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ENDOSCOPIC REMOVAL OF A GIANT ETHMOID OSTEOMA WITH ORBITAL EXTENSION

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Case report
ABSTRACT
Osteomas are slow growing bony tumours of the paranasal sinuses. They are usually asymptomatic but they may present with headache, cerebral symptoms, or visual disturbances, depending on their anotomical location. A computerized tomography scan is the imaging modality that should be choosen for the diagnosis of osteomas. Radiographically, osteoid osteoma appears as an opaque lesion with a nidus which has a radioluscent center surrounded by dense sclerosis. If treatment is indicated, external or endoscopic approaches can be chosen. We report a rare case of giant ethmoido-orbital osteoma which was treated via endoscopic approach. The endoscopic way is convenient and safe enough with advantages over the external approach. The decreased morbidity and better cosmetic results are clear advantages of this technique which has the potential to become the treatment of choice for selected ethmoid tumours, such as a giant tumour mentioned in this study.
Key words: Endoscopic approach, ethmoid osteoma, orbital extension.

1. INTRODUCTION

Ethmoid osteomas are usually asymptomatic and are usually found incidentally on radiographic examinations. Most authors agree that surgery is not necessary for small lesions, and they suggest periodic imaging in order to follow the growth of the tumor (1]). When osteomas expand into the orbital vault, they displace the orbital contents and give rise to symptoms like headache, diplopia, exophthalmos and proptosis. Primary intraorbital involvement is extremely rare (2).

Osteoma of the paranasal sinuses may occur at any age, although most of them are found in the fourth and fifth decades. They are more common in men than in women, with a ratio of 2:1 (3). Traditional surgical approaches to the involved sinuses are external frontoethmoidectomy, lateral rhinotomy or osteoplastic flap techniques (4). Technological advantages in endoscopic instrumentation have extended the use of endoscopic surgery for the management of ethmoid osteomas. Endoscopic transnasal resection is ideal for tumors confined to the ethmoid sinuses and nasal cavity. The main advantages of this method are the minimal soft tissue dissection, the absence of facial bony disruption, and the avoidance of a facial incision. The magnification and the different angled view, which are possible with the use of endoscopes, may facilitate the removal of osteoma, with minimal morbidity (5).

We report a case of a giant ethmoid sinus osteoma with intraorbital expansion, treated successfully with endoscopic approach instead of the external, or combined way.

2. CASE REPORT

A 45 year old male was referred to our hospitals' emergency room with periorbital edema, exophthalmos, pain and decreased vision in the right eye. The eye movements were restricted to all directions and he has been complaining of right sided headache for the last 6 months. The patient underwent an ophthalmological assessment which revealed 2.5 mm of proptozis on right side with diplopia on both gazes, limitation of eye movements and exophtalmos. In our clinical examination we found a minimal septal deviation to the right and hypertrophy of the left inferior turbinate. No history of systemic medical diseases were present.

Computed tomography of the paranasal sinuses and orbita showed a dense ossified mass which was 35x30x25 mm in size, originating from the posterior ethmoid air cells, extending to the anterior ethmoid air cells and the right orbita. It was pushing the right medial rectus muscle and right optic nerve from the medial side. Bulbus oculi was dislocated anteriorly (proptozis).

Under general anaesthesia, endoscopic sinus surgery was performed for the removal of the mass. Uncinectomy was performed, maxillary sinus ostium was identified and the ethmoid bulla was resected. After the anterior wall of the ethmoid bulla had been resected, the osteoma was fairly visualized as a hard, whitish mass strongly bonded to the medial wall of the orbit. The size of the tumour was too large to be taken out from the nasal cavity through neither the choana nor the piriform aperture. It was necessary to fragment

it, so most of the tumor was drilled with the help of a burr and the rest was elevated and removed with the aid of forceps by way of piriform aperture. . As seen on the CT, lamina papyracea was defective seperation, and the mass was elevated directly from the periorbital tissues.

Nose was lightly packed to prevent post-operative haemorrhage and they were removed 48 hours later. There was no defect at the cribriform plate and no perioperative complications like cerebrospinal fluid leakage, haemorrhage or loss of vision was observed.

The symptoms improved dramatically just after the operation, and the patient discharged two days after surgery without any complications.

The histopathological examination confirmed the diagnosis, 'osteoid osteoma'. The patient was followed-up with nasoendoscopy which confirmed re-epithelialization within 4 weeks of surgery. The HRCT sinus-scan performed 6 months postoperatively confirmed no residual osseus tumours.

