Maxillary Sinus Septation as a Cause of Chronic Rhinosinusitis

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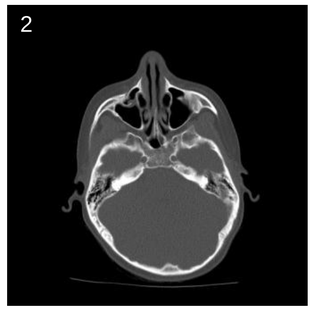
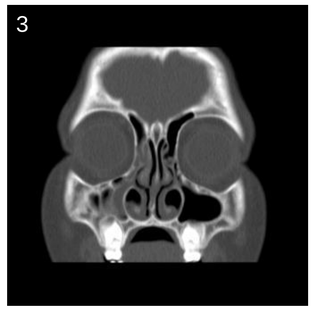
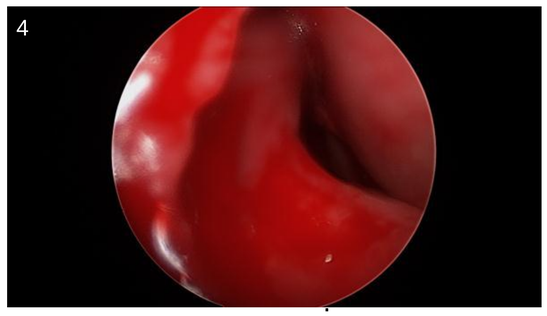




Figures 1, 2, 3: Sagittal, axial and coronal CT views of the complete right-sided maxillary sinus septation in our patient. The coronal view shows the septum and its obstructive relationship to the right maxillary ostio-meatal unit.

Figure 4: This is the view via the right Caldwell Luc approach of the intact intra-sinus septum. Note the minimal space between the edge of the septum and the medial maxillary sinus wall.
Figure 5: This shows the almost completely removed intra-sinus septum on the left margin of the endoscopic image with the now widely open right maxillary sinus septum cavity and posterior sinus wall visible. The suction tip is through the maxillary antrostomy.



Abstract

Chronic rhinosinusitis (CRS) is common and typically multifactorial in its cause. The role of anatomic abnormality in CRS is well-accepted and part of the basis of functional sinus surgery. Maxillary sinus septations (MSS) are also common, but rarely addressed in otolaryngology literature and almost never as a cause of CRS. In this report, we present a novel case of a complete maxillary sinus septation causing CRS, its treatment, and a brief review of the literature.

Introduction

Septations of the maxillary sinus are relatively common but are typically considered to be asymptomatic.[1,2] They are classified as either primary, occurring after tooth eruption, or secondary, occurring after edentulation. The majority of studies concerning MSS are in the oral and maxillofacial surgery literature, relating to the risks and complications of LeForte osteotomy surgery. There is scant mention of MSS in Otolaryngology texts, and rarely related to rhinosinusitis. We report a novel case of a child with a complete unilateral maxillary sinus septation causing obstruction of the ostio-meatal complex (OMC) and resultant chronic unilateral maxillary and ethmoid sinusitis. We also describe treatment with dual approach via Caldwell-Luc and endoscopic maxillary antrostomy.

Case Report

JH is an 8-year-old boy with a history significant for documented multiple environmental allergies. He presented with a 2 to 3 year history of nasal congestion, sinus tenderness and intermittent headache coupled with approximately 8 months of persistent rhinosinusitis symptoms. There was no response to multiple courses of amoxicillin and amoxicillin-clavulanic acid or a 1-week burst of prednisone. Additional treatment with multiple inhaled corticosteroids and antihistamines produced no resolution of symptoms. The patient had no intracranial or ophthalmologic complications of sinusitis.

Sinus computed tomography (CT) performed prior to presentation showed complete opacification of the right maxillary and ethmoid sinuses with left maxillary sinus mucosal thickening and partial aeration. Maxillary sinus irrigation was offered at this time, but the patient and parents opted for continued aggressive medical management with nasal irrigation, steroid and antihistamine nasal spray, and 21 days of clarithromycin antibiotic therapy.

A sinus CT performed at the end of this treatment course demonstrated improved sinus disease, with complete aeration of the left maxillary and ethmoid sinuses, and bilateral sphenoid and frontal sinuses with scattered mucosal thickening. The right ethmoid and maxillary sinuses showed patchy opacification with a complete anterior bony septation in the coronal plane of the right maxillary sinus, associated with apparent obstruction of the right OMC (figure 3). In addition, forme fruste sepatation of the left maxillary sinus was identified that did not apparently interfere with mucocilliary clearance based upon complete response to therapy. The complete right septation was considered a primary cause of the patient's right-sided CRS, so operative management was planned.

The patient underwent a right maxillary sinus antrostomy and right Caldwell-Luc approach with endoscopic takedown of the intramaxillary bony septum. The approach was done in conjunction with a senior oral maxillofacial surgery staff to minimize risk to the unerupted secondary tooth buds. Intraoperative photodocumentation showed the septation causing a greater than 90 percent obstruction of the anterior maxillary sinus (figure 4).

The patient had one episode of acute left maxillary sinusitis following the procedure, but has since been maintained on nasal irrigation and intranasal steroids without further infection over the following 16 months.

Conclusion

Prevalence of MSS based on the number of individual patients who have septa ranges from 21.6 to 66.7 percent.[2,5,8] Most MSS are in adults, and there is scarce literature on primary septa or septa in children. Complete or near complete MSS are rare in all studies. Only one study found in an extensive literature review mentioned MSS as a risk factor for CRS, and all of the patients who had CRS in the study had complete septa.[12]

Our patient did have well-defined CRS, with the necessary signs, symptoms and imaging, and it proved refractory to multiple courses of medical management. Though surgical intervention was warranted, there was no precedent for this particular case. The combined Caldwell-Luc and maxillary antrostomy approach was chosen for maximum exposure without violating the facial structure. Thus far, the result has been a success, but further cases of obstructive MSS would likely require similar consideration and personalized approach to treatment.

Future considerations regarding MSS and rhinosinusitis could include a retrospective imaging study of patients with chronic rhinosinusitis looking for maxillary sinus septation. The rarity of the MSS would likely preclude any prospective treatment study.

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