**Endoscopic Treatment of Silent Sinus Syndrome with Dramatic Resolution**

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**ABSTRACT**

**Introduction**

Chronic maxillary atelectasis (CMA), also known as silent sinus syndrome, is a rare clinical entity characterized by gradual but progressive collapse of the orbital floor and maxillary sinus walls. Montgomery first described silent sinus syndrome in 1964. Since then, several authors have proposed that the causing incite of silent sinus syndrome is hypoventilation of an air filled maxillary sinus due to obstruction of the ostiomeatal complex. This hypoventilation results in a negative pressure gradient within the sinus that produces accumulated secretions and chronic inflammation. This negative pressure gradient results in maxillary atelectasis and sinus wall collapse.

Clinically, silent sinus syndrome is characterized by painless facial asymmetry and unilateral enophthalmos and hypoglobus. Vision and ocular movements are unaffected, and sinus pain and pressure may or may not be present. The onset of symptoms is usually gradual and progressive, but can be rapidly progressive due to sudden collapse of the maxillary sinus. The diagnosis is supported by clinical findings on ocular measurements and endoscopic sinonasal examination. These may include edema and closure of the ipsilateral maxillary sinus. CT visualization of the air-fluid levels and mucosal thickening. Along with obstruction of the maxillary sinus ostium. Atelectatic modulations of the maxillary sinus walls with reduction of maxillary sinus volume is seen, accompanied by inbowing and inferior bowing of the orbit. Orbital floor reconstruction is performed for patients with diplopia or severe cosmetic deformity. In performing FESS on patients with silent sinus syndrome, great care must be taken to avoid the globe, which is in a lower position due to inferior bowing of the orbital floor. Disease progression is arrested after FESS alone, with development of further deformity.

In this article, silent sinus syndrome is described in a young woman complaining of right maxillary sinus pressure who was found to have chronic sinusitis, chronic right maxillary atelectasis and ipsilateral enophthalmos. We highlight the dramatic, spontaneous resolution of the bony changes in the maxillary sinus through FESS-induced aeration of the sinus alone.

**INTRODUCTION**

Enophthalmos due to maxillary atelectasis, a condition also referred to as chronic maxillary sinus syndrome (CMAS) or silent sinus syndrome, is a rare clinical entity seen by both otolaryngologists and ophthalmologists. This syndrome is characterized by hypoglobus due to gradual but progressive collapse of the orbital floor and maxillary sinus walls. Monte have first described silent sinus syndrome in 1964. Since then, several authors have proposed that the inciting cause of silent sinus syndrome is hypoventilation of an air-filled maxillary sinus due to obstruction of the ostiomeatal complex. This hypoventilation results in a negative pressure gradient within the sinus that produces accumulated secretions and chronic inflammation. This negative pressure gradient results in maxillary atelectasis and sinus wall collapse.

The patient did well following surgery and reported improved sinus aeration and significantly reduced symptoms. Sinonasal endoscopy performed at her routine follow-up visit demonstrated a widely patent right maxillary sinus and a persistent inward bulge of the posterior wall of the right maxillary sinus. Similar endoscopy at her six-month visit demonstrated again a widely patent maxillary sinus but a resolution of the posterior wall bowing. Routine post-operative CT imaging obtained six months following surgery showed normal aeration of the right maxillary sinus and confirmed the dramatic resolution of the osseous changes of the right posterior maxillary sinus wall.

**CASE PRESENTATION**

A 28-year-old female was being followed for mild chronic sinusitis at the Department of Otolaryngology-Head & Neck Surgery at the University of California, San Francisco. She complained of pressure and pain referable to her right maxillary sinus. She had also noticed her right eye sinking with an associated pressure sensation. Physical examination demonstrated right-sided enophthalmos and mild hypoglobus. Visual acuity was grossly normal. CT and MRI demonstrated right maxillary opacification as well as bilateral mucosal thickening of the ethmoid sinuses.

The orbital floor and posterior maxillary wall were deformed with resultant ipsilateral enophthalmos.

**DISCUSSION**

In this article, silent sinus syndrome developed in a young woman followed for chronic sinusitis. Spontaneous enophthalmos developed in the setting of an obstructed sinusal outflow tract, and was associated with orbital pressure and pain. The patient was taken to the operating room for FESS. The remarkable component of our post-operative course was the spontaneous resolution of the bony involution of the posterior wall of the maxillary sinus, which resolved after about six months post-operatively. She was found on post-operative CT scan to have fully restored maxillary sinus architecture. We conclude that the atelectasis of the bony sinus walls resolved spontaneously from maxillary sinus decompression alone. Specifically, resolution of the posterior maxillary sinus wall involution has not been reported. Thus, the osseous changes of SSS can spontaneously resolve after FESS-induced aeration alone and without direct manipulation.

**REFERENCES**

14. Babinski et al also reported 3 cases of SSS whose enophthalmos was completely resolved without orbital floor repair.

**CONCLUSIONS**

This case highlights the spontaneous resolution of the bony changes seen in chronic maxillary atelectasis – essentially the involution of the posterior maxillary sinus – through FESS-induced aeration of the sinus alone. This calls into question the need for reconstructive repair of the orbital floor.

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