

Original Research Article

Demographic profile of subjects undergoing sphenoidotomy for sphenoid sinusitis, in a tertiary care centre of Punjab- analysis of 75 subjects

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ABSTRACT

Background: The demographic profile of patients with Sphenoiditis undergoing surgical intervention, in the state of Punjab was studied. The emphasis was on the age, gender and clinical presentation in this prospective study.

Methods: There were 75 patients of sphenothmoidal recess pathology with sphenoditis, who were selected from the Rhinology clinics of Otorhinolaryngology and head Neck services of Dayanand Medical College and Hospital Ludhiana, in a period one and a half years (November 2002 to October 2004). All patients were taken up for Functional endoscopic sinus surgery of the sphenoid sinus surgery with sphenoidotomy.

Results: The age range of subjects with sphenoiditis was between 12 years to 70 years. The mean age was 38.13 years. The maximum number of patients were in 19-30 years age group and the minimum in 31-40 years age group. Males outnumbered the females by a ratio of 1.7:1. The most common was posterior nasal drip (69.33% cases) behind the Eustachian tube and the least common complaint was diplopia (5.33% cases). Ocular involvement was observed in 32%. The right eye was more frequently involved (17.33%) as compared to the left (12%).

Conclusions: Patients with Sphenoid sinusitis were seen in the broad age range from 19 to 30 years with a male predominance. Posterior nasal discharge behind the Eustachian tube, rather than the typical occipital ache was the primary complaint. Right sided eye involvement with ptosis and lateral rectus palsy were commonly noted.

Keywords: Endoscopic sinus surgery, Demography, Sphenothmoidal recess, Sphenoiditis, Sphenoidotomy

INTRODUCTION

The sphenoid sinus is the most neglected of all paranasal sinuses". It is neglected by disease because of its location, by the physician because it is difficult to detect and correlate symptoms when diseased, and by the surgeon because of its inaccessibility. Van Alyea 1941.¹

The patient's history and conventional anterior and posterior rhinoscopy procedures are unable to convey the

status of the sphenoid sinus; diseased or otherwise with certainty. Moreover the sphenoid sinus is not delineated well on routine outpatient sinus radiographs (Water's projection). With the recent advent of computed tomography, magnetic resonance imaging, nasal endoscopy and functional endoscopic sinus surgery, a great deal of progress has been made in this regard.

Infection of the sphenoid sinus is a rare cause of generalized headaches in children and adolescents and

localized occipital headaches in adults. Its symptoms are often non-specific and confusing. The diagnosis is made on the history, examination, nasal endoscopy, cultures and CT or MRI. Prompt and aggressive medical treatment in the form of parenteral antibiotics and nasal decongestants is advocated to reduce the risk of serious complications such as permanent cranial neuropathies or intracranial spread. Surgical intervention is advocated when symptoms persist or complications develop. Although sphenoiditis is potentially devastating, early joint intervention by pediatric medical and rhinologists has a favorable outcome.

Clinical records identified only 45 patients with sphenoid sinus pathology, over a 37 year period. Rothfield et al found 13 patients in a five year study, Gilain et al found 12 patients in five years and Hadar et al described 21 cases over three years.^{2,3,4} Surgical access to the sphenoid sinus has been traditionally performed through either an intranasal or external ethmoidectomy approach. Cheung et al, Friedman et al.^{5,6}

External ethmoidectomy provides wide surgical exposure and allows for control of excessive bleeding but requires a facial incision. Metson and Gliklich 1996.⁷

One of the most revolutionary changes seen in the present era is the use of telescopes/endoscopes to visualize the nose and paranasal sinuses. The basic concept of nasal endoscopy was given by Zaufal in 1880s, when he started using an endoscope for the examination of Eustachian tube orifices through the nose, whereas the true precursor to the contemporary endoscope was Hirschmann in 1903.^{8,9}

The development of the rigid nasal endoscope and the introduction of functional endoscopic intranasal sinus surgery by Messerklinger 1978 and Stammberger 1986 have changed the surgical approach to the sphenoid sinus.^{10,11} Stankiewicz and Wigand described an endonasal endoscopic approach that involved as a first step, removing a portion of the middle turbinate to expose the ethmoid sphenoid complex.^{12,13}

Endoscopic sphenoidotomy has become the mainstay of treatment when an infected sphenoid sinus refractory to medical treatment requires surgical drainage. It provides excellent visualization within the depths of the nasal cavity minus any facial scars.

Aim of the study was to determine the common clinical presentations and demographic profile of patients taken up for functional endoscopic surgery of the Sphenoid sinus.

METHODS

There were 75 patients of spheno-ethmoidal recess pathology with sphenoiditis, selected from the Rhinology clinics of Otorhinolaryngology services of Dayanand

Medical College and Hospital, Ludhiana in a period one and a half years (November 2002 –October 2004). All patients were taken up for Functional endoscopic sinus surgery of the sphenoid sinus surgery with sphenoidotomy.

The study included 44 men, 26 women and 5 children (less than 14 yr). The average age was 38.13 yr. and the range was 12-70 yr. They were all worked up as per the proforma attached and their height and weight recorded.

