reports in the current literature are limited. We describe the case of a 73-year-old woman who developed a nasal septal mucocele several days after an episode of angioedema. The lesion was treated with 2 rounds of needle aspiration with antibiotics and the application of silastic splints. There was no recurrence after 1 month, though the patient developed a saddle nose deformity. She ultimately underwent reconstruction with a diced-cartilage dorsal augmentation graft with fibrin glue. We review the learning points of this case and summarize existing literature on this disease.

## Introduction

Mucoceleles are benign, expansile, mucus-filled, epithelial-lined, cystic masses.<sup>1</sup> Although common in the paranasal sinuses, mucoceles of the nasal septum are rare, with only 15 cases reported in the literature, and there are no previous descriptions of saddle nose deformity resulting from these lesions. We describe a nasal septal mucocele causing saddle nose deformity and discuss subsequent reconstruction with a diced-cartilage dorsal augmentation graft with fibrin glue. Written patient consent was obtained for photographs and publication. For a full timeline of the case, see Table 1 and Figure 1.

postnasal discharge, and nasal obstruction starting several days after an episode of angioedema. She was a nonsmoker, and her medical history was significant for hypertension, Raynaud's disease, and Hashimoto's thyroiditis. The patient had no history of nasal trauma or surgery of the nose. She was found to have bilateral swelling of the anterior nasal septum and distension of the midvault. Magnetic resonance imaging was consistent with a nasal septal mucocele (Figure 2). Turbid yellow fluid (9.5 mL) was aspirated from the lesion. Bacterial cultures yielded *Eikenella corrodens* and *Staphylococcus aureus*, for which she was treated with oral amoxicillin-clavulanate. Fine needle aspiration demonstrated acute inflammation and was negative for malignancy.

## Case Narrative

A 73-year-old woman presented with a week of nasal swelling,

The patient then presented to the senior author (MT) a month later with recurrence of the mass. Fluid

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### Author Contributions

David W Chou, MD, provided substantial contributions to the study conception and design as well as acquisition, analysis, and interpretation of data, and drafted the article. Jacob E Hoerter, MD, provided substantial contributions to the acquisition, analysis, and interpretation of data for this work, and revised the article. Charles Shih, MD, provided substantial contributions to the study conception and design, and revised the work. Matthew Tamplen, MD, provided substantial contributions to the study conception and design, and revised the article. All co-authors agree to be accountable for all aspects of the work in ensuring its accuracy and integrity, and approve of this version to be published.

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73-Year-Old Woman with Past Medical History of Hypertension, Raynaud's Disease, and Hashimoto's Thyroiditis, and No History of Nasal Surgery, Trauma, or Other Problems.			
Date	Summaries from initial and follow-up visits	Diagnostic testing, including dates	Interventions
8/13/19	Presented with 1 wk of nasal swelling, paroxysmal nocturnal dyspnea, and nasal obstruction following angioedema episode. Examination notable for midvault distension and bilateral swelling of the anterior nasal septum.	Magnetic resonance imaging revealed nasal septal mucocele (8/23/19); fine needle aspiration biopsy demonstrated acute inflammation, no malignancy (8/13/19); culture of fluid grew <i>Eikenella corrodens</i> and <i>Staphylococcus aureus</i> (8/13/19).	Fine needle aspiration of 9.5 cc turbid yellow fluid. Full course of amoxicillin-clavulanate.
9/04/19	Followed up for recurrence of mass and symptoms.	N/A	Fine needle aspiration of 6 cc. Silastic splints placed bilaterally along septum. Full course of amoxicillin-clavulanate.
9/21/19	No recurrence of mucocele.	N/A	Silastic splints removed.
2/27/20	Patient noticed saddle nose deformity, elects to pursue nasal septal reconstruction.	N/A	Dorsal augmentation with bilateral auricular conchae cartilage graft and fibrin glue (8/24/20).
9/03/20	Excellent aesthetic outcome. No recurrence of mucocele.	N/A	N/A
10/09/20	Excellent aesthetic outcome. No recurrence of mucocele.	N/A	N/A
3/08/21	1 mm depression appreciated at mid-dorsum.	N/A	N/A

