

ECTOPIC INFRAORBITAL NERVE IN A MAXILLARY SINUS SEPTUM: ANOTHER POTENTIALLY DANGEROUS VARIANT FOR SINUS SURGERY

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We report on two patients with ectopic infraorbital nerve and canal located in a maxillary sinus septum. This very rare anatomic variation may possibly generate complications during sinus surgery if it passes unnoticed during the preoperative CT work-up.

Key-word: Paranasal sinuses, Anatomy

Various paranasal sinuses anatomic variants have been described in the literature. Detailed knowledge of these variations is critical for surgeons performing functional endoscopic sinus surgery (FESS) and for the radiologist performing the preoperative work-up, in order to increase management outcome and to avoid potential complications. We describe two patients with a very rare undescribed yet anatomic variation that could potentially be dangerous during sinus – mainly FESS- surgery which consists in a bony septum crossing the upper part of the maxillary sinus and the infraorbital nerve being located within this septum.

Case reports

The first patient is a 61-year-old lady (Fig. 1,2) complaining of non specific symptoms of nasal obstruction. A CT scan of the sinus was performed, with no signs of chronic sinusitis but it showed in the right maxillary sinus a septum crossing its anterior-superior portion (Fig 1B,C, Fig 2). The infraorbital nerve is located in this septum .

The second patient is a 72-year-old male admitted in our emergency department with suspicion of cerebral infarction. The sinus findings are incidental but showed bilaterally a septum in the anterior and superior part of the maxillary sinus with an ectopic infraorbital nerve located in the septum (Fig.3).

Discussion

FESS is one of the most commonly performed procedures by otolaryngologists. However, the procedure has many potential com-

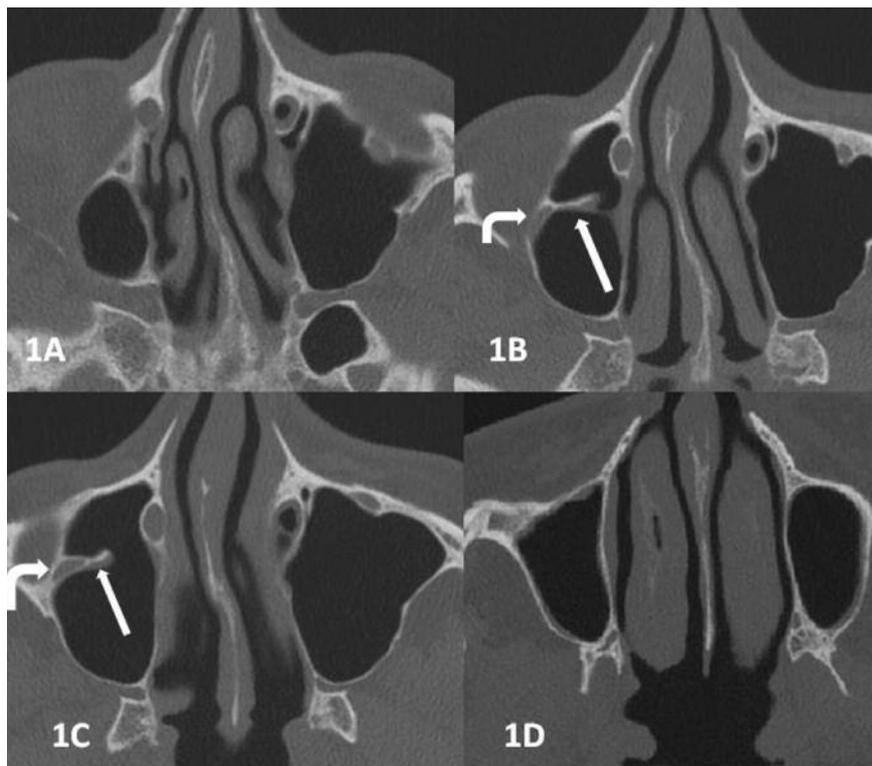


Fig.1. — Axial CT scan slices, from top to bottom. A. Upper part of the maxillary sinus. B,C, slightly below A: the septum (straight arrow) starts from the lateral sinus wall. Within it the infraorbital nerve (curved arrow) . D: lower portion of the sinus , without septum. CT parameters in both cases were the following: 64 slices MDCT , 0625 mm thin slices, 100 kV, 50 mA resulting in patient 1 in a CTD/vol of 2,74 mGy, DLP 37,5 mGy-cm and 1,5 mSv

plications. It is essential that the anatomic sinonasal variations be clearly described in all sinonasal CT imaging.

The preoperative work-out before FESS has three goals: to describe the signs of sinus inflammation and possible causes, such as odontogenic granulomas; to show the anatomic variations that can disturb

sinonasal air circulation; and finally to depict the “ dangerous ” anatomic variations, helping thus the surgery avoiding unnecessary surgical problems. Those variants are numerous, a few important ones being for example defect in the medial orbital wall, medial septum of the sphenoid sinus inserted on the carotid artery canal, abnormal location of the anterior ethmoidal artery in the ethmoid sinus, hypoplastic maxillary sinus, and septa inside the maxillary sinus with an abnormal ostium (1 and 2).

