

Giant Ethmoid Osteoma Originated from the Lamina Papyracea

Mümtaz Taner Torun, Fatih Turan, Ümit Tuncel

Department of Ear Nose and Throat, University of Erzincan, Erzincan, Turkey

Corresponding author: Mümtaz Taner Torun, MD. Department of Ear Nose and Throat, University of Erzincan, Erzincan, Turkey. Phone: +90 446 212 2222; E-mail: dr2735@myynet.com

ABSTRACT

Introduction: Osteomas are slow-growing, benign tumors. They are the most common neoplasms of the paranasal sinuses. They are usually originates from the frontal and ethmoid sinus and much less frequently seen in the maxillary and sphenoid sinuses. Although the lamina papyracea is a part of ethmoid bone, a giant osteoma originated from the lamina papyracea is very uncommon. An osteoma of the paranasal sinus is usually asymptomatic. Headache, proptosis, epiphora, diplopia, dizziness, facial deformity, face pain and cerebral complications are possible symptoms. The treatment of the paranasal osteomas are controversial. **Case report:** A 65 year old patient that applied with stuffiness and headache to our clinic. She has had a smooth mass in the right nasal cavity. Paranasal sinus tomography showed an osseous lesion, the size of 4x 3 cm, arising from the right lamina papyracea. The mass excised endoscopically and reported as osteoma histopathologically. There was no complication. After 9 months, there was no recurrence. **Conclusion:** Giant osteomas of paranasal sinuses, especially originated from the lamina papyracea are rare. They can be treated successfully by endoscopic approaches without any recurrence and complication despite its size.

Key words: Giant osteoma, lamina papyracea, endoscopic resection, ethmoid sinus.

1. INTRODUCTION

Osteomas are slow-growing, benign and encapsulated osteogenic neoplasm. They are the most common neoplasms of the paranasal sinuses (1). They are usually originates from the frontal and ethmoid sinus and much less frequently seen in the maxillary and sphenoid sinuses (2). The osteoma originated from the lamina papyracea is very uncommon (3). However the giant osteomas of the ethmoid and frontal sinuses are very rare, with only a few dozen cases reported in the literature (4).

Lamina papyracea is also a part of the ethmoid bone. An osteoma of the paranasal sinus is usually asymptomatic and found incidentally on imaging examinations. Ethmoid sinus osteomas often Show symptoms at an early stage while osteomas range in size from 2 to 30 mm because of the limited anatomical space (4).

Most common symptoms are; blunt face pain, congestion, rhinorrhea, anosmia, sinusitis and orbital symptoms include diplopia, proptosis, exophthalmos and changes in vision (5). Osteomas may be associated with rhinosinusitis and mucocoeles and these can increase the cranial and orbital complications (5). While osteomas usually range in size from 2 to 30 mm, an osteoma with a diameter > 30 mm or weighing > 110 g is considered a 'large' or 'giant' osteoma (6).

The treatment of the osteomas are controversial. The symptomatic osteomas are treated surgically by external approach, endoscopic or both (1, 2). Endoscopic approaches are preferred recently because of its advantages.

We report a case of a giant osteoma of ethmoid sinus and its treatment by endoscopically.

2. CASE REPORT

A 65 year old woman, presented with stuffiness and headache, referred to our clinic. She has had these symptoms for three years and increasing for three months especially at the right side of her face. The patient had no associated symptoms such as; epistaxis, rhinorrhea, diplopia, cerebral or the other ophthalmologic symptoms. She had no history of surgery, trauma or chronic infection. At physical examination there was no deformity on her face. Anterior rhinoscopy showed bilateral inferior conchal congestion and a mass at posterior of the right inferior concha. A solid mass with smooth surface that extend to the choana was found in right nasal cavity on endoscopic examination (Figure 1). Other physical examinations were normal. A paranasal sinus computerized tomography (CT) scan revealed a 4x3 cm lesion of osseous density arising from the right lamina papyracea and extending to the choana, posterior ethmoid air cells and frontal reses (Figure 2). Except from the lamina papyracea, there were no insertion of the mass to the lateral wall. There was a soft tissue density in the right maxillary sinus secondary to the ostium obstruction.