Table 1: Relevant medical history and interventions

was again aspirated (6 mL), and silastic splints were placed along the septum bilaterally. She was given a course of amoxicillin-clavulanate, and the splints were removed 2 weeks later. No recurrence of the mucocele was noted after 1 month. However, at this

point she was noted to have developed collapse of the nasal midvault. A year later, the decision was made to pursue dorsal augmentation to improve her saddle nose deformity.

In the operating room, an open rhinoplasty approach was performed without elevation of the septal mucoperichondrial flaps, in an effort to maintain separation between the area of prior mucocele and the soft-tissue envelope. The septum was noted to be destabilized and inferiorly displaced with

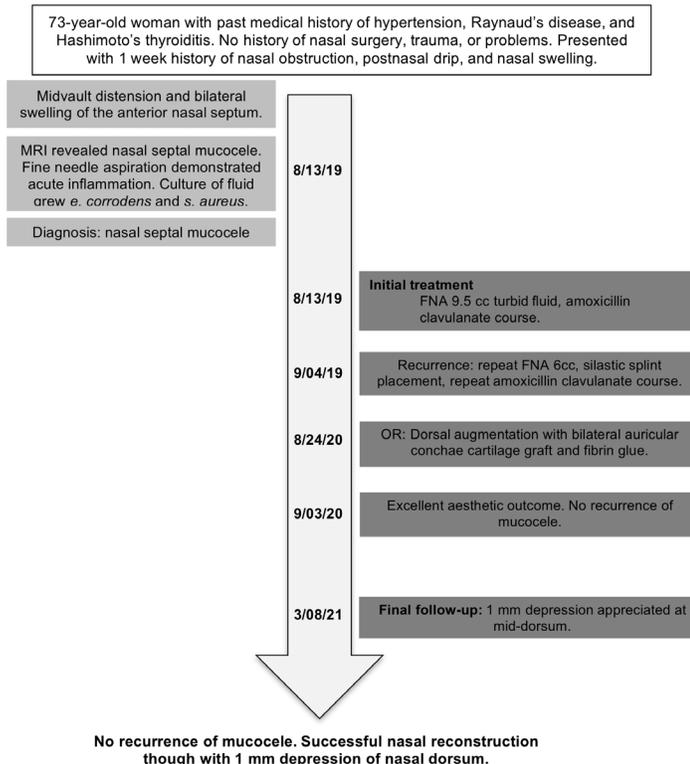


Figure 1: Case timeline from presentation to clinical follow up.