Anatomic variation of the infraorbital nerve is usually minimal. Testut

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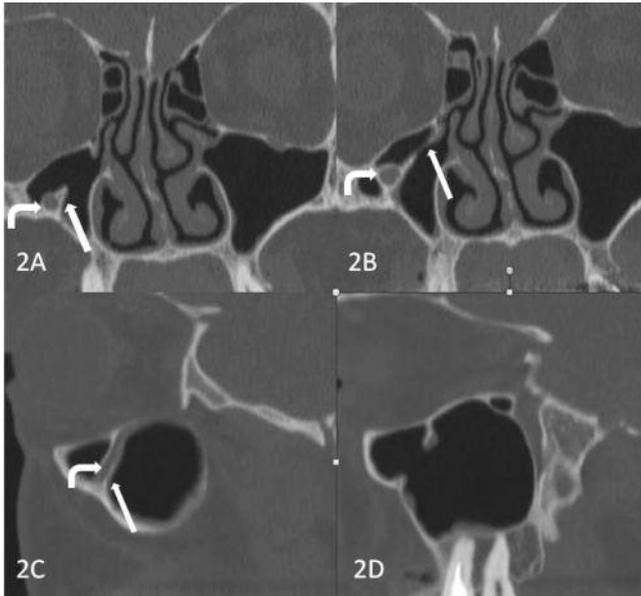


Fig. 2. — Coronal and sagittal slices . A, B: coronal slices: the septum (straight arrows) crosses the lateral part of the sinus and within it the orbital nerve (curved arrow). C and D: sagittal slices through the right maxillary sinus.

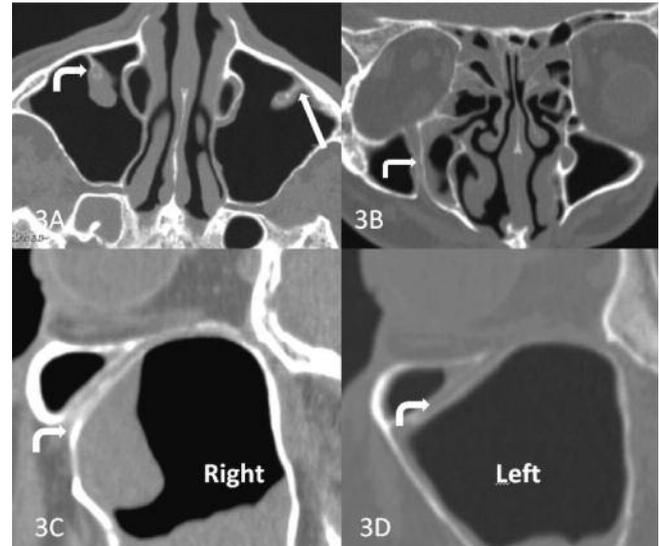


Fig. 3. — CT scan. A: Axial slice with bilateral upper maxillary sinus septa (arrow) with ectopic nerve (curved arrow) .B: Oblique coronal view through the septum and nerve on the right side (curved arrow). C: sagittal slice through septum and nerve on the right side. D: same aspect on the left . CT scan parameters were the same as in patient 1 (Fig. 1, 2) with a resulting 1,4 mSev

describes a dehiscence of the bony infraorbital nerve canal containing the nerve, with no interposing bony structure between the nerve and the sinus mucosa (3). One case of right infraorbital nerve canal passing within the inferior lamella of an infraorbital ethmoid (Haller's) cell was also described (4), but meandering infraorbital nerve and canal in a maxillary sinus septum do not seem to have been described (5).

Septa in the maxillary sinus are present in about 16% of the maxillary septa (6), most often in atrophic maxillary sinuses (27%). They are complete in 0.5%, incomplete on the anterior wall in 5% and incomplete on the sinus floor for the other cases. Detailed information about location, morphology and height of the septa is clinically relevant to help avoiding complications during sinus surgery (7).

In the presented cases, the septum is incomplete with an oblique anterosuperior location (Fig. 2C, D).

It contains an ectopic infraorbital nerve and canal which do not follow the inferior orbital wall up to the orbital ridge but dive into the septum. Any surgical attempt to break down this septum would cause infraorbital palsy, with permanent soreness and paresthesias in the area, a complication relatively frequent after facial trauma with fracture of the orbital floor, or after malar augmentation procedures for esthetic purposes. It is thus important for the radiologist to mention it in any sinonasal preoperative report and for the surgeon to be aware of any anatomic variant.

Conclusion

We describe two patients with ectopic location of the infraorbital nerve in a maxillary sinus septum. This very rare anatomic variation should be described in the report of any sinonasal preoperative CT scan or MRI to avoid sectioning the nerve

during FESS or other maxillary sinus surgery.

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