An endoscopic excision planned under general anesthesia. After uncinectomy and anterior ethmoidectomy, the margins of the osteoma evaluated. The bony medial orbital rim were cut by a drill without excision of the lamina



Figure 1. Pre-operative endoscopic view



Figure 3. Pathologic specimen



Figure 2. Pre-operative computerized tomography



Figure 4. Post-operative computerized tomography at 9th month

papyracea and the mass was mobilized. Posterior part of the nasal septum was resected for excision of the osteoma. It was pushed to the choana and got out from mouth. Merocele package was done for hemostasis. After removal, the giant osteoma was found to measure ~ 4x3x2 cm (Figure 3). There was no complication after surgery and the lamina papyracea was intact. Meroceles were got out two days later, there was no hemorrhage and the patient was discharged. The histopathologic report confirmed a diagnosis of osteoma with osteoblastic and osteoclastic activity. An endoscopic examination and CT showed that the patient was disease-free 9 months postoperatively (Figure 4).

3. DISCUSSION

Osteomas are the most common benign tumors of the paranasal sinuses, usually found in the frontal sinus (57-80 %) and less often in the ethmoid sinus, also lamina papyracea, (20 %), maxillary sinus (6.3 %) or sphenoid sinus (4.9 %) (1, 2, 4). Osteomas are slow-growing neoplasms and affect 0.43-1 % of the population with a male dominance and in fourth decade (2, 7). The tumors larger than 30 mm in diameter are considered giant tumors (6). Our patient was 65 year old, female and the size of the tumor was 4x3x2 cm. We thought that the osteoma was originated from the lamina papyracea because of the insertion of the mass. Osteomas can be divided 3 subgroups histologically. Cortical variant, sponge variant and mixed type

(both cortical and sponge) (8). The etiology of the osteomas are still unknown but there are 3 theories. Embryological, traumatic and infection theories (9). There was no trauma or infection history in our patient. Because of the large size of the tumor, the embriologic theory is considered in our patient.

Osteomas are generally diagnosed incidentally. They are usually asymptomatic. Only 5% of cases become symptomatic or require surgery (5). Diagnosis is based on imaging studies, especially CT scan. When they become symptomatic, it is often related to the location of the tumor. The most common symptom is headache (6). Proptosis, epiphora, diplopia, dizziness, facial deformity, face pain and cerebral complications are the other possible symptoms (4, 5, 6). There were no ophthalmologic symptoms in our patient. Headache and facial pain were our patient's major complaints alike reported in literature. The treatment of the osteomas are controversial. Although some studies suggest that asymptomatic static lesions may be observed, surgical removal is indicated in cases with orbital matrix compression and displacement (10). Smith et al. evaluated 22 patients with asymptomatic frontal osteomas. If the mass localised near the nasofrontal ductus or filled the 50% of the frontal sinus, they operated the patients even asymptomatic (11). According to Savic and Djeric, asymptomatic osteomas should be operated if they extend beyond the frontal sinus boundaries, if they can be demonstrated to be enlarging on repeated radiological examinations, or if they are located near the frontonasal duct (12).

Endoscopic surgery, external approach or both are the main treatments for symptomatic osteomas of the sinuses. The choice must consider several factors such as tumor location, extension, dimension and the experience of the surgeon. Yiotakis and Cheng reported that the main treatment is external approach but endonasal surgery may be performed (4, 13). Karapantzios et al. reported that a transcutaneous paranasal approach offers the advantages of increased exposure of affected structures as well as accurate recognition and preservation (14). Savic and Djeric used the osteoplastic flap technique at 34 patients, external ethmoidectomy at 4 patients and lateral rhinotomy at 3 patients (12). Lund et al. reported a combined approach was chosen in seven cases (15.6%) and osteomas in three cases (6.7%) were resected completely via endoscopic intranasal surgery (15). First time, Menezes and Davidson used the endoscopic approach in these tumors (9). After that, there are several reports of successful removal of large ethmoid osteomas with intraorbital extension, treated endoscopically. Huang et al. have presented a case of ethmoid osteoma extended into the orbit, which was removed endoscopically after drilling and elevation (1). Naraghi et al. have described a case of large ethmoid-orbital osteoma dissected via endoscopic approach without drilling, with minimal complications (16). More researchers reported the endoscopic treatment of paranasal sinus osteomas and its advantages (17, 18). In our patient; we performed transnasal approach despite its large size. There was no complication or recurrence in nine months postoperatively. The limitation of blood loss, reduced postoperative morbidity with a shorter hospitalization time and no incision scar are the advantages of an endoscopic surgery.