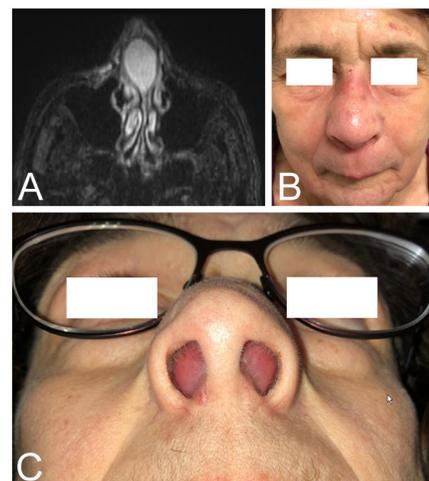
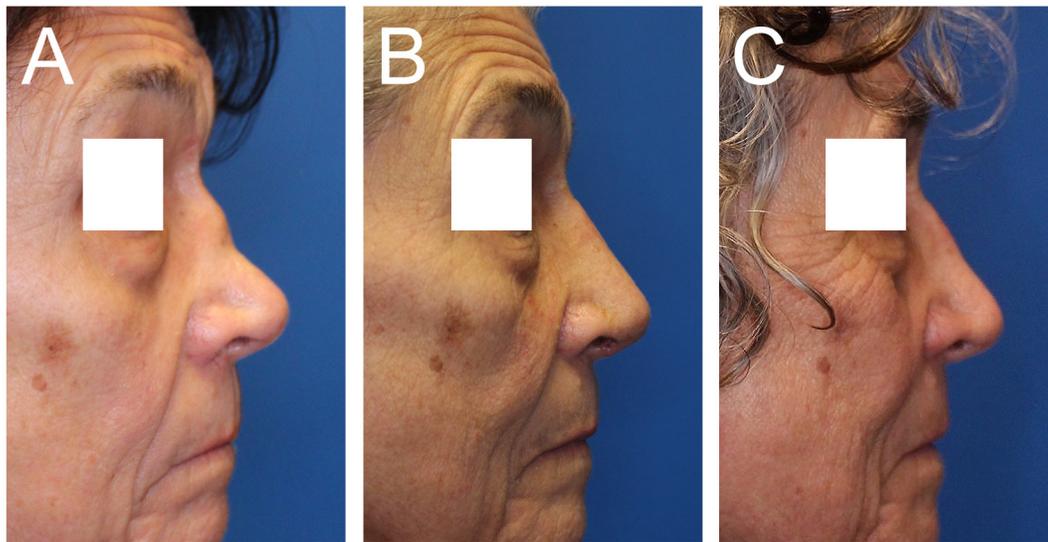


Figure 2: (A) Magnetic resonance imaging demonstrating a cystic mass of the anterior nasal septum. (B) Widening of the nasal midvault and tip. (C) Distension of the septal mucosa into the nasal vestibules bilaterally.

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**Figure 3:** (A) Preoperative and postoperative lateral views at (B) 10 days and (C) 6 months, demonstrating reconstruction of saddle nose deformity. Slight depression of the mid-dorsum was appreciated at 6 months.

Reference	Age	Sex	History of trauma or surgery	Presentation	Treatment	Reconstruction	Resolution (follow-up)
Arrué et al 1998 <sup>6</sup>	36	M	Facial trauma, 10 y ago	Nasal swelling	Endoscopic marsupialization	-	Yes
Gall et al 2002 <sup>7</sup>	62	M	Septoplasty, 20 y ago	Nasal obstruction, pain, anosmia, headache	Endoscopic marsupialization	-	Yes
Hermann et al 2002 <sup>8</sup>	54	F	Sinus surgeries, 9 and 15 y ago	Facial pain	Marsupialization	-	Yes
Lei et al 2004 <sup>2</sup>	37	M	No	Nasal mass and pain	Endoscopic marsupialization	-	Yes (10 mo)
Yilmaz et al 2011 <sup>9</sup>	13	M	No	Nasal obstruction	Endoscopic excision	-	Yes (6 mo)
Taskin et al 2012 <sup>3</sup>	45	M	No	Nasal mass and pain	Endoscopic excision	-	Yes
Aynali et al 2013 <sup>10</sup>	34	M	Rhinoplasty	Nasal obstruction, rhinorrhea	Endoscopic excision	-	Yes (6 mo)
Friedmann et al 2013 <sup>11</sup>	32	M	Nasal fracture, 10 y ago	Nasal obstruction	Open excision via rhinoplasty approach and endoscopic marsupialization	-	Not stated
Liu et al 2014 <sup>12</sup>	37	M	Nasal bone and Lefort, 2 fracture 9 y ago	External nasal swelling, nasal congestion, hyposmia	Open excision (gull wing)	Bony septum overlay	Yes
Lo Casto et al 2014 <sup>13</sup>	49	M	Ogston-Luc procedure, 23 y ago	Nasal obstruction	Endoscopic marsupialization	-	Yes
Lee et al 2015 <sup>4</sup>	52	F	No	Incidental on magnetic resonance imaging, asymptomatic	Marsupialization with microdebrider, no splints	-	Yes (16 mo)
Halawani et al 2016 <sup>14</sup>	20	M	Inferior turbinectomy, 3 mo ago	Nasal obstruction, rhinorrhea, pain, headache	Endoscopic excision	-	Yes (6 mo)
Rawl et al 2019 <sup>1</sup>	57	M	3 septorhinoplasties, incision and drainage of septal hematoma, 35 y ago	Nasal obstruction	Endoscopic excision, splints for 3 wk	-	Yes (3 wk)
Ghorbani et al 2019 <sup>15</sup>	27	M	Septoplasty and turbinoplasty, 5 y ago	Nasal obstruction, headache	Endoscopic marsupialization	-	Yes (2 y)
Fontes Lima et al 2020 <sup>16</sup>	49	M	Maxillofacial trauma, 24 y ago	Nasal obstruction	Endoscopic marsupialization	-	Yes