3. DISCUSSION

Osteoid osteoma is a benign osteoblastic lesion and constitutes 1% of all bone tumors and 11% of benign bone lesions (6). Lesions larger than 3 cm in diameter are considered giant tumors (7). It is frequently localized to the cortex (85%) of the bone but may also occur in spongiosa (13%) and subperiosteal region (2%) (8). Skull base osteoid osteomas are extremely rare and occur in the frontal or ethmoidal sinuses (6, 9). Osteomas occuring in the ethmoid sinus tend to present earlier than others, possibly due to the constricted anatomy of the ethmoid air cells (10). Numerous cases of paranasal osteomas that extended beyond the margins of the sinuses and caused serious complications such as menengitis, cerebral abscesses, and intracranial mucoceles have been reported (7, 11). When present, the most common symptom is headache. Nasal obstruction, persistent sinusitis, pain, facial asymmetry, and ocular findings such as diplopia and proptosis are the other symptoms (3). Ocular symptoms are a consequence of tumoral compression of the intraorbital structures (12). Large tumours may also completely destroy the eye (13). The signs and symptoms are usually related to the location of the tumor. In our case the osteoid osteoma was seen to originate from the ethmoid sinus and orbital symptoms were the presenting feature.

A CT scan is the imaging modality of choice for the diagnosis of osteomas. It allows the physician to determine the exact anatomic location of the tumor and its extensions (14, 15). Radiographically osteoid osteoma appears as a radio opaque lesion with a nidus which has a radiolucent centre surrounded by dense sclerosis (8).

Osteomas that are not big enough to obstruct any paranasal sinus ostium or that do not impinge into adjacent orbital or cranial cavity, could be asymptomatic. If asymptomatic and small, the lesion may be observed. However a rare complication of a large pneumocephalus has been reported by Ferlito et al from a frontoethmoidal osteoid osteoma (16). Although osteomas are generally asymptomatic, some of them grow and become symptomatic in the third or fourth decades (17). Treatment is not recommended in asymptomatic cases, especially in elderly patients because of slow growth pattern of the tumour (17). Surgical treatment should be done immediately for sphenoid sinus osteomas because of the potential risk of the rapid compression on the visual pathways that causes blindness (13). On the other hand small osteomas should be removed because of removing easily, when they are large and complicated it will be difficult to remove. Our patient presented with loss of vision due to a large osteoid osteoma of the ethmoid extending the right orbit, but tumor was not present in the orbit for a long time, so significant atrophy of orbital fat was not expected.

The purpose of the surgery is total removal of the tumor without any damage to the adjacent organs. For large ethmoid osteomas lateral rhinotomy, midfacial degloving, osteoplastic flap, external frontoethmoidectomy, and in selected cases, endoscopic excision, are suggested (18). Small ethmoidal osteomas are easily removed by a simple endoscopic technique (17, 19). Not only small ethmoid osteomas but also large tumors extending to the orbit, as seen in our case, could be easily removed without any need for external approach causing an external scar.

The treatment generally consists of en bloc resection or curettage of the tumor. In deciding the surgical approach to an osteoma, its size and location are important, as is the surgeon's experience (20). We realized that it was possible to remove this huge tumor radically using endoscopic techniques because tumor boundaries can be controlled very easily. We believe that the vast majority of ethmoid sinus osteomas can be managed endoscopically. Orbital extension of ethmoid osteomas is not a contraindication for an endoscopic approach. Because orbita was tightly adherent to the mass, care was taken not to injure the periorbita, orbital fat, or damage the medial rectus muscle. Small osteomas can be removed by en bloc resection. If the osteoma is exceptionally large and broadly attached to the ethmoidal borders, as in the case described here, the tumor can be reduced in size with the drill, before complete removal (21). We also drilled the osteoma for thinning and then elevated it from adjacent tissues and skull base. The endoscopic approach provides a safe and effective alternative to external way, offering cosmetic advantages and a lower morbidity rate (22).

There are conflicting reports about the ability of an osteoma to recur after incomplete removal (23, 24). Recurrence rate after incomplete resection may be upto 10% (6). No malignant transformation has been reported (6).

In conclusion; if treatment is indicated for a paranasal sinus osteoma, external or endoscopic approach can be chosen. The endoscopic approach offers the possibility of safe removal with cosmetic advantages compared to external approach. Larger osteomas are burred at the center, creating a cavitation of the osteoma and

thinning the remaining peripheral side. This thin side is then broken and removed with a forceps. Due to the serious potential risks of surgery, treatment is not recommended in asymptomatic osteomas.