4. CONCLUSION

Giant osteomas of paranasal sinuses, especially originated from the lamina papyracea, are rare. They can be treated successfully by endoscopic approaches without any recurrence and complication. The minimal blood loss, short hospitalization and excellent cosmetic view are the choice of endoscopic approach. We offer endoscopic approach at appropriate cases.

CONFLICT OF INTEREST: NONE DECLARED

REFERENCES

- Huang MH, Liu CM, Lin KN, Chen HT. Giant ethmoid osteoma with orbital extension, a nasoendoscopic approach using an intranasal drill. *Laryngoscope*. 2001; 111: 430-432.
- Zouloumis L, Lazarides N, Papadaki M, Epivatianos A. Osteoma of the Ethmoidal Sinus: A Rare Case of Recurrence. *Br J Oral Maxillofac Surg*. 2005; 43: 520-522.
- Kim KS. Symptomatic osteoma originated from lamina papyracea. *Saudi Journal of Ophthalmology*. 2011 Oct; 25(4): 427-429.
- Cheng K, Wang S, Lin L. Giant osteomas of the ethmoid and frontal sinuses: Clinical characteristics and review of the literature. *Oncol Lett*. 2013 May; 5(5): 1724-1730.
- Mansour AM, Salti H, Uwaydat S. Ethmoid sinus osteoma presenting as epiphora and orbital cellulites: Case report and literature review. *Surv Ophthalmol*. 1999; 43: 413-426.
- Erdogan N, Demir U, Songu M, Ozenler NK, Uluç E, Dirim B. A prospective study of paranasal sinus osteomas in 1889 cases: changing patterns of localization. *Laryngoscope*, 2009; 119: 2355-2359.
- Selva D, White VA, O'Connell JX, Rootman J. Primary bone tumors of the orbit. *Surv Ophthalmol*, 2004; 49: 328-342.
- Cobusch RF. Frontal sinus osteoma: complete removal via endoscopic sinus surgery and frontal sinus trephination. *Am J Rhinol*. 1992; 4: 139-143.
- Menezes CO, Davidson TM. Endoscopic resection of a sphenoid osteoma: a case report. *ENT J*. 1994; 73: 598-600.
- Becelli R, Santamaria S, Saltarel A, Carboni A, Lannetti G. Endo-orbital osteoma: two case reports. *J Craniofac Surg*, 2002; 13: 493-496.
- Smith ME, Calcaterra TC. Frontal sinus osteoma. *Ann Otol Rhinol Laryngol*. 1989; 98: 896-900.
- Savic DLJ, Djeric DR. Indications for the surgical treatment of osteomas of the frontal and ethmoid sinuses. *Clin Otolaryngol*, 1990; 15: 397-400.
- Yiotakis I, Eleftheriadou A, Giotakis E, Manolopoulos L, Ferekidou E, Kandiloros D. Resection of giant ethmoid osteoma with orbital and skull base extension followed by duraplasty. *World J Surg Oncol*. 2008; 6: 110.
- Karapantzios I, Detorakis ET, Drakonaki EE, Ganasouli DL, Danielides V, Kozobolis VP. Ethmoidal osteoma with intraorbital extension: excision through a transcutaneous paranasal incision. *Acta Ophthalmol Scand*. 2005; 83: 392-394.
- Lund VJ. et al. European position paper on endoscopic management of tumours of the nose, paranasal sinuses and skull base. *Rhinol Suppl*. 2010 Jun 1; (22): 1-143.
- Naraghi M, Kashif A. Endonasal endoscopic resection of ethmoid-orbital osteoma compressing the optic nerve. *Am J Otolaryngol*. 2003; 24: 408-412.
- Bertoletti F, Capolunghi B, Bertolini G, Cascio F, Bracci AM. Giant osteoid osteoma of ethmoid sinus: role of functional endoscopic sinus surgery. *Acta Otorhinolaryngol Ital*. 2004 Oct; 24(5): 297-301.
- Muderris T, Bercin S, Sevil E, Kiris M. Endoscopic removal of a giant ethmoid osteoma with orbital extension. *Acta Inform Med*. 2012 Dec; 20(4): 266-268.