

Sphenoid Sinus Mucoceles – Our Experience

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ABSTRACT

Introduction

Mucocele of the sphenoid sinus act as benign lesions and can result in bony erosion from within its continuity of the sinus to the intracranial and orbital spaces. Disease restricted to the sphenoid sinus is rare and often manifests with nonspecific or subtle signs and symptoms. Early and accurate diagnosis of sphenoid sinus disease may thus be difficult. Otolaryngologists must have a thorough knowledge of the spectrum of sphenoid sinus disease and the radiologic characteristics to manage these patients properly. The increased use of endoscopy in routine examination and advances in techniques of imaging this area will result in the more frequent diagnosis of these lesions..

Materials & Methods

We report 10 cases of chronic rhinosinusitis with sphenoidal mucocele with or without polyposis. All patients underwent detailed history taking, and a thorough examination followed by diagnostic nasal endoscopy and contrast-enhanced computed tomography of the Nose and paranasal sinuses. All patients underwent functional endoscopic sinus surgery, and a swab was sent for KOH stain, and histopathological examination was done for biopsy. With regular follow-up on the 1st month, 6th month, and 12th month, showing no evidence of recurrence to date.

Results

Out of 10 patients four were women and six were men, with a mean age of 40 year and most common presenting symptom being headache followed by nasal obstruction, cacosmia and 8 patients presented with sinonasal polyposis, and two patients without polyposis, 7 patients had diabetes type 2 as a co-morbidity.

Conclusion

Variable nonspecific symptoms and the complex anatomy of the sphenoid sinus tend to delay the diagnosis, resulting in a poor prognosis.

Keywords

Mucocele; Sphenoid; Polyposis

The paranasal sinuses mucoceles are expansive, benign cystic lesions that occur rarely in the sphenoid sinus, lined by pseudostratified epithelium. The sphenoid sinus has been referred to as the neglected sinus because of its isolated position and complexity inaccessibility.¹ Sphenoid sinus mucocele is a rarely afflicted sinus and comprises 1–2% of all paranasal sinus mucoceles.² Mucoceles are the most common sequelae following allergic fungal rhinosinusitis.³ The pathophysiology of this lesion is still uncertain, but it is

generally thought to be caused by obstruction of the sinus ostium. Other hypotheses include cystic dilatation of glandular structures and cystic development from embryonic epithelial residues.⁴ Patients may present with a myriad of symptoms, due to the presence of important contiguous neurological and vascular structures.⁵ They may also be asymptomatic.⁶ Sphenoid or posterior ethmoid mucoceles produce more subtle symptoms, including visual disturbance, generalized headache, diplopia, and orbital displacement.^{7,8} Radiological imaging techniques and the use of endoscopes have assisted in the diagnosis of a sphenoid sinus mucocele. The treatment of choice is endoscopic sphenoidotomy and drainage of the mucocele.^{4,9}

Thus, a thorough preoperative workup, endoscopic

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evaluation, and imaging techniques allow safe management of this type of lesion 10.

Materials and Methods

This is a case series of about 10 patients who presented with various symptoms suggestive of sphenoid sinus mucoceles who were evaluated and managed surgically at the department of Otorhinolaryngology and head and neck surgery, at a tertiary care. This study was conducted over two years from September 2020 to August 2022.

