

# Bilateral maxillary sinus hypoplasia: A Rare Cause Of Chronic Facial Pain

R Dwivedi, N Samanta, K Kishore, D Srivastava, S Agarwal

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## Abstract

Bilateral maxillary sinus aplasia or severe hypoplasia with associated paranasal sinus abnormalities is extremely rare. Only a few cases have been reported in the literature. This rare abnormality should be kept in mind by Otolaryngologists to prevent misdiagnosis and possible complications during endoscopic sinus surgery. This is a presentation of 24- year-old woman with bilateral maxillary sinus hypoplasia who presented to us with chronic facial pain.

## INTRODUCTION

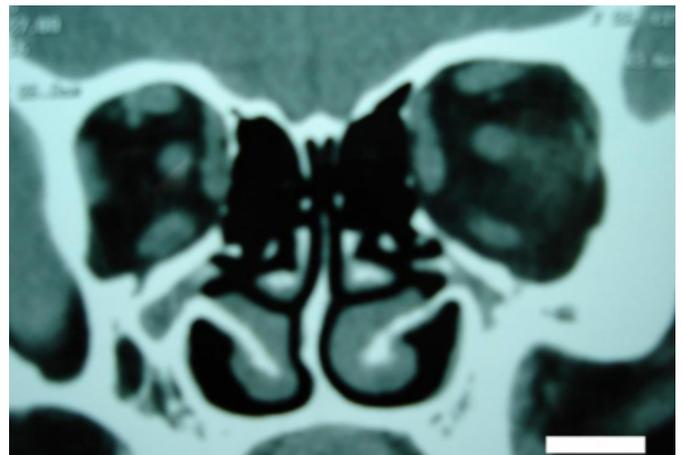
Bilateral maxillary sinus hypoplasia is a rare anomaly, with the prevalence of 0.6 -5% (1). Maxillary sinus hypoplasia (MSH) is classified into three types depending upon embryological development of the sinus and uncinate process. Type I MSH is characterized by mild hypoplasia of the maxillary sinus, normal uncinate process and a well-developed infundibular passage. Type II MSH has significant hypoplasia of the maxillary sinus, hypoplastic or absent uncinate process and absent or pathologic infundibular passage, as in the present case. Type III MSH is characterized by near absence of the uncinate process and cleft-like maxillary sinus (2).

## CASE REPORT

A 24 years old female presented to us with the complaints of chronic facial pain of 3 years duration. It was dull ache kind and use to persist throughout the day and night, however she was able to take 8 hours of sleep in the night. She used to get relieved transiently after taking some pain killers. On clinical examination the nasal septum was deviated towards right, in anterior portion only. Bilateral inferior turbinates were also hypertrophied Left > Right. CT-scan PNS revealed bilateral maxillary sinus hypoplasia with absent uncinate process and infundibulum (Fig 1 & Fig 2). However mucosal thickening was seen in both hypoplastic maxillary antra, indicating it to be the pathology, which was confirmed by patient's response to the antibiotic treatment.

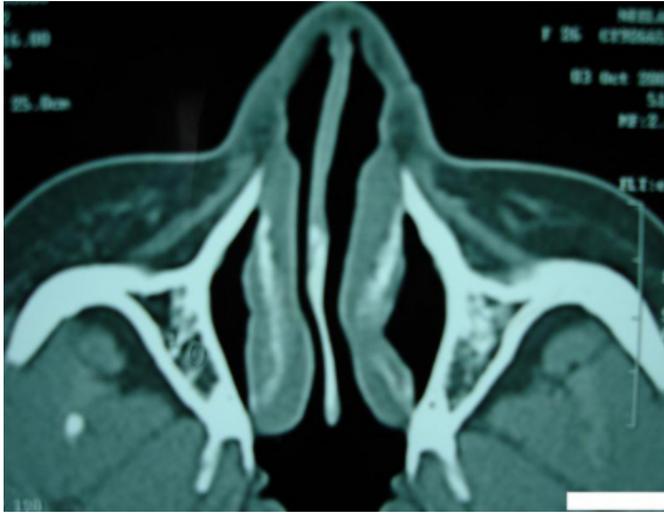
## Figure 1

Figure 1: CT scan PNS coronal view, showing B/L hypoplastic maxillary antra.



**Figure 2**

Figure 2: CT scan PNS axial view, showing B/L hypoplastic maxillary antra.



**DISCUSSION**

The maxillary sinus develops in the fourth month of intrauterine life as a mucosal evagination in the center of the middle meatus. The uncinate process projects medially from the ethmoid bone, forming a groove between it and the lateral nasal wall and the infundibulum. This is the site for maxillary sinus cell or bud. If development is arrested at this stage, aplasia occurs. The sinus extends laterally into the maxillary bone as a result of pneumatization attaining the adult size by mid teens.

At birth the cavity measures approximately 8.2 mm anteroposteriorly, 3.3 mm vertically, and 2.8mm laterally (3) with a volume of 6-8 ml (4). After birth, the sinus expands primarily in an antero-inferior direction which parallels the direction of facial growth. At six years of age, the floor of the maxillary antrum is approximately at the level of the middle turbinate. By 15 years of age the sinus is fully developed (5), with average dimensions of about 34mm x 33mm x 25mm.(6) and volume of 15 ml each (7).

Maxillary sinus hypoplasia occurs more frequently in syndromes of craniosynostosis, osteodysplasia (Melnick-Needles), as well as in cases of Down's syndrome (hypoplasia of the frontal sinus) (8). It is also seen in the cases of thalassemia major when the demand for marrow prohibits sinus pneumatization. Conditions like severe infection, trauma, tumor, irradiation, and congenital first

arch syndrome, arrest the growth of the maxilla resulting in a small (hypoplastic) antrum.

Maxillary hypoplasia leads to low lying orbital floor resulting in the compromise of infundibulum, making it vulnerable for injuries during endoscopic surgery. Hence proper pre op workup of the patients should be done and CT scan of PNS should be the baseline radiological investigation before planning any such surgical procedure, especially in the developing countries where the facilities are meagre.

**CONCLUSION**

Paranasal sinuses are prone to a great diversity of anomalies. It is important for surgeons to be aware of variations that may predispose patients to increased risk of intraoperative complications and help avoid possible complications and improve success of management strategies. CT is an excellent cross-sectional imaging technique that is used to map sinus anatomy prior to surgical intervention to limit morbidity.

**CORRESPONDENCE TO**

Dr. Nirmalya Samanta Dept. of Otolaryngology & Head-Neck Surgery King George's Medical University, Lucknow, India- 226007 +91-0522-2361604, +91-0522-23655539, +91-9415181078 E-mail: raghav\_dwivedi@rediffmail.com

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**Author Information**

**Raghav C. Dwivedi**

Senior resident, Department of Otolaryngology and Head Neck Surgery, King George's Medical University

**Nirmalya Samanta**

Resident, Department of Otolaryngology and Head Neck Surgery, King George's Medical University

**Kaushal Kishore**

Resident, Department of Radiodiagnosis, King George's Medical University

**Devesh Srivastava**

Practicing ENT surgeon

**Satya P. Agarwal**

Professor, Department of Otolaryngology and Head Neck Surgery, King George's Medical University