

## Uncommon Optic Nerve Course in the Sphenoid Sinus

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### ABSTRACT

We present a case of bilateral, free optic nerves passing through the sphenoid sinus associated with bilateral anterior clinoid process pneumatization, in addition to bilateral vidian nerves protrusion with pterygoid process pneumatization.

**Key words:** Functional endoscopic sinus surgery, optic nerve, sphenoid sinus

ملخص البحث:  
يعرض الباحثون حالة لأعصاب بصرية حرة تمر من خلال الجيب الوتدي بنتوء أمامي للحجيرات الهوائية بالإضافة إلى نتوء فيديوس الأعصاب الثنائي مصحوبا بزائدة فطرية للحجيرات الهوائية.

### INTRODUCTION

The optic nerve (ON) has a close relationship with the sphenoid sinus, but its position can be changed due to the degree of sinus pneumatization. This may cause a protrusion or even dehiscence into the sphenoid sinus. During endoscopic sinus surgery, it is vital that surgeons are aware of these possible variations as this vital structure may not be well protected.<sup>[1]</sup>

### CASE REPORT

We report a case of 47-year-old man who presented to the Department of ENT with a history of bilateral sinonasal polyposis. We discovered that in the routine preoperative computed tomography (CT) scan, the passage of the ON through the sphenoid sinus was bilaterally associated with the bilateral anterior clinoid process (ACPs) pneumatization, in addition to bilateral vidian nerve (VN) protrusion with pterygoid process (PPs) pneumatization. The patient underwent bilateral functional endoscopic sinus surgery without any intra- and post-operative

complications, and during surgery, we found that the ONs passed freely through the sphenoid sinus without any bony coverage Figures 1 and 2.

### DISCUSSION

A review of literature revealed a number of studies that described the relationship between the type of sphenoid sinus pneumatization and its adjacent neurovascular structures. Delano *et al.* studied 150 CT scans (300 nerves) and found ACP pneumatization in about 4% (13 cases) of the cases, of which 10 cases were with ON dehiscence, and the passage of the ON through the sphenoid sinus was classified as type III, which accounted for only 6% of his cases.<sup>[2]</sup> Sapçi *et al.* studied 100 CT scans and noticed that the ON passed through the sphenoid sinus in 7% (14 cases) of the cases, of which 86% (12 cases) had ACP pneumatization.<sup>[3]</sup> Hewaidi and Omami also studied 300 CT scans and found an association between ACP pneumatization and ON protrusion in 17.7% (53 cases) and an association between PP pneumatization and VN protrusion in 33% (99 cases).<sup>[4]</sup> Sirikci *et al.* studied 92

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**Figure 1:** Coronal computed tomography image of paranasal sinuses showing pneumatization of anterior clinoid process (squares), protrusion and dehiscence of optic nerves (circles), protrusion of vidian canals (arrowheads) and pneumatization of pterygoid process (asterisks)

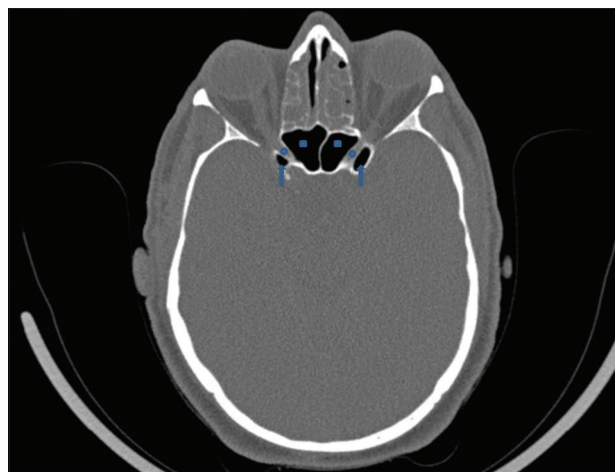
CT scans and found a combination of ACP pneumatization and ON protrusion in 41.5% (38 cases).<sup>[5]</sup>

## CONCLUSION

A preoperative CT scan before functional endoscopic sinus surgery to reveal the anatomy of sinuses will highlight unusual findings and avoid complications, including injury to the ON, which could result in blindness. The degree of sphenoid sinus pneumatization changes depending on its relationship with the adjacent neurovascular structures. When studying the preoperative CT scan, we should be aware of the frequent association between the ACP pneumatization and ON protrusion or dehiscence.

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Nil.



**Figure 2:** Axial computed tomography image of paranasal sinuses showing bilateral pneumatization of the anterior clinoid process (arrows) and bilateral optic nerves (asterisks) inside sphenoid sinus (circles)

## Conflicts of interest

There are no conflicts of interest.

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