

Isolated sphenoid sinusitis*

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SUMMARY

Isolated sphenoid sinusitis is a relatively rare clinical entity and can cause severe complications. Diagnostic nasal endoscopy using Hopkins telescopes and coronal and axial paranasal-sinus CT made the diagnosis of the sphenoid sinus disease easier. Eight out of 221 patients with paranasal sinus infection refractory to medical treatment – and treated surgically at the 2nd ENT Clinic of Ankara Numune Hospital between 1990-1995 – had isolated sphenoid sinus infection. The most common symptom was headache felt in the retro-orbital region. Surgical procedure was intranasal endoscopic approach to the sphenoid sinus. The symptoms of the patients with isolated sphenoid sinusitis were completely resolved after surgery. As the literature is reviewed, it is concluded that endoscopic approach to the sphenoid sinus disease is the most appropriate method of surgery in order to reduce intra-operative morbidity and mortality.

Key words: sphenoid sinusitis, endoscopic surgery

INTRODUCTION

Infection of the sphenoid sinus is mostly accompanied by involvement of the other sinuses. Isolated sphenoid sinus disease is a rare clinical entity. The diagnosis in such cases is generally delayed, as the sphenoid sinus is located in the deep apex of the nasal cavity (Lew et al., 1983). However, diagnostic and therapeutic endoscopy of the sphenoid sinus diseases has been described earlier (Draf, 1978,1979).

Sphenoid sinus disease is hardly diagnosed by routine ENT examinations (Rothfield et al., 1991). A high degree of suspicion should be necessary. Diagnostic nasal endoscopy using 0° and 30° Hopkins telescopes and computerised tomography have led to more frequent diagnosis of this entity being. Sphenoid sinus disease, like other sinus pathologies, can easily be diagnosed in the office by the use of endoscopic examination under local anaesthesia. We present a review of 8 patients with isolated sphenoid sinus disease refractory to medical treatment, who underwent transnasal endoscopic approach to the sphenoid sinus.

PATIENTS AND METHODS

Patients

Eight cases were diagnosed to have isolated sphenoid sinus disease from March 1992 to April 1995 at the ENT Clinics of the Numune Hospital, of whom 6 were male and 2 were female. Their ages ranged from 17 to 62 years and the mean age was 38 years. Follow-up period ranged from 1 to 4 years. Patients with

symptoms predicting sinus infection (such as headache, nasal obstruction and/or postnasal discharge) were evaluated by routine ENT examination, including diagnostic nasal endoscopy by means of 0° and 30° Hopkins telescopes. Conventional X-rays of paranasal sinuses were performed in all patients.

Patients who had ostiomeatal complex disease and pus in the sphenoidal recess or in the middle meatus, were administered an antibiotic and an antihistaminic for 4 weeks with topical nasal decongestant for 5 days.

Coronal and axial paranasal-sinus CT scans were obtained if the patient's symptoms were not relieved with the medical treatment in the 4-week period. The pathological involvement of paranasal sinuses on CT led to the decision of surgical intervention in 221 patients. The distribution of the lesions among the paranasal sinuses as shown by CT is presented in Table 1. Of the 221 patients who underwent endoscopic endonasal surgery, 24 patients had

Table 1. Pathological involvement of the paranasal sinuses on CT examination.

sinus	No. of patients	%
maxillary sinus	124	56.1
anterior ethmoid	173	78.3
posterior ethmoid	62	28
frontal sinus	53	24
sphenoid sinus	24	10.9

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sphenoid sinus involvement. Of the 24 cases, 8 cases (3.6%) were diagnosed to have isolated sphenoid sinus disease.

Our endoscopic approach to the sphenoid sinus for patients with isolated sphenoid sinus disease was modification from the technique described by Stankiewitz (1989).

