



Isolated sphenoid sinus disease: An overlooked cause of headache



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ABSTRACT

Objectives: The aim of this study was to evaluate patients who underwent endoscopic sphenoid sinus surgery for isolated sphenoid sinus disease. We also investigated the impact of sphenoid sinus surgery on headache intensity.

Material and methods: Twenty-one consecutive patients who underwent endoscopic sphenoidotomy for isolated sphenoid sinus disease were included in the study. Diagnosis of isolated sphenoid sinus pathology was based on history, physical examination, and radiologic evaluation. All patients had headache with various localizations. Pre- and postoperative headache intensity of patients was scored using a visual analogue scale (VAS).

Results: The most common location of headache was the vertex (24%). The preoperative and postoperative mean VAS scores for headache were 8.24 ± 0.94 and 2.67 ± 1.49 , respectively. Statistical comparison revealed a significant improvement in headache intensity ($p < 0.01$). Polyps (33.3%) were the most common pathology, followed by inflammation (23.8%).

Conclusions: The most common presenting symptom of isolated sphenoid sinus disease is headache. In this study, we demonstrated that headache induced by isolated sphenoid disease can be relieved by endoscopic sphenoidotomy. Sphenoid sinus disease should be considered in the differential diagnosis of patients presenting with subacute or chronic headache.

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1. Introduction

Isolated sphenoid sinus disease is a rare clinical entity, with a reported incidence between 1% and 3% among patients with paranasal sinus disease (Lawson and Reino, 1997; Metson and Gliklich, 1996; Hnatuk et al., 1994). The deep location of the sphenoid sinus is suggested to make it less accessible to infectious agents (Lawson and Reino, 1997). However, there are many vital structures, including the middle cranial fossa, optic nerve and chiasm, cavernous sinuses, and cranial nerves adjacent to the sphenoid sinus (Wang et al., 2002). Therefore, neglected sphenoid sinus disease may lead to serious complications.

Inflammatory and neoplastic processes may affect the sphenoid sinus. A sphenoid sinus disease is difficult to diagnose with history and physical examination due to the anatomical location of the sphenoid sinus. The signs and symptoms associated with isolated

sphenoid sinus disease may be unclear and nonspecific (Ng and Sethi, 2011). The most common presenting symptom of patients with isolated sphenoid sinus disease is headache, which is reported in 70%–90% of patients (Kim et al., 2008).

In this study, we evaluated patients who underwent endoscopic sphenoid sinus surgery for isolated sphenoid sinus disease. We also investigated the impact of sphenoid sinus surgery on headache intensity.

2. Material and methods

In this retrospective study, we evaluated patients who underwent endoscopic sinus surgery for isolated sphenoid sinus disease. Data collected from the charts of the patients included patient demographics, presenting signs and symptoms, intensity of headache, location of headache, duration of headache, operative findings, radiologic findings, and histopathologic outcome.

Diagnosis of isolated sphenoid sinus pathology was based on history, physical examination, and radiologic evaluation. Patients with persistent symptoms suggestive of paranasal sinus pathology

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underwent radiologic evaluation. This series also included patients whose disease was detected incidentally either by other departments or by the otolaryngology department while investigating other symptoms and pathologies. After a detailed history, all patients underwent a nasal endoscopy using a rigid, 4-mm nasal endoscope or a fiberoptic endoscope. Endoscopic nasal examination findings were noted. All patients underwent computed tomography (CT) for evaluation of the sphenoid sinuses and other paranasal sinuses (Fig. 1). Axial and coronal projections were used to assess sphenoid sinuses. Magnetic resonance imaging (MRI) was performed in patients suspected to have fungal infections or malignancy. Patients who had other sinus involvements or who had tumors extending out of the sphenoid sinus and arising from surrounding tissues were excluded from the study. All patients with intractable headache consulted a neurologist.

All patients underwent endoscopic transnasal or transtethmoid sphenoidotomy in a head-flexed position under general anesthesia. Before the surgery, nasal mucosa was decongested by placing pledgets soaked in topical decongestants in the nasal cavity. Subsequently, topical anesthetic agent was infiltrated into the nasal septum and middle turbinate. A 4-mm rigid endoscope was used during the operation. The sphenoid sinus was approached by advancing the endoscope between the middle turbinate and nasal septum. The sphenoid sinus ostium was identified 1.5 cm above the choana. The sphenoid sinus ostium was widened, and the pathology was removed. A nasal pack was placed if necessary. Nasal packs were removed 24–48 h after the surgery. All patients were followed up for at least 6 months. Pre- and postoperative headache intensity of patients was scored using a visual analogue scale (VAS). On the VAS, 0 was considered “no pain” and 10 was considered “extreme pain.”