All the patients included in our study were subjected to a detailed history taking regarding the presenting complaints and other co-morbidities. This was followed up by a thorough ear, nose, throat, head, and neck examination, which was also followed by a thorough systemic examination. Patients were then subjected to a diagnostic nasal endoscopy, and swabs were collected for KOH mount, gram staining, and culture and sensitivity whenever it was required. These patients then underwent radiological evaluation with Non-contrast Computed tomography of the nose and paranasal sinus, diagnosis of sphenoid mucocele was confirmed, and any other co-existing pathology was also looked for. These patients then underwent routine pre-operative investigations, pre-anaesthetic evaluations, and ophthalmological evaluation. All the patients then underwent functional endoscopic sinus surgery with sphenoidotomy under general anaesthesia; sufficient removal of the anterior and inferior walls of the sphenoid sinuses was made to allow adequate drainage into the sphenoidal recess and to avoid recurrence, any other co-existing nasal pathologies were also tackled at the same sitting. Specimens of the polyp were sent for histopathological evaluation, and fungal debris and pus collected were sent for KOH mount, gram staining, and culture & sensitivity. All the patients tolerated the procedure well with no complications. The post-operative period of all the patients was uneventful. Anterior nasal packing was removed on the 2nd post-operative day, and patients were discharged. Postoperative treatment consisted of nasal lavage and the use of a topical corticosteroid spray (in each nostril bid) for 1 month. At the time of first postoperative

consultation, a clinical and endoscopic examination was done to remove secretions, crusting, or synechiae. Patients were asked to come for routine follow-ups, for 1 year 1st month, the 6th month, and at the 12th month to look for recurrence.

Case Series

Case 1:

A 60-year-old male patient presented with a headache for 6 months, with recent onset of nasal discharge, and with type 2 diabetes mellitus as a co-morbidity. On diagnostic nasal endoscopy, there was mucopurulent non-foul smelling discharge from the sphenoidal recess, and multiple polypoidal masses were noted. And on computed tomography of the nose and paranasal sinuses, showed sphenoid mucocele with sphenoid sinusitis underwent functional endoscopic sinus surgery, on regular follow up no evidence of recurrence.

Case 2:

A 41-year-old female patient presented with a headache for 2 months, with decreased smell sensation and no morbidities. On diagnostic nasal endoscopy, there was mucopurulent non-foul-smelling discharge from the sphenoidal recess and mucopurulent discharge from the middle meatus. Multiple polypoidal masses were noted and on computed tomography of the nose and paranasal sinuses, showed sphenoid mucocele with pansinusitis was noted. Underwent functional endoscopic sinus surgery. On regular follow up no evidence of recurrence.

Case 3:

A 55-year-old male patient was referred by a physician on an incidental finding in computed tomography of the brain, which was done for giddiness and with type 2 diabetes mellitus as a co-morbidity. On diagnostic nasal endoscopy, there was no evidence of discharge or mass, and he underwent functional endoscopic sinus surgery; the procedure surgery uneventful.

Case 4:

A 35-year-old female patient presented with nasal obstruction for 10 months with occasional headache and with type 2 diabetes mellitus as co-morbidity. On diagnostic nasal endoscopy, there was mucopurulent, foul-smelling discharge from the sphenoidal recess, and on computed tomography of the nose and paranasal sinuses, showed sphenoid mucocele with pan sinusitis underwent functional endoscopic sinus surgery, and on regular follow with no fresh complaints.

Case 5:

A 28 year female patient presented with headache for 5 months with orbital pain, on diagnostic nasal endoscopy there was mucopurulent fowl smelling discharge from sphenoidal recess and middle meatus with multiple polypoidal mass noted and on computed tomography of nose and paranasal sinuses showed sphenoid mucocele pushing orbit with sinusitis underwent functional endoscopic sinus surgery, on regular follow up and post surgery uneventful.

Case 6:

A 42-year-old male patient presented with anosmia for 1 year with headache and with type 2 diabetes mellitus as a co-morbidity. On diagnostic nasal endoscopy, there was mucoid non-foul-smelling discharge from the sphenoidal recess with multiple polypoidal masses noted, and on computed tomography of nose and paranasal sinuses, showed sphenoid mucocele with sinusitis underwent functional endoscopic sinus surgery, and on regular follow up no evidence of recurrence.

Case 7:

A 39-year-old male patient presented with excessive sneezing for 6 months with headache and with type 2 diabetes mellitus as co-morbidity. On diagnostic nasal endoscopy, there was mucopurulent, foul-smelling discharge from the sphenoidal recess, multiple polypoidal masses were noted, and computed tomography of the nose and paranasal sinuses showed sphenoid mucocele.