Surgical technique

All of the patients were operated under local anaesthesia. Pantocain (2%) and adrenalin on cotton pads were used as topical anaesthetics, whereas infiltration anaesthesia was performed with lignocaine (2%) and adrenalin (1:100.000). At the start of the procedure, the inferior one-third of the middle turbinate was resected (Figure 1). The anterior wall of the sphenoid sinus

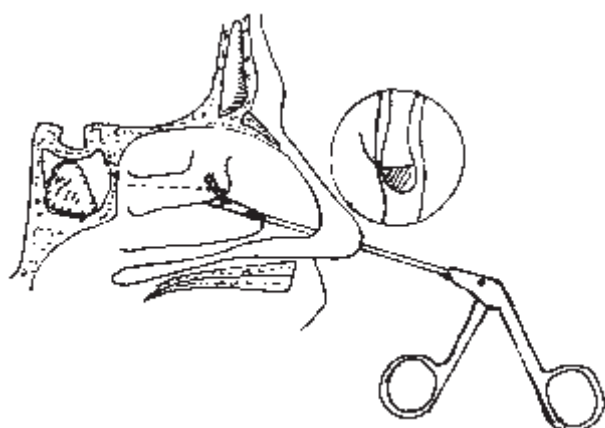


Figure 1. The inferior one-third of the middle turbinate is removed after an anterosuperiorly directed incision.

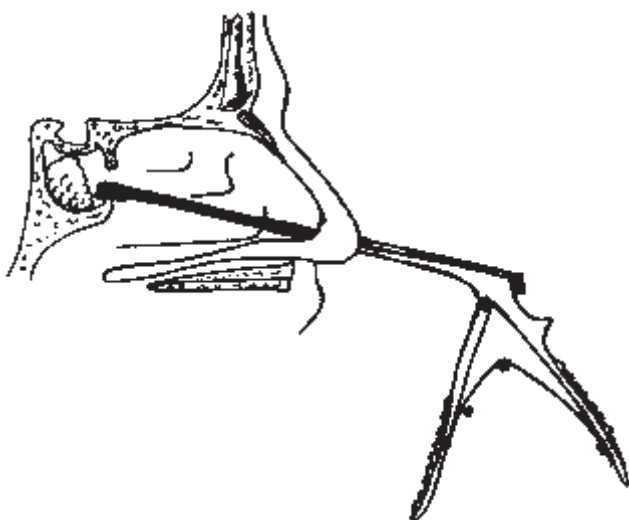


Figure 2. The anterior wall of the sphenoid sinus is removed with a rongeur.

was exposed using a 0° Hopkins telescope. With a Weil-Blakesley forceps the sphenoid sinus was entered from the medial part of the sinus. The inferior half of the anterior wall of the sphenoid sinus was removed using a sphenoid rongeur (Figure 2). The pathological tissue in the sphenoid sinus was excised with the help of a curette and a forceps (Figure 3).

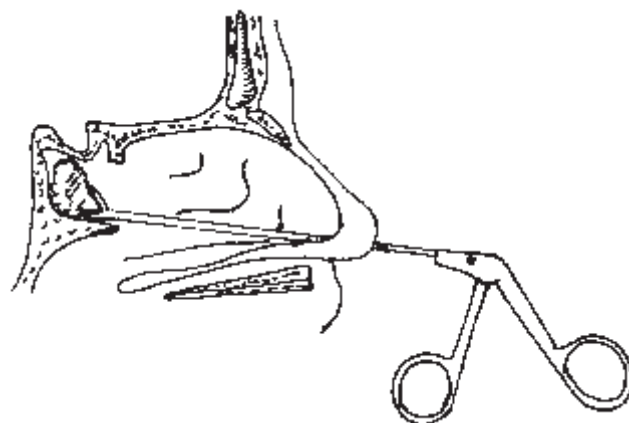


Figure 3. Pathological tissue is removed with a forceps.

When adequate exposure of the inferior wall of the sphenoid sinus was achieved, the operation was terminated. Merocel^R sinus packs impregnated with antibiotics and steroids were introduced into the sphenoid sinus and the nasal cavity. They were removed on the 2nd post-operative day. Follow-up examinations were performed endoscopically on the 5th, 7th, 14th, and 21st post-operative days.

