CASE STUDY

Silent sinus syndrome in children
Síndrome del Seno Silente en Niños

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Case report

A 10-year-old girl, with no relevant medical history, presented to our Hospital with complaints of headache. The patient reported no nasal congestion, nasal drainage, or facial pressure. Physical examination showed a slight facial asymmetry with hypoglobus and enophthalmos of the right eye. A Computed Tomography (CT) scan of the sinuses showed a hypoplastic right maxillary sinus with complete opacification (Fig. 1A). Downward bowing was evident in the right orbital floor. The remainder of the scan was unremarkable. A right endoscopic maxillary antrostomy was performed and intraoperative findings showed a hypoplastic right maxillary sinus with thick mucus.

Postoperative recovery progressed uneventfully. Six months after surgery, the facial asymmetry had improved and the CT showed a permeable right maxillary antrostomy and well aerated right maxillary sinus. The right maxillary sinus size has improved, despite continuing to be hypoplastic (Fig. 1B and Table 1).

Discussion

The silent sinus syndrome is an uncommon disease process, described as the progressive development of painless facial asymmetry, unilateral enophthalmos and hypoglobus secondary to the occupation and chronic atelectasis of the maxillary sinus without nasal or sinus symptoms.1-3 The majority of reported cases in literature describe this occurrence in adults, usually in their third to fifth decade of life.4-6 Although rare, children can also be affected.7,8

Maxillary sinuses are present at birth but do not fully developed until 15–18 years of age. The final pneumatization occurs in the inferior direction with the eruption of the upper teeth.9 The pathogeny of the syndrome is uncertain. According to the current hypotheses, the silent sinus syndrome is caused by maxillary sinus hypoventilation due to the obstruction of the osteomeatal complex.3 Progressive gas reabsorption produces negative pressure with subsequent thinning an bowing of the maxillary sinus walls, sinus volume retraction an reduction. The syndrome appears to affect males and females equally.1 It is thought that adult silent sinus begins in childhood but is only identified when the process increases in severity.7,8

The diagnosis of silent sinus syndrome was based on the clinical and radiological findings. These clinical signs are not pathognomonic and a differential diagnosis must be carried out with chronic sinusitis, osteomyelitis, malignancies, orbit traumatism, Wegener’s granulomatosis and systemic disease (scleroderma).3 Even though the suspicion is clinical, diagnosis is achieved by means of radiology. CT is the reference test and usually shows internal retraction of the sinus walls, infundibulum occupation and maxillary sinus opacification.6 The orbital floor is thinned or completely absent, and orbit contents are caudally displaced due to orbit floor defect.8 Endoscopic maxillary antrostomy

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and uncinectomy has replaced the Caldwell–Luc procedure as the treatment approach of choice. The orbital floor reconstruction is controversial. Little has been published about the management of silent sinus syndrome in children. The reduction in enophthalmos observed in adults patients suggests that children through maxillary sinus aeration could benefit from a two-stage approach that delays orbital floor augmentation. In children, due to the lateral growth of the maxillary sinus, uncinectomy may be more demanding as the uncinated process may be more medial to the lamina papyracea compared to adults.\(^2,8\)

We describe in this report a 10-year-old girl with silent sinus syndrome who underwent endoscopic sinus surgery for maxillary antrostomy. Before surgery, one of the main doubts of the family, was about the recovery of facial asymmetry and hypoplastic maxillary sinus after surgery. These clinical reports show that restoring aeration of the maxillary sinus allows spontaneous improvement of maxillary sinus size and improvement in facial asymmetry.

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**Conflicts of interest**

None.

**Table 1** Measurements of maximum maxillary sinus dimensions.

<table>
<thead>
<tr>
<th>Maxillary sinus</th>
<th>Preoperative Right</th>
<th>Postoperative Right</th>
<th>Ratio</th>
<th>Preoperative Left</th>
<th>Postoperative Left</th>
<th>Ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>Height (mm)</td>
<td>13.8</td>
<td>17.1</td>
<td>0.81</td>
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<td>0.99</td>
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<tr>
<td>Width (mm)</td>
<td>17.9</td>
<td>22.2</td>
<td>0.81</td>
<td>27.2</td>
<td>27.7</td>
<td>0.98</td>
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**References**