

ENDOSCOPIC APPROACH IN ETHMOID SINUS OSTEOMAS

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SUMMARY : *Osteomas in the paranasal sinuses usually do not cause symptoms and many of them are encountered incidentally on radiographs. Three cases of osteoma localized in the ethmoid sinus that simultaneously present with nasal polyposis and chronic sinusitis are reported. Of various methods for resection of a paranasal sinus osteoma, an endoscopic approach was preferred and this technique is highlighted in order to evaluate its place, indications and limitations.*

Key Words: *Osteoma, Ethmoid Sinus, Paranasal Sinus, Endoscopic Surgery.*

INTRODUCTION

Osteomas are benign tumors composed of lamellar bone. Osteomas of the paranasal sinuses are most frequently encountered in the frontal sinus, and, in decreasing order of frequency, in the ethmoid and maxillary sinuses, and rarely in the sphenoid sinus. Asymptomatic cases are usually diagnosed incidentally on radiographs. Osteomas of the paranasal sinuses are reported to be encountered in 1 % of routine sinus X-rays (1). In a study comprising of paranasal sinus CT scans of 1500 patients, osteomas were detected in 46 cases (2). They usually remain the same size for a long period of time with a low rate of growth. Rarely they can have a relatively high rate of growth with involvement of not only the paranasal sinuses but neighbouring tissues as well. One case report describes an osteoma with a small size in the

frontal sinus in an acromegalic patient who refused treatment, filling the cavity in 10 years, leading to a pyocele at the end of 17 years and resulting in surgical intervention (3).

There is no significant difference in gender distribution of paranasal sinus osteomas which has a wide range of age distribution, cases being encountered in the second to seventh decade of life (4). In differential diagnosis, fibro-osseous lesions like fibrous osteoma and fibrous dysplasia should be considered (5).

An osteoma located away from the sinus ostium usually does not cause symptoms for a long time. Symptoms arise when the osteoma enlarges or is located in the drainage pathway of the sinus, the most frequent ones being facial pain, pain in the frontal region, and headache. Nasal obstruction and postnasal discharge may participate in the picture depending on the size of the osteoma and appearance of mucosal changes. When the mass enlarges anteriorly, a deformity in

the forehead may be the primary complaint. Rarely posterior extension of an osteoma may lead to meningitis, proptosis and diplopia.

Treatment of paranasal sinus osteomas is surgical. Asymptomatic cases can be followed up with radiologic examination on a regular basis.

Three cases of ethmoid sinus osteomas are reported in order to stress the place, indications and limitations of endoscopic approach in paranasal sinus osteomas.

CASE REPORTS

CASE 1

A 38-year-old female patient presented with complaints of headache, postnasal discharge and decrease in sense of smell for the last 3 years. Her past medical history indicated an intranasal polypectomy in another institution 2 years prior to her admission, and recent treatment for polyps and chronic sinusitis. Nasal examination revealed a nasal septal deviation to the left and polyps in the middle meatus bilaterally. Computed tomography scans demonstrated a circumscribed, sessile, high density mass compatible with osteoma originating from the medial orbital wall in the right ethmoid sinus. Additionally bilateral changes in the maxillary sinuses as mucosal hypertrophy, and an increase in soft tissue density in the ethmoid and frontal sinuses were shown on CT scans (Fig. 1). The patient was operated on under local anesthesia. An endoscopic approach was chosen for removal of the osteoma. Following resection of the uncinat process, the ethmoid bulla was opened and a wide middle meatal antrostomy was performed. While proceeding with the removal of the affected ethmoid cells posteriorly to complete ethmoidectomy, the mass was observed to be attached to the lamina papyracea and intimately related to the ethmoid roof. The mass was resected with a fine chisel.

The patient is doing well and free of symptoms for the postoperative 3-year period. Postoperative endoscopic examination revealed epithelialized cavities and open middle meatus antrostomies without any pathologic secretion.

CASE 2

A 59-year-old male patient was referred to our clinic with complaints of postnasal discharge and nasal obstruction of 10 years duration. The patient had received medical treatment for his symptoms prior to his referral. His past medical history was otherwise unremarkable. On nasal endoscopy a slight nasal septal deviation to the left, edematous mucosa on the uncinat process and the ethmoid bulla bilaterally, and purulent discharge from the right ethmoid infundibulum were observed. CT scans showed a high density 7x12 mm mass in close contact with the cribriform plate on the right side extending to the posterior ethmoid cells. An additional finding on CT scan was bilateral soft tissue density in the ethmoid sinuses (Fig. 2).

The patient underwent an endoscopic procedure under local anesthesia. During the procedure, the uncinat process was resected, the ethmoid bulla was opened, a wide middle meatal antrostomy was performed and the osteoma was revealed with the opening of the ground lamella. Similar to the prior case, the mass was resected with the aid of a fine chisel and mallet, and removed using a curette.

At the end of the 30-month postoperative period, the patient did not have any complaints. Postoperative endoscopic examination demonstrated epithelialized cavities and open antrostomies bilaterally.