**Table 2:** Summary of existing literature on nasal septal mucoceles

HA = headache.

intact attachments to the upper lateral cartilages. There was no evidence of septal perforation. Cartilage was harvested from bilateral auricular conchae, diced, and fashioned into a dorsal augmentation graft with fibrin glue. A cap graft of the same material was positioned over the nasal tip.

At follow-up 10 days and 1 month after surgery, the patient had an excellent aesthetic outcome and no evidence of recurrence of the mucocele. At 6-month follow-up, a 1 mm depression at the mid-dorsum could be appreciated (Figure 3). On palpation, the dorsal augmentation graft was otherwise intact and midline. The septum remained intact without evidence of perforation. The patient's nasal obstruction symptom evaluation score was 10, indicating minimal symptoms.

## Discussion

Nasal septal mucoceles are rare, with only 15 cases described in the existing literature (Table 2). Only 2 of these prior patients were women, and all had resolution of symptoms. Most of these cases arose in the setting of prior nasal surgery or trauma, and only 3 idiopathic adult cases exist in the literature.<sup>2-4</sup> Interestingly, our patient had no relevant nasal history, though she did present after an episode of angioedema. Though angioedema is known to affect the skin, oral cavity, and pharyngeal mucosa,<sup>5</sup> nasal involvement would be an unusual manifestation. She also had a history of autoimmune disease but none that classically affect the nasal cavity, such as granulomatosis with polyangiitis or sarcoidosis.

Although saddle nose deformity in the setting of nasal septal mucocele has not previously been described, its occurrence is perhaps not surprising given destabilization of the nasal dorsum with this locally destructive process. Compared to other causes of saddle nose deformity such as syphilis, cocaine abuse, granulomatosis with polyangiitis, and relapsing chondritis, which are typically progressive, it is unclear if the natural history of saddle nose from a septal mucocele would follow a similar course. Given the stability of our patient's examination for a year after development of the nasal deformity, our suspicion is that the area of inflammation at the anterior septum was likely replaced by mature fibrosis at that point. Numerous dorsal augmentation techniques involving both alloplastic materials and autologous tissues have been described to improve the contour of saddle or short noses.<sup>17-20</sup> Diced cartilage grafts with fibrin glue are thought to

provide lasting favorable outcomes in these cases.<sup>21</sup> One challenge in our case was the development of a 1 mm depression at the mid-dorsum at 6 months which was not present immediately after surgery. This could be due to dorsal augmentation graft resorption, further destabilization of the septum at the midvault over time, or insufficient volume of the graft over the inferiorly displaced septum and upper lateral cartilages during surgery.

## Conclusion

Nasal septal mucoceles can be successfully treated with needle aspiration and application of silastic splints. In cases that develop saddle nose deformity and require reconstruction, dorsal augmentation with diced cartilage and fibrin glue is an effective method for reconstruction, though caution should be taken with a destabilized septum.

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