With sinusitis underwent functional endoscopic sinus surgery he is on regular follow-up.

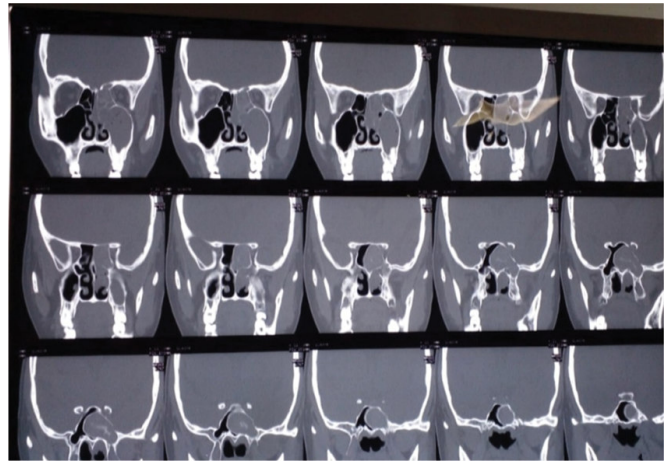


Fig. 1. Left pan sinusitis with? Left sphenoidal mucocele showing heterogeneous density within it

Case 8:

A 56-year-old male patient presented with headache for 2 years with nasal obstruction, and with type 2 diabetes mellitus as a co-morbidity. On diagnostic nasal endoscopy, there was mucopurulent non-fowl smelling discharge from the sphenoidal recess, with a polypoidal mass noted, and



Fig. 2. Multiple pale polyps filling the left nasal cavity arising lateral to the middle turbinate

On computed tomography of the nose and paranasal sinuses, showed sphenoid mucocele was shown with sinusitis that underwent functional endoscopic sinus surgery, and on regular follow up no evidence of recurrence.

Case 9:

A 43-year-old female patient presented with sneezing for 1 month with nasal obstruction, and with type 2 diabetes mellitus as a co-morbidity. On diagnostic nasal endoscopy, there was mucoid non-foul-smelling discharge from the sphenothmoidal recess with multiple polypoidal masses noted, and on computed tomography of nose and paranasal sinuses, showed sphenoid mucocele with sinusitis underwent functional endoscopic sinus surgery, post-surgery surgery uneventful.

Case 10:

A 30-year-old male patient presented with headache for 3 months with cacosmia, and with type 2 diabetes mellitus as a co-morbidity. On diagnostic nasal endoscopy, there was mucopurulent non-foul-smelling discharge from the sphenothmoidal recess with multiple polypoidal masses noted, and on computed tomography of the nose and paranasal sinuses, showed sphenoid mucocele with sinusitis underwent functional endoscopic sinus surgery, and on regular follow up no evidence of recurrence.

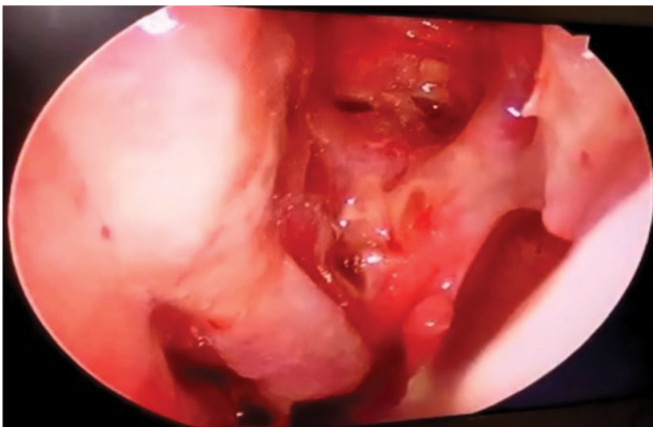


Fig. 3. Post operative picture of maxillary ostium

Results

The 10 patients included in the study comprised four women and six men, with a mean age of 40 years (range 21–60 years) (Figure 4).