CASE 3

A 44-year-old male was admitted to the hospital with a primary complaint of nasal obstruction for 5 years and an additional complaint of nasal discharge. The patient had received various forms of medical treatment recommended by several other physicians. Nasal examination demonstrated nasal polyps in both nasal cavities obscuring exposure of the middle turbinates. Computed tomography revealed a small, high density mass compatible with osteoma in the right frontal recess region. Additional findings on CT scans were increased soft tissue density filling both nasal cavities, maxillary, ethmoid, sphenoid sinuses and frontal recess (Fig. 3). An endoscopic sinus approach was carried out under local anesthesia. Following removal of polyps with microdebrider, standard

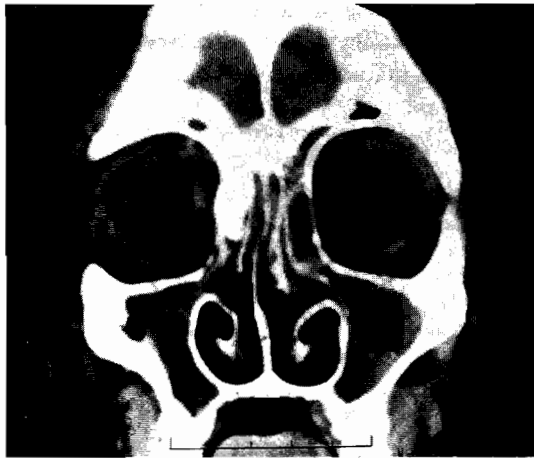


Fig. 1: Coronal CT scan demonstrating a circumscribed, sessile osteoma in the right ethmoid sinus and mucosal changes in the maxillary, ethmoid and frontal sinuses.

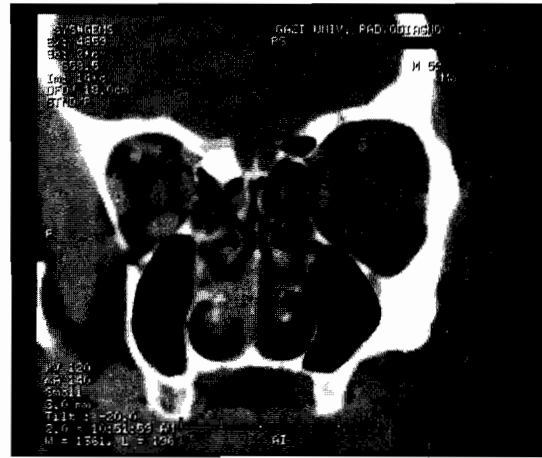


Fig. 2: Coronal CT scan showing an osteoma of the ethmoid sinus posteriorly with mucosal changes in the ethmoid sinus.



Fig. 3: Coronal CT scan indicating an osteoma of the right frontal recess and soft tissue opacification in the nasal cavity, ethmoid and maxillary sinuses.

endoscopic sinus surgical steps were followed to perform uncinectomy and proceed thereon. The bony mass was found to attach to the right medial ethmoid roof neighboring the anterior ethmoid artery and was removed with the aid of a Blakesley 45⁰, upturned forceps.

The patient is symptom-free for the 10-month postoperative period. The postoperative endoscopic examination demonstrated an epithelialized cavity with minimal edema on the right frontal recess.

DISCUSSION

Indications for surgical treatment of osteomas depend on the presence and severity of symptoms. A small mass located laterally in the frontal sinus can be followed up by radiographs obtained at 1-2 year intervals (6). Main indications for treatment of osteomas are enlargement of the mass beyond the boundaries of a paranasal sinus, localization in close proximity to the nasofrontal duct, complication of the condition with chronic sinusitis, osteomas arising from the ethmoid sinus with the risk of extension to the orbit and obstruction of the nasofrontal duct (7).

Various surgical approaches are defined in the literature. An ideal approach should provide sufficient exposure in order to avoid complications, and should lead to minimal functional and cosmetic deformity. Methods for surgical approach depending on the size and localization of the osteoma are osteoplastic flap with or without frontal sinus obliteration, endoscopic trephination (8), craniofacial resection (9), lateral rhinotomy and frontoethmoidectomy (10), external ethmoidectomy and endoscopic resection.

A frontal sinus osteoma of a moderate to large size is generally removed by the osteoplastic flap technique. Most of the time, since the mucosa of the frontal sinus can usually be spared during the removal of the osteoma with osteoplastic flap technique, there is no need for

obliteration of the sinus. In small sized tumors, endoscopic trephination may be preferred. In cases where the osteoma extends to the anterior skull base eroding the posterior wall of the frontal sinus, craniofacial resection can be considered as the most appropriate approach.

Endoscopic surgery is gaining a progressively increasing position with gradual replacement of traditional methods for nasal and paranasal sinus problems. In our opinion, the indication for endoscopic removal of an osteoma is a small sized mass localized in the ethmoid sinus. The surgeon should have sufficient knowledge and experience about the anatomy and surgical technique related to this region. Superiorities of endoscopic technique when compared to external approaches are decreased morbidity and cost, avoidance of postoperative cosmetic deformity and scars, absence of postoperative hyposthesia or anesthesia of the forehead, and avoidance of general anesthesia. In cases where osteomas lead to or are simultaneously present with chronic sinusitis, the endoscopic approach provides treatment for both problems at the same session. External approaches may leave postoperative anatomic deformities which may serve as a medium for development of chronic sinusitis.

Like every other method, the endoscopic approach also has disadvantages. Osteomas are usually located in close proximity to the ethmoid arteries, lamina papyracea, orbit, cribriform plate and anterior skull base. Especially in cases where indications for endoscopic approach is not well-determined and/or the surgeon is not sufficiently experienced, injury to one or more of the above mentioned anatomic structures may arise. In some cases of osteoma, polypoid edema may prevent exposure of the mass and its pedicle which necessitates alternative techniques of resection.

As is the case with determination of the method of approach, the instruments to be used during the removal of the osteoma would depend on the preference and experience of the surgeon, size and location of the mass. Our choice would include a Blakesley forceps -upturned or straight- in small masses with a narrow pedicle, a chisel and a mallet in larger cases, and a drill in osteoma cases where there is a danger of injury to surrounding structures.

As a result, in appropriate cases of

osteomas which are located in the ethmoid sinus, endoscopic resection of the tumor is an advantageous technique with lower morbidity and cost than traditional methods.

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