Inclusion criteria

Endoscopic sphenoidotomy was undertaken in cases of:

- i) Computed tomographic evidence of sphenoid sinus disease (opacification/air fluid level/mucosal hypertrophy).
- ii) Endoscopic evidence of spheno-ethmoidal recess pathology (Oedematous tissue/polyps/mucopurulent discharge/fungal debris).
- iii) Intractable occipital or retro-orbital headaches in the presence of computed tomographic evidence of sphenoid sinus disease.

Exclusion criteria

Malignancies as evident on imaging studies

The surgery was performed under local or general anesthesia, as per fitness of the patient. For local anesthesia, the block was given at the sphenopalatine area.

Endoscopy was performed with a 4.0 mm 0 and 30 deg endoscope. It was first passed along the floor of the nose, while the septum, inferior meatus, inferior turbinate, middle turbinate and nasopharynx were inspected. The telescope was then raised to expose the face of sphenoid, sphenoethmoidal recess and the sphenoid ostium.

In cases with associated pathology of other paranasal sinuses pathology, e.g. polyps were removed after performing anterior and posterior ethmoidectomy. A trans-ethmoidal approach was undertaken to reach the sphenoid. In cases of isolated sphenoid sinus disease a transnasal route was adopted. Here, if the posterior end of middle turbinate overlapped the sphenoid ostium; it was partially resected, else left as such. Microdebrider, Blakesely nasal forceps-straight and upturned and Stamberger straight mushroom punches were used to remove the pathology and complete the Sphenoidotomy.

Statistical analysis

All statistical calculations were done using Statistical Package of Social Sciences (SPSS) 17 Version statistical

program for Microsoft windows (SPSS Inc. released 2008. SPSS statistic for windows, version 17.0, Chicago).

RESULTS

The analysis of our study on the Sphenoid sinus is discussed below:

There were 75 cases which were examined clinically by anterior rhinoscopy, posterior rhinoscopy and nasal endoscopy under local anesthesia. After radiological assessment, they were taken up for functional endoscopic sinus surgery of the sphenoid sinus, i.e. a Sphenoidotomy.

Table 1: Age and gender distribution (n=75).

Age (years)	Male 47		Female 28		Total 75	
	No.	%	No.	%	No.	%
12-18	6	12.77	5	17.86	11	14.67
19-30	13	27.66	7	25	20	26.67
31-40	7	14.89	7	25	14	18.67
41-50	8	17.02	1	3.5	9	12
51-60	7	14.89	4	14.29	11	14.67
61-70	6	12.77	4	14.29	10	13.33

n = total number of subjects, Mean±SD 38.4 + 18.12 37.57 + 17.93 38.3 + 17.93

The males outnumbered the females by a ratio of 1.7:1. The maximum numbers of patients were in 19-30 years age group and the minimum in 31-40 years age group. The age range was between 12 years and 70 years. The mean age was 38.13 years.

Table 2: Chief complaints of the patients.

Complaints		Number	%
Occipital Headache		33	44.00
Retro orbital pain		14	18.67
Anterior nasal discharge		42	56.00
Posterior nasal discharge		54	72.00
Nasal Blockage	Right	38	50.67
	Left	40	53.33
Blurred vision	Right	38	50.67
	Left	40	53.33
Diplopia	Right	4	5.33
	Left	0	0
Side involved	Right	58	77.33
	Left	55	73.33

n = total no. of subjects

The chief complaint that the patients of Sphenoiditis presented with, prior to surgery was posterior nasal drip, in 54(72%) patients and the least common complaint was diplopia 4(5.33%) cases. Occipital Headache was noted in only 33(44%) patients.

Table 3: Clinical findings on posterior rhinoscopy (n=75).

Posterior rhinoscopy	N	%	
Discharge Fossa of Rosenmuller	13	17.33	
Front of Eustachian tube	50	66.67	
Behind Eustachian tube	52	69.33	
Over Eustachian tube	51	68.00	
Polyp	Right	10	13.33
	Left	15	20.00
Nasopharyngeal Mass	5	6.67	

n = total no. of subjects

On posterior rhinoscopy, maximum number of cases (69.33%) had a discharge behind the Eustachian tube orifice. A small group of patients presented with greenish brown/ black crusts/ sub mucosal swelling in the nasopharynx.

Table 4: Ophthalmic examination (n=24).

Presentation		Number	Percentage
Side	Right	13	70.8
	Left	9	37
Bilateral		2	8
Chemosis		3	12
Ptosis		9	37
Visual acuity		2	8
Lacrimation		7	29
Exophthalmos		8	33
Periorbital swelling		7	29
Lateral rectus palsy		8	33

n = number of cases

Eye involvement was observed in 24 (32%) patients and more so on the right side, 13 (70.85%) as compared to the left 9 (37%). The common feature were ptosis (37%) followed by lateral rectus palsy and exophthalmos 8 (33%).