The common presenting symptoms of the patients were headache, nasal obstruction, cacosmia, nasal

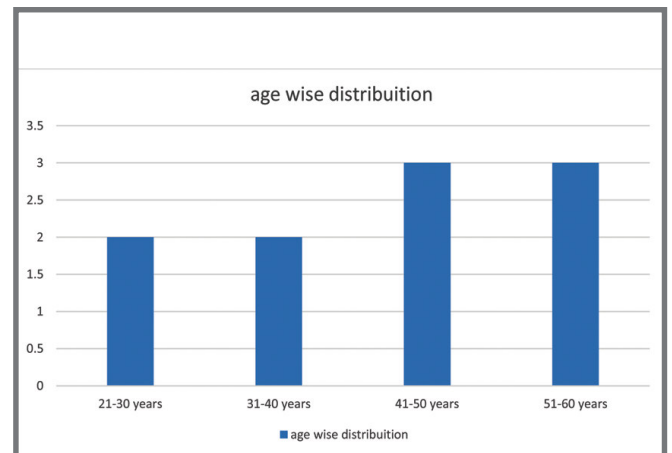


Fig. 4. Distribution according to age

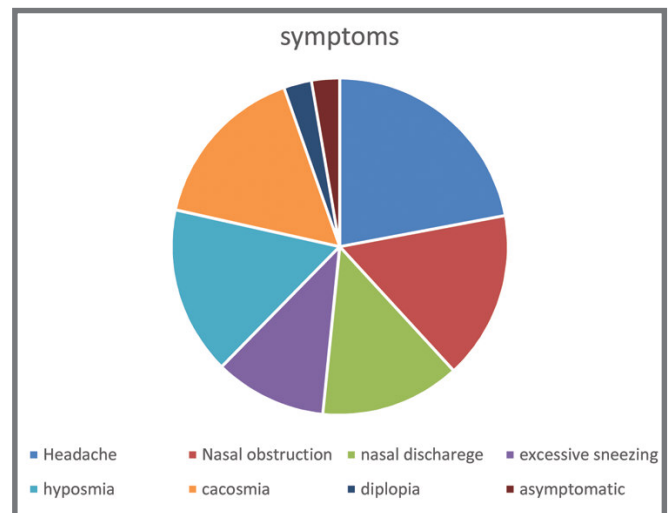


Fig. 5. Distribution according to symptoms

discharge, excessive sneezing, and diplopia, which are shown in Figure 5.

With head headache being the most common presenting complaint. One of the patients was asymptomatic and was diagnosed incidentally. Most of the patients came out to have fungal elements in the KOH mount sent intra-operatively from the fungal debris collected from the sphenoid sinus, which is about 70% (7 out of 10 patients), as shown in Figure 6.

Out of 10 patients, 8 patients presented with sinonasal polyposis, and two patients without polyposis (Figure 7). Also, 7 patients had diabetes type 2 as a co-morbidity (Figure 8).

