

Silent Sinus Syndrome in Pediatric Patients: A Case Series and Systematic Review



Introduction

- Silent sinus syndrome is a rare condition characterized by progressive maxillary sinus atelectasis which can ultimately lead to hypoglobus and enophthalmos
- The management and long-term sequelae of this condition are well characterized in adults
- There is limited published literature on silent sinus syndrome in pediatric patients

Aim

- 1) Review pediatric cases of silent sinus syndrome that were treated with endoscopic sinus surgery
- 2) Perform a systematic review of the published literature

Methods and Materials

Institutional Case Series

- A retrospective chart review was performed on cases of endoscopic sinus surgery for patients with a diagnosis of maxillary atelectasis or silent sinus syndrome at a single institution
- Cases were reviewed for clinical presentation, surgical treatment, and outcomes at follow up

Systematic Review

- A systematic review was performed from a comprehensive search of PubMed, Medline, and Google Scholar databases
- The last updated search was performed on September 26, 2025
- Analysis was performed according to PRISMA guidelines. Studies were excluded if they were not written in English or if they included adult patients

Results

Institutional Case Series

- Between 2023 and 2025, four children with silent sinus syndrome were treated with endoscopic sinus surgery at our institution. The mean age at surgery was 9 (range 6-12).
- All had symptoms of nasal obstruction. Two had allergic rhinitis, two had recurrent sinusitis, and one had headaches
- Three patients had no visual symptoms. One patient had a complex ophthalmologic history, including congenital orbital fibrosis with associated strabismus, but was also noted to have enophthalmos with midface hypoplasia
- A maxillary antrostomy was performed on the affected side in all patients. One patient also had a concurrent adenoidectomy and another patient had a concurrent inferior turbinate reduction. There were no post-operative complications
- There was an average of 5.5±6.3 months of post-operative otolaryngology follow-up and an average of 16.2±13.5 months of follow up with any documented provider
- No patient developed progressive ophthalmologic symptoms. All patients endorsed improvement in their baseline sinonasal symptoms. The patient with pre-existing enophthalmos and midface hypoplasia remained stable

Systematic Review

- Twelve published articles (nine single case reports, two limited case series, and one retrospective chart review) were identified in the systematic review, with a total of 102 patients
- The average age was 11.8 (range 3-18). 52 were male
- The most common presenting symptoms were hypoglobus (62%), headache (51%), and nasal congestion (24.3%)
- 36 patients were treated surgically, all with a maxillary antrostomy on the affected side. Eight patients also received more extensive sinus surgery, four received adenoidectomy with or without tonsillectomy, and two received concurrent orbital floor reconstruction.
- There were no reported surgical complications. At follow up, all patients reported improved sinonasal symptoms and orbital symptoms were stable or improved

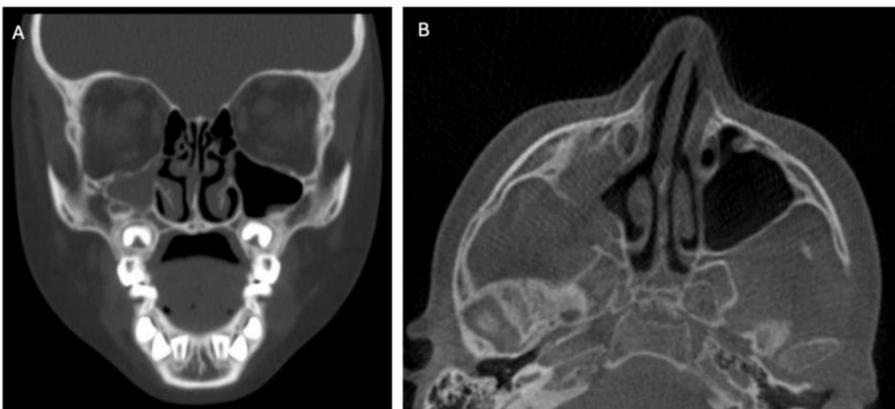


Figure 1. Coronal (A) and axial (B) slices of a CT sinus demonstrating right sided maxillary sinus atelectasis characteristic of silent sinus syndrome

Discussion

- Here we report the presentation, treatment, and outcomes of pediatric silent sinus syndrome, including a case series from our institution as well as a systematic review of the published literature
- All patients that were treated with a maxillary antrostomy did well, without reported complications or progressive ophthalmologic symptoms
- Silent sinus syndrome is rare in pediatric patients; however, early recognition and treatment of this condition may prevent complications of enophthalmos and hypoglobus

Contact

Allan R. Wang, MD
UCLA Head and Neck Surgery
arwang@mednet.ucla.edu

Jessa E. Miller, MD
University of Michigan – Otolaryngology Head and Neck Surgery
jessamil@med.umich.edu

Alisha N. West, MD
UCLA Head and Neck Surgery
awest@mednet.ucla.edu