The Statistical Package for Social Science (SPSS) version 22 was used for the statistical analysis. Pre- and postoperative VAS scores were compared using the Wilcoxon test. A p value of less than 0.05 was defined as statistically significant.

3. Results

Twenty-one consecutive patients who underwent endoscopic sphenoidotomy for isolated sphenoid sinus disease were included in the study. There were 13 (61.9%) female and 8 (38.1%) male patients with ages ranging from 11 to 63 years (mean, 43.14 ± 13.15 years). Sphenoid sinus involvement was unilateral in 8 (38.1%) patients and bilateral in 13 (61.9%) patients.

All patients had headache with various localizations. The distribution of locations of headaches was as follows (Fig. 2): vertex



Fig. 1. Coronal computed tomographic scan showing a heterogenous opacity involving the left sphenoid sinus.

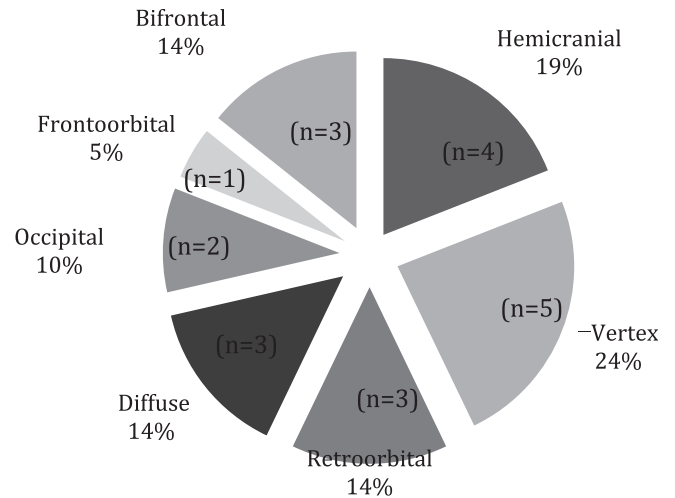


Fig. 2. Headache locations.

(n = 5, 24%), hemicranial (n = 4, 19%), retroorbital (n = 3, 14%), diffuse (n = 3, 14%), bifrontal (n = 3, 14%), occipital (n = 2, 10%), and fronto-orbital (n = 1, 5%). Duration of headache ranged from 3 to 48 months, with a mean of 25.57 ± 14.18 months. The preoperative and postoperative mean VAS score for headache were 8.24 ± 0.94 and 2.67 ± 1.49 , respectively (Fig. 3). Statistical comparison revealed a significant improvement in headache intensity ($p < 0.01$). Other symptoms were nasal discharge (n = 5, 23.8%), nasal blockage (n = 5, 23.8%), and episodic nosebleed (n = 1, 4.8%). Ten (47.6%) patients presented with headache as the only symptom. Eight (31.8%) patients also had allergic symptoms. Fifteen (71.4%) patients showed abnormal nasal endoscopic findings, and 6 (28.6%) patients had normal findings. Endoscopic examination findings were nasal purulent secretion in 5 (23.8%) patients, nasal polyp in 4 (19%) patients (Fig. 4), nasal mucosal edema in 5 (23.8%) patients, and hemorrhagic crusts in 1 (4.8%) patient.

Histopathologic analysis revealed nasal polyp in 7 (33.3%) patients, chronic inflammation in 5 (23.8%) patients, mucocele in 4 (19%) patients, fungal infection in 3 (14.1%) patients, and malignancy in 2 (9.5%) patients. Eight (38.1%) patients had accompanying systemic disease such as diabetes mellitus or asthma. All patients

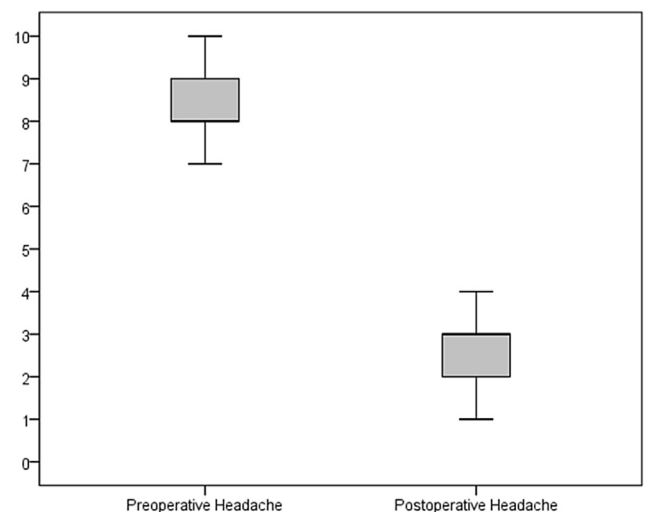


Fig. 3. Pre- and postoperative visual analogue scale (VAS) scores of patients for headache.

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