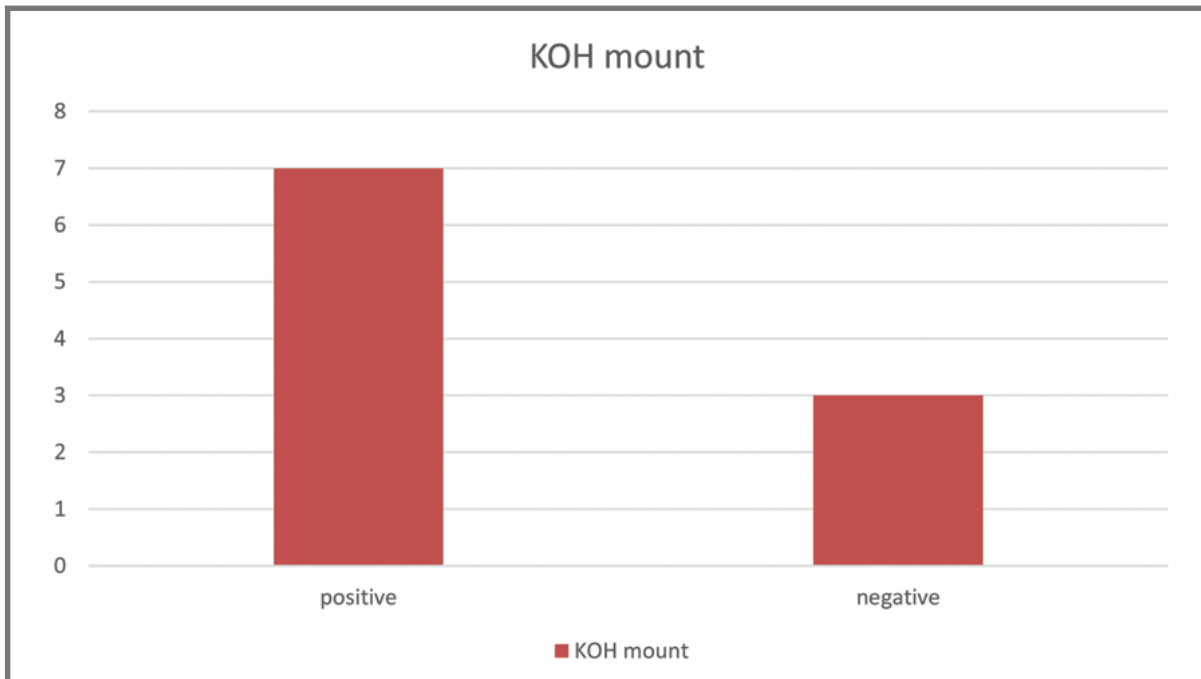


Fig. 6. Distribution according to presence of fungal elements in KOH mount

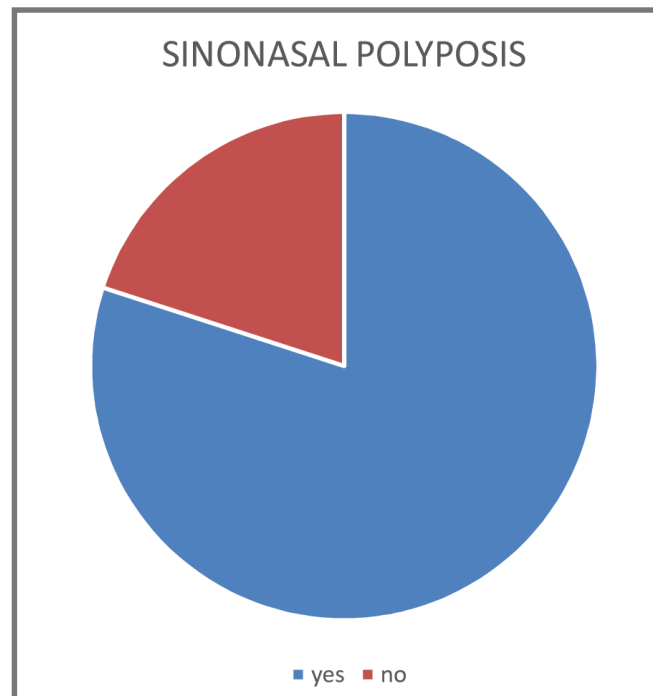


Fig. 7. Distribution according to presence of sinonasal polyposis

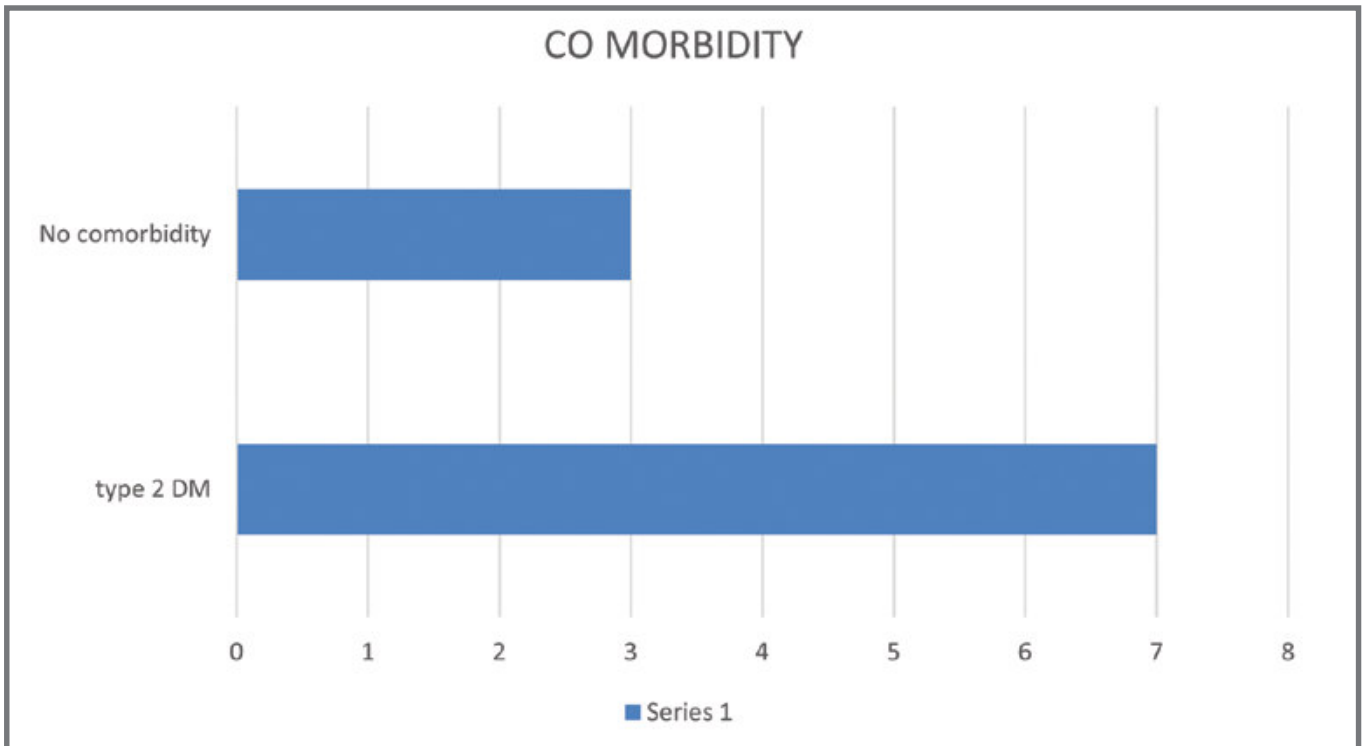