DISCUSSION

Endoscopic sinus surgery has transformed the oto-rhino-laryngologist's approach to pathology in the nose and the paranasal sinuses and the anatomy and physiology of the nose and sinuses is better comprehended and hence surgery can be undertaken, which is pathology specific and yet functional. Endoscopic surgery is however, not easy. One still needs a very thorough knowledge of anatomy of this complex area. This is even more valid when one crosses into relatively unknown territory as inside the sphenoid sinus.

The excellent illumination and clear visual field during endoscopy has improved the accuracy and security of operation and minimized the injury to normal tissue. But for large or recurrent tumors, this approach should not be selected indiscreetly.^{14, 15}

The approach to the sinuses described by Kennedy 1985 and Stammberger 1986 leaves the middle turbinate undisturbed because visualization of the operative field is usually excellent with an endoscope and the intact middle turbinate protects the cribriform plate from inadvertent injury by manipulation of instruments in this area.^{16, 11, 4}

In the present study maximum number of patients were in 19-30 years age group and the minimum in 31-40 years age group. The age range was between 12 years and 70 years.

The Al-Qudah M study found that though anatomical variations in the nose and paranasal sinuses found are common in children with chronic sinusitis, they are unlikely to predict the extent and severity of chronic rhinosinusitis in pediatric age group. A coronal computed tomography examination of the nose and paranasal sinuses was part of their diagnostic or preoperative work up, between the ages 5-16 years. The scans were analyzed for the presence of anatomical variations, and disease extension. The maxillary sinus was the most commonly involved sinus, followed by the ethmoid, sphenoid, and frontal sinuses. Agger nasi cell was the most common anatomical variation, followed by concha bullosa of middle turbinate.¹⁷

In the present study males outnumbered the females by a ratio of 1.7:1. No gender predilection for sphenoiditis has been documented in literature.

In our series the chief complaint was posterior nasal drip, in 54 (72%) patients and the least common complaint was diplopia 4 (5.33%) cases. Occipital Headache was noted in only 33(44%) patients.

Sethi DS noted nasal obstruction to be the presenting symptom in 19% and epistaxis in 14.2% of his patients.¹⁸

The incidence of occipital headache ranges between 70%-90% Lawson et al and Wang et al, 33%-81%.^{19,20}

Headache can be the chief and unique symptom of isolated sphenoiditis in children, which was easy to misdiagnose and miss diagnosis. CT or MRI was the evidence of diagnosis. Antibiotic therapy could be used for acute sphenoiditis. Patients with chronic sphenoiditis should receive endoscopic sinus surgery as early as possible. From supratubinal to sphenoid sinus natural Ostia is the best way in sphenoidotomy.²¹

Although sphenoiditis is potentially devastating, early joint intervention by pediatric medical and rhinologists has a favorable outcome.²²

On posterior rhinoscopy, maximum patients 52 (69.33%) had a discharge behind the Eustachian tube orifice. A small group of patients presented with greenish brown/black crusts/ sub mucosal swelling in the nasopharynx.

Involvement of the eye was observed in 24 (32%) patients and more so on the right side, 13 (70.85%) as compared to the left 9 (37%). The common features were ptosis 9 (37%) followed by lateral rectus palsy and exophthalmos 8(33%).

In sphenoiditis usually the abducent nerve is the most common cranial nerve affected (76%), followed by the oculomotor nerve (18%). Even combined oculomotor, trochlear and abducent palsies are noted. Isolated purulent sphenoid sinusitis 64% followed by allergic fungal sinusitis (AFS) 18%, and fungal infection in 18% with an acute presentation in 94% was observed in the El Mograbi et al study. The majority (85%) received a combined intravenous antibiotics and surgical treatment. The remainder received conservative treatment alone. Complete recovery of cranial nerve palsy was noted in 82% during follow up.²³

The left sphenoid was the most often involved, in 50 years or more old females. Neurological complications were the most frequent (75% of the cases): isolated headache, neuro-ophtalmologic paralysis, meningitis, before respiratory complications (20%). A bacteriological etiology was found in 60% of the cases, and a fungal etiology in 25%. The treatment is based on primarily endoscopic marsupialization of the sphenoid. Recovery is the rule, except for neuro-ophtalmologic paralysis in which recovery is inconstant.²⁴

Endoscopic techniques have gained widespread popularity for the treatment of sphenoid sinusitis; Patients having undergone endoscopic sphenoidotomy were monitored over a period of time. Surgery was performed with the superior turbinate as the key landmark for identification and enlargement of the natural sphenoid ostium. Surgical access was through either a transnasal or transethmoid approach, depending on whether disease was limited to the sphenoid sinus. Prospective analysis with established outcome measures demonstrated a significant reduction in facial pain, nasal drainage, and congestion after surgery with reduced usage of medication, oral or topical. Endoscopic sphenoidotomy appears to be a safe technique that effectively reduces patient morbidity associated with sphenoid sinusitis.⁷

CONCLUSION

Patients with Sphenoid sinusitis were seen in the broad age range from 19 to 30 years with a male predominance. Posterior nasal discharge behind the Eustachian tube, rather than the typical occipital ache was the primary complaint. Right sided eye involvement with ptosis and lateral rectus palsy were commonly noted.

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