RESULTS

The main complaint of all patients was headache, which was retro-orbital in 75% and frontal in 25%. The second commonest symptom was postnasal drainage. The most frequent symptoms are presented in Table 2.

Table 2. The symptoms of patients with isolated sphenoid sinusitis.

symptom	No. of patients	%
headache	8	100
retro-orbital pain	6	75
frontal pain	2	25
nasal obstruction	5	62.5
postnasal drainage	6	75
anterior rhinorrhoea	2	25
bilateral ophthalmoplegia	1	12.5
fever	1	12.5

The diagnosis of isolated sphenoid sinus disease was established by coronal and axial CT scans in all patients. Eight patients, who had no pathological findings in the paranasal sinuses except for opacification in the sphenoid sinus, were accepted as isolated sphenoid sinusitis. Of these eight patients, one had bilateral involvement of the sphenoid sinus, the others had unilateral involvement. Pathological CT findings are summarised in Table 3.

Table 3. CT findings of the patients with isolated sphenoid sinusitis.

CT finding	No. of patients
large pneumatization of the sphenoid sinus	1
cavernous sinus pathology	1
unilateral sinus opacification	7
bilateral sinus opacification	1

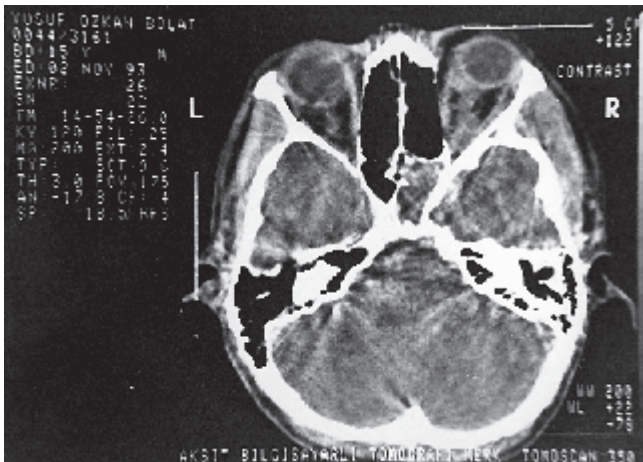


Figure 4. Opacity in a well-pneumatized sphenoid sinus on an axial CT scan.

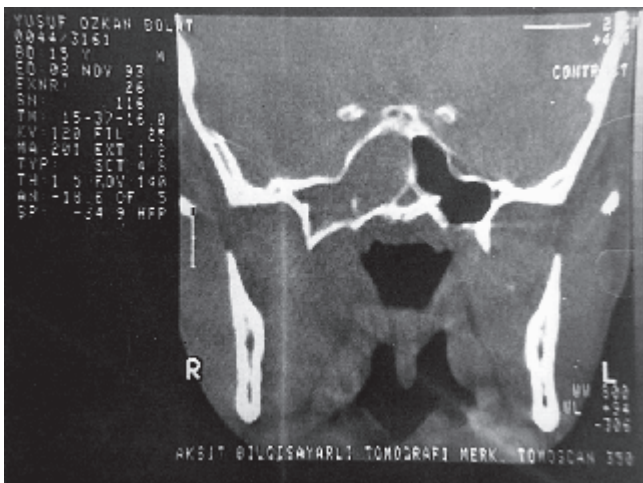


Figure 5. Coronal CT scan of the patient from Figure 4 showing opacity in the sphenoid sinus.