Fig. 8. Distribution according to co-morbidity

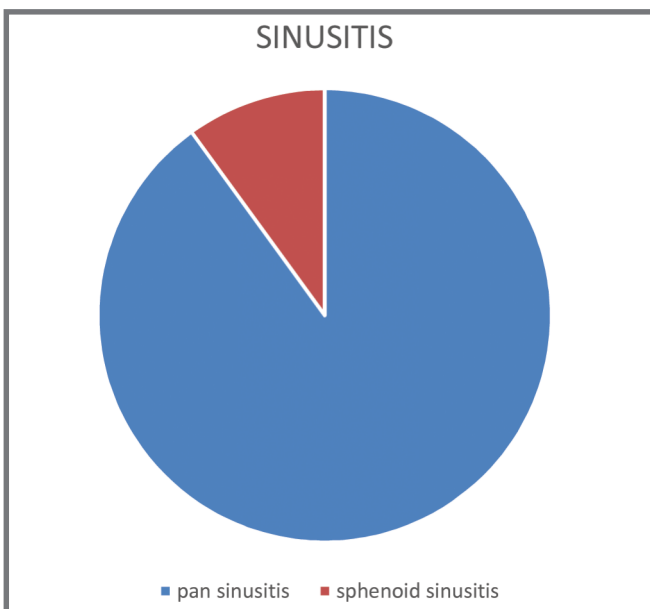


Fig. 9. Distribution according to involment of sinuses

Among these 9 patients had pan sinusitis, and 1 patient had only sphenoid sinusitis with mucocele.