Conflict of interest: none declared.

REFERENCES

1. Earwaker J. Paranasal sinus osteomas: a review of 46 cases. J Skeletal Radiol. 1993; 22: 417-423.
2. Becelli R, Santamaria S, Saltarel A, Carboni A, Iannetti G. Endo-orbital osteoma: two case reports. J Craniofac Surg. 2002; 13: 493-496.
3. Gillman GS, Lampe HB, Allen LH. Orbitoethmoid osteoma: case report of an uncommon presentation of an uncommon tumor. Otolaryngol Head Neck Surg. 1997; 117: 218-220.
4. Osma U, Yaldiz M, Tekin M, Topcu I. Giant ethmoid osteoma with orbital extension presenting with epiphora. Rhinology. 2003; 41: 122-124.
5. Menezes C, Davidson T. Endoscopic resection of the sphenoethmoid osteoma: a case report. Ear Nose Throat J. 1994; 73: 598-600.
6. Grayeli AB, Redondo A, Sterkers O. Anterior skull base osteoid osteoma: case report. Br J Neurosurg. 1998; 12(2): 173-175.
7. Summers L, Mascott C, Tompkins J, Richardson D. Frontal sinus osteoma associeted with cerebral abscess formation: a case report. Surg Neurol. 2001; 55: 235-239.
8. Rosai J. Bone and joints. In Ackerman's surgical pathology Volume 2. 8th edition. Edited by: Rosai J. St Louis: Mosby, 1996: 1934-1936.
9. Hamilton HB, Voorhies RM. Neurosurgery 2nd edition. Edited by: Wilkins RH, Rengachary SS. Mc Graw Hill, New York, 1503-1528.
10. Begley JW. Hallberg OE. Osteomas ofthe paranasal sinuses and their treatment. Proceedings ofthe Staff Meetings ofthe Mayo Clinic. 1950; 25: 13-16.
11. Nabeshima K, Marutsuka K, Shimao Y, Uehara H, Kodama T. Osteoma of the frontal sinus complicated by intracranial mucocele. Pathol Int. 2003; 53: 227-230.
12. Benatiya AI, Touiza E, Bhallil S. et al. Orbital osteoma: three case reports. Bull Soc Belge Ophtalmol. 2006; 300: 73Y-79Y.
13. Mansour AM, Salti H, Uwaydat S, et al. Ethmoid sinus osteoma presenting as epiphora and orbital cellulitis: case report and literature review. Surv Ophthalmol. 1999; 43: 413Y-426Y.
14. Trinidade A, Shakeel M, Moyes C, Ram B. The evidence-based management of bilateral ethmoid osteomas: diagnosis, endoscopic resection and review of the literature. West Indian Med J. 2010; 59: 188-191.
15. Karapantzos 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.
16. Ferlito A, Pesavento G, Recher G, Mingrino S, Visona A, Fiore DL, Macchi C. Intracranial pneumocephalus (secondary to frontoethmoidal osteoma). J Laryngol Otol. 1989, 103: 634-637.
17. Strek P, Zagolski O, Skladzien J, et al. Ethmoid sinus osteoma removed under endoscopic guidance-the literature review of the problem based on one case. Case Rep Clin Pract Rev. 2005; 6: 207Y-210Y.
18. Schick B, Steigerwald C, El Tahan A, Draft W. The role of endonasal surgery in the management of frontoethmoidal osteomas. Rhinology. 2001, 39: 66-70.
19. Eller R, Sillers M. Common fibro-osseous lesions of the paranasal sinuses. Otolaryngol Clin North Am. 2006; 39: 585Y-600Y.
20. Strçk P, Zagólski O, Skladzien J, Kurzyriski M, Dyduch G. Osteomas of the paranasal sinuses: Surgical treatment options. Med Sei Monit. 2001; 13: CR244-250,
21. Reis M, Hüttenbrink KB. Endoscopic removal of osteoma of the paranasal sinuses. HNO. 1997; 15: 397-404.
22. Gerbrandy SJ, Saeed P, Fokkens WJ. Endoscopic and trans-fornix removal of a giant orbital-ethmoidal osteoma. Orbit. 2007; 26: 299-301.
23. Selva D, White V, O'Connell J. Primary bone tumors of the orbit. Surv Opthalmol. 2004; 49: 328-342.
24. Gibson T, Walker F. Large osteoma of the frontal sinus: A method of removal to minimize scarring and prevent deformity. Br J Plast Surg. 1951; 4: 210-217.