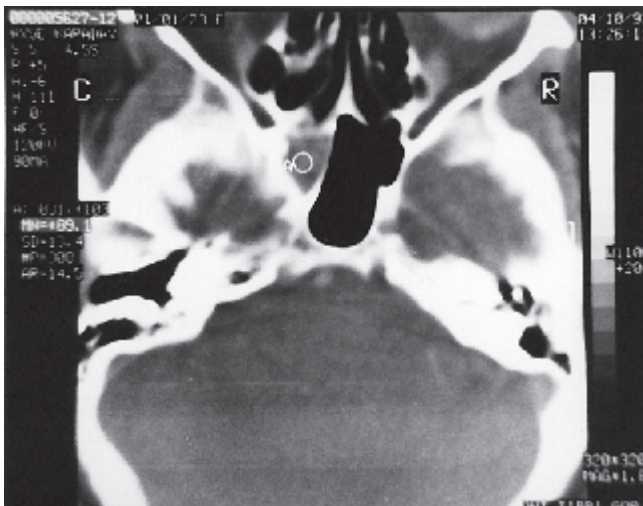


Figure 6. Opacity in the left sphenoid sinus on an axial CT scan.

A yellowish-gray material was removed from the sphenoid sinus in 1 out of the 8 patients who had endoscopic sinus surgery for isolated sphenoid sinus disease. This material was diagnosed as aspergillosis when examined microscopically. From one patient who had cavernous sinus thrombophlebitis, pus was aspirated from a large, well-pneumatized sphenoid sinus. The axial and

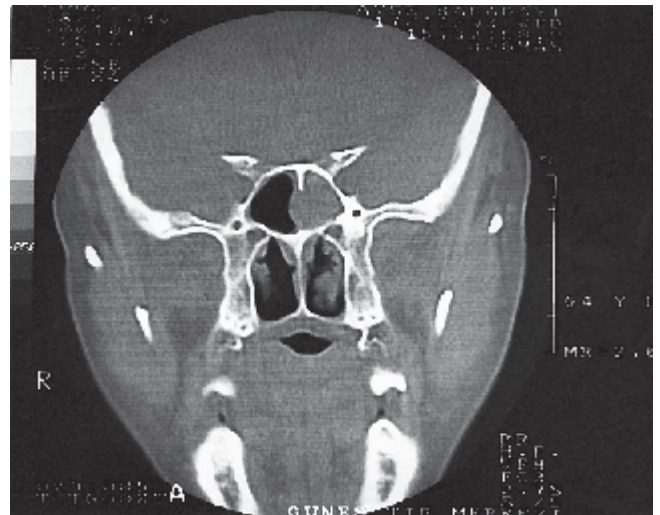


Figure 7. Coronal CT scan of the patient from Figure 6 showing opacity in the left sphenoid sinus.

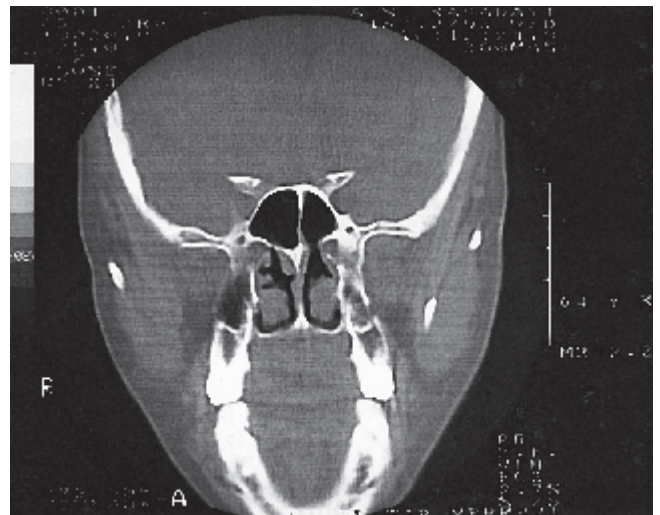


Figure 8. Coronal CT scan of the patient from Figures 6-7, one month post-operatively.

coronal CT scans of these patients are illustrated in Figures 4 and 5, respectively. Two patients had mucoceles, 2 patients had polypoid mucosa and 2 patients had hypertrophied mucosa in the sphenoid sinus. Axial and coronal CT scans of one patient with a left sphenoid sinus opacification, which was found to be hypertrophied mucosa, is shown in Figures 6 and 7, respectively. In Figure 8, a coronal CT of the same patient one month post-operatively does not show any evidence of the disease.