Discussion

Sphenoid sinus mucocele is a rare entity, representing only 1-2% of all paranasal sinus mucoceles. It can present in any age group, but 30 to 60 years are more commonly affected, with no gender predilection. In our study, the patients in the age group 20-60 were affected by sphenoid mucocele, with the lowest age being 23 years and the highest age being 59 years. There is no sex preponderance observed in sphenoid mucoceles. In our study, it was observed more among males (06) when compared to females (04), but we will need a study with a larger sample size to deduce more regarding any sex preponderance.

The most common presenting complaints in sphenoid sinus disease are vague facial pain or headache, with associated symptoms being nasal obstruction, smell, and

visual disturbances. In our study, the commonest presenting complaint was headache, which was a generalized type observed in about 80% of patients, followed by nasal obstruction. One of our patients was asymptomatic, came for otological complaints, and was incidentally diagnosed with sphenoid mucocele when computed tomography of the nose and paranasal sinuses was done to rule out nasal pathologies. Diplopia was observed in one of the patients who had bone thinning on the medial wall of the orbit with pressure over the medial rectus muscle; the symptoms subsided post-operatively. A mandatory nasal endoscopy enables collection of cultural material, determining extension to the nasal cavity, and identifying nasal anatomical configuration relevant to surgery.^{1,2}

Sino-nasal computed tomography usually demonstrates mucoceles as being hypodense with a characteristic expanding propensity, unlike simple fluid retention. Surgical evacuation of the lesion for symptomatic relief and prevention of recurrence has been advocated. Early treatment confers the benefit of preventing visual damage and neurological deficits. Various approaches to the sphenoid sinus include trans-nasal, transseptal, and trans-ethmoid approaches. The endonasal endoscopic approach via the transnasal route is the current treatment modality of choice.^{2,11}

Endoscopic trans-nasal sphenoidotomy with adequate removal of anterior and inferior sinus walls enables unimpeded sinus drainage into the sphenoid-ethmoid recess and prevents recurrence.³

A long-term post-operative follow-up regime is recommended due to the possible recurrence even 2 decades after the initial surgery. Certain tumors and tumor-like conditions like carcinoma, fibrous dysplasia, osteoma, and ossifying fibroma are likely to be found as concomitant lesions with sphenoid mucocele, thus mandating its systematic evaluation and management.^{3,10}

Most of our patients were diagnosed early, evaluated, and treated by surgical intervention, which is the treatment of choice in cases of Paranasal sinus mucoceles. This prevents the extension of the mucocele, causing various

visual and neurological complications. Though this is a rare entity, it is better to thoroughly evaluate the patient clinically and radiologically to obtain an early diagnosis and effective management of this condition to prevent any complications and recurrence of the disease.

In our study, most patients had a history of rhinosinusitis, which is almost similar to a study conducted by Soon s r, the same study showed a history of nasopharyngeal carcinoma treated with radiotherapy as the most common aetiological factor, followed by chronic sinusitis.

Sphenoid sinus mucocele is a rare condition; radiation to the head and neck appeared to be a predisposing factor, and eye symptoms were the commonest presentation. Endoscopic sinus surgery is a safe and effective treatment modality.¹²

Conclusion

Surgical treatment is indicated in the case of sphenoid mucocele, and early treatment avoids visual damage that can be permanent. Endonasal endoscopic approach with drainage and marsupialization of the sphenoid sinus along with ethmoidal polyposis using a transnasal corridor is a safe and effective treatment modality for less recurrence.

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