

## Case Report

### Silent sinus syndrome

M.Sonbolestan MD\*, M.Rogha MD\*\*, M.Amiri Davan MD\*\*

#### ABSTRACT

Silent sinus syndrome (SSS) is a rare clinical condition. In this report, we are presenting a 58 years old woman with chief complain of right global pain. All ophthalmic examinations were normal. In CT-scan of para nasal sinuses right maxillary sinus volume was decreased but she had no sinonasal symptoms.

**S**ilent sinus syndrome (SSS) is a rare clinical presentation in both fields of otolaryngology & ophthalmology. This is characterized by enophthalmos, ipsilateral atelectatic maxillary sinus, and no positive history referable to the nose and paranasal sinuses. Since "silent sinus syndrome" is a very rare finding, it seems wise to present this case.

#### Case report

The patient, a 58 years old female was initially referred to an ophthalmologist with the chief complain of right globe pain, exacerbated by upper respiratory tract infections. In the ophthalmic exam, nothing was found except of a moderate enophthalmos in the right globe (Figure 1).

Movements of the globe, visual acuity, slit lamp exam, and fundoscopy were all normal.

The remarkable point elicited from coronal CT-scan of paranasal sinuses was decreased volume of right maxillary sinus to almost half of the left one (Figure 2), while there was no declaration of sinonasal symptoms by the patient. She had not also mentioned any positive history of facial trauma, surgery, or any other sinus disease. Diagnostic nasal endoscopy, was unremarkable.

#### Discussion

The entity of "Silent sinus syndrome" is attributed to those patients with enophthalmos and ipsilateral atelectasis of maxillary sinus, despite of any sinonasal symptoms<sup>1</sup>.

Although elusive, based on pathophysiologic



**Figure 1.** Coronal sinonasal view, showing maxillary sinus hypoplasia.

point of view, obstruction of ostimeatal complex of the involved sinus leads to an increasing negative pressure within the sinus cavity which will remodel the floor of the orbit after a while by pulling it downward. So it provides more room in the orbit for the globe, which presents as "enophthalmos"<sup>2</sup>.

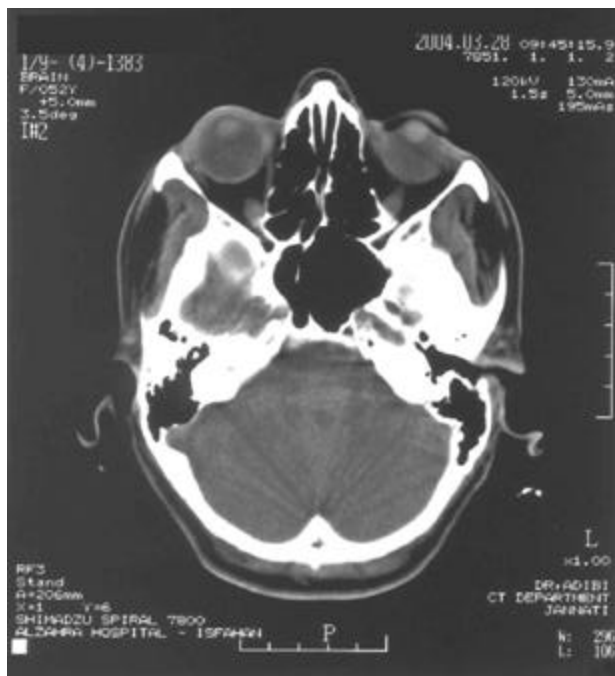
The main etiologic factors for ostimeatal complex (OMC) occlusion are:

1- The presence of infra orbital halar cell (a variation in anterior ethmoidal cells), which can occlude the

\* Associate Professor, Department of Otolaryngology-Head & Neck Surgery, Isfahan University of Medical Sciences, Isfahan, Iran.

\*\* Assistant Professor, Department of Otolaryngology-Head & Neck Surgery, Isfahan University of Medical Sciences, Isfahan, Iran.

Correspondence to: Dr. Mehdi Sonbolestan, Department of Otolaryngology-Head & Neck Surgery, Isfahan University of Medical Sciences, Isfahan, Iran.



**Figure 2.** Axial sinonasal view, showing enophthalmia in left side.

sinus ostium.

- 2- Congenital hypoplasia of maxillary sinus, that makes the sinus ostium more prone to occlusion.
- 3- Occlusion by inspissated mucous or polyp in the middle meatus.
- 4- ateralized middle turbinate, which exerts a compressible effect on the OMC.

## References

1. Vander Meer J, Harris G, Toohill R. The silent sinus syndrome. *Laryngoscope* 2001;111:975-8.
2. Boyd J, Yaffee K, Holds J. Maxillary sinus atelectasis with enophthalmos. *Ann Otol Rhinol Laryngol* 1998;107:34-9.
3. Scharf KE, Lawson W, Shapiro JM, Gannon PJ. Pressure measurements in the normal and occluded rabbit maxillary sinus. *Laryngoscope* 1995 Jun;105(6):570-4.

In an experimental study, the maxillary sinus ostia of white rabbits were intentionally occluded<sup>3</sup>.

Initially, after 412 minutes, the intrasinus pressure increased, while, by more time(20-50 minutes), a negative pressure was determined within the sinus cavity<sup>1,3</sup>. The initial positive pressure has been due to fast penetrance of Co2 from the vessels into the sinus space, but the secondary negative pressure, has been the result of more slow absorption of intrasinus air by the mucosal lining<sup>3</sup>.

A durable negative pressure within the sinus cavity activate the osteoclasts which in turn will lead to thinning of the sinus walls. Therefore, the prominent effect of this mechanism would be on the thinnest sinus wall (the orbital floor), via downward traction of it. This, eventually, will reposition the orbital floor, which, not only enhance the OMC obstruction, but also, as mentioned earlier, it will enlarge the orbital room for the globe that will presents as "enophthalmos".

To counteract the pathophysiologic mechanism of the defect, it is essential to aerate the sinus cavity. This is now available by endoscopic procedures to eliminate the occlusion of OMC.

Another method is fenestration of the maxillary sinus through inferior meatus<sup>2</sup>.

In the case of sever enophthalmos, reconstruction of orbital floor is also mandatory by titanium micro-mesh or conchal cartilage<sup>2</sup>.