No intra- or post-operative complications were encountered related to the surgery. The mean follow-up of the patients was 42 months. The patient with cavernous sinus thrombophlebitis had a good general condition, but ophthalmoplegia remained as a sequela. All of the other patients were completely free of symptoms after the surgery.

DISCUSSION

The sphenoid sinus has often been characterised as the most neglected of the paranasal sinuses. Increased use of CT has led to more frequent diagnosis of isolated sphenoid sinus disease. In addition, diagnostic endoscopy with 0-30° Hopkins tele-

scopes enables a much easier and earlier diagnosis. Eight out of the 221 patients that were operated because of paranasal sinus disease, were diagnosed to have isolated sphenoid sinusitis.

Wyllie et al. (1973) reported 45 patients with isolated sphenoid sinus lesions at the Mayo Clinics during a period of 37 years. Among them 34 had inflammatory lesions, 6 had tumours, 2 had fibrous dysplasia, 2 had rhinoliths and 1 had a solitary polyp. The most prominent symptom of the patients in this series was headache in the retro-orbital region. Conventional X-rays and, when needed, CT had been used for imaging. Thirteen patients of their series underwent surgical exploration. Twelve of them were operated by the transnasal route and one patient underwent an external ethmoido-sphenoidostomy. The mortality rate due to the complications of the sphenoid sinus diseases was 15% in this series.

Rothfield et al. (1991) presented 13 patients with isolated sphenoid sinus disease. Five of them had benign tumours, 2 had malignant lesions, 4 had inflammatory lesions and 2 had mucoceles. They preferred the sublabial transseptal route during surgery and concluded that it was superior to the endoscopic surgery because it provided wide exposure and less intra-operative complications.

Lew et al. (183) reported 30 patients with infectious sphenoid sinusitis (15 acute cases, 15 chronic cases). The main symptom of their patients was headache that radiated to the occipital region or pain in the trigeminal nerve distribution. Eleven of the acute cases were diagnosed by conventional X-rays. Four patients had normal X-rays. The authors agreed that CT was the most useful method for diagnosis of the sphenoid sinus disease. Delay in treatment of acute infection was associated with 100% morbidity. Surgery was advised for drainage and relief of symptoms.

Only 21 patients with isolated sphenoid sinus aspergillosis were reported in the literature (Scamoni, 1992). One of the patients in our series (12.5%) had isolated aspergillosis of the sphenoid sinus. Among the remaining 7 patients, 2 had mucoceles, 3 had inflammatory lesions and 2 had polypoid mucosa. Axial and coronal paranasal-sinus CT scans were used for all our patients. Although various surgical techniques (such as intracranial, septoplasty and various external and internal transnasal techniques) have been described during the past century, the endoscopic intranasal approach to the sphenoid sinus is a relatively

new technique (Draf, 1978, 1979; Stankiewicz, 1989). Individual series about this subject have not been reported commonly.

We prefer endoscopic sinus surgery as a surgical procedure for isolated sphenoid sinus disease. All of our patients were successfully treated using this technique. We did not have any complication during or after surgery. We believe that endoscopic sinus surgery is an appropriate surgical procedure for inflammatory and most of the benign lesions limited to the sphenoid sinus.

In conclusion, isolated sphenoid sinus disease is a relatively uncommon clinical entity; however, it should be considered in the differential diagnosis of the patients with headache and especially retro-orbital pain. Coronal and axial CT scans and diagnostic endoscopic examination are valuable diagnostic tools in early diagnosis. Endoscopic sinus surgery is an appropriate surgical procedure for the patients with isolated inflammatory sphenoid sinus disease refractory to medical treatment and benign lesions such as mucopyocele and mucocele and fungal infections.

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