Osteoma of the paranasal sinuses is a benign, well-defined and slow-growing tumor arising mostly from the frontal sinus, and less frequently from the ethmoid, maxillary and sphenoid sinuses. It rarely invades the orbital cavity and results in complications with ocular symptoms. We report a young man with an osteoma of his right ethmoid and maxillary sinuses extending into the orbital cavity and presenting with diplopia. This patient underwent a lateral rhinotomy approach for total removal of the huge tumor without any postoperative complications. The pathologic report confirmed the clinical diagnosis of osteoma. The patient fared well after surgery and his diplopia resolved without any definite cosmetic complications. No residual tumor was found during post-operative follow-up.

CASE REPORT

A 20-year-old man visited our clinic with the chief complaint of a progressive diplopia for 3 months. Tracing his medical history, he had a minor right orbital fracture in a traffic accident 2 years before and a lesion with bony density had been accidentally found in the routine X-ray film examination at another hospital (Data unavailable). The impression at that time was a sinus osteoma and regular follow-up was suggested due to the absence of symptoms or signs. But the young man was too busy with his school work to comply with the doctor’s advice.

Unfortunately, progressive diplopia of his right eye was noted in the past few months. He also felt a fullness sensation of the right eye, and soon visited our clinic. Computed tomographic (CT) scans of the sinuses revealed a bony density lesion in volving the right ethmoid and maxillary sinuses and with extension to the orbital cavity (Fig. 1).

We consulted ophthalmologists and ophthalmic examination showed normal visual acuity and visual field with partially limited movement of the right medial
rectus muscle. Due to the huge, hard and deeply embedded mass, a right lateral rhinotomy was performed for total removal of the tumor from the ethmoid, the maxillary sinuses and the orbital cavity. The tumor measured $4 \times 3 \times 2$ cm in size and the final pathology reports confirmed the clinical impression of osteoma. The diplopia had completely resolved and his vision of the right eye was well preserved. No residual tumor was found in the post-operative CT scan of sinuses (Fig. 2).

**DISCUSSION**

Osteomas of paranasal sinuses are benign and slow-growing tumors composed of osseous tissue. The incidence of osteomas of paranasal sinuses reported between 0.43% and 1% of the general population.\(^1\) Osteomas are usually detected during the second to fifth decades of life and has 1.5-2:1 of male to female ratio in the general population.\(^2\) Koivunen et al.\(^3\) reported the mean growth rate of paranasal sinuses osteoma to be 1.61 mm per year, ranging from 1.44 to 6.0 mm per year. In 1993, Earwaker\(^4\) described the size of paranasal sinus osteomas to vary from a mean diameter of 1.5 mm to 30 mm in a survey of 1500 coronal CT scans. Osteomas less frequently involve the ethmoid and maxillary sinuses and rarely invade the orbit. In our case, the huge osteoma located in right ethmoid and maxillary sinuses invaded deeply into

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**Fig. 1.** Preoperative CT scans – a bony density mass involved right ethmoid and maxillary sinuses with deep extension into right bital cavity. (A) coronal view. (B) horizontal view.

**Fig. 2.** Postoperative CT scans – there is no residual osteoma and the orbital contents are well preserved. (A) coronal view. (B) horizontal view.
right or bital cavity. The tu mor mea sur ing more than 40 mm was an ex tremely rare case.

The majority of osteomas is asymptomatic at early stage and is found in ci dentally on radio graphic ex ami na tions for other rea sons. Symp toms and signs are re lated to the tu mor size, lo ca tion, and rate of growth. Sec ond ary orbital or intracranial compli ca tions of sinus osteomas are greatly em pha sized. The orbital dis orders in clude proptosis, or bital pain, de creased vi sual acuity, che mosis, dis plopia, epiphoria, non pul sar turing ex opthal mos and trans ient blind ness. The ini tial symp tom of our pa tient was full ness sen sa tion of his right eye when sneez ing and may be due to the tu mor de struc tion of the right lamina papyracea. With the growth of the tu mor mass, pro gres sive dis po sition de vel oped due to the in volve ment of the rectus mus cle. CT scans are the stan dard di ag nos tic ex amination for osteomas. Ax ial and co ro nal CT cuts lo cate the pri mary le sion, de fine its ex tent, and iden tify the as so ci ated sinunasal, or bital and intracranial ex ten sion.

The treat ment of asymp tom atic sinunasal osteomas re mains con tro ver sial and con ser va tive treat ment is rec om mend ed for most asymp tom atic cases. Surgical re moval of paranasal si nus osteomas is un doubt edly pre served for clini cal ly symp tom atic pa tients when: (1) osteomas cause or bital or intracranial com pli ca tions; (2) the ini tial symp toms of na sal ob struc tion or si nus itis fail to re solve even on max imal med i ca tion ther apy; (3) asymp tom atic osteomas are lo cate d near the open ing of the fron tal si nuses where ob struc tion may lead to se vere con se quences; (4) osteomas occupy more than 50% of the frontal si nus; and (5) an ob vi ous in crease in tu mor size is noted.\textsuperscript{5}

Tra di tion ally, re sec tion of such a hard and large tu mor requires an open approach. The advent of endo sco pic tech no logy has revo lution ized the rhino logist’s view point to the ap proach to sinunasal le sions. Even though the endosco pic tech nique through the intra nasal drill has been ap plied suc cess fully to osteomas with or bital ex ten sion,\textsuperscript{6} the choice of sur gi cal ap proaches is in di vid u al ized and de pends on the tu mor lo ca tion and size. The goal is the to tal re moval of tu mors with out in jury to the im por tant sur round ing struc tures by ob tain ing a pro per operative field.

For our pa tient, we chose the lat eral rhino to my ap proach in stead of the en do scopic ap proach be cause it would al low closer and more di rect ap proach to the tu mor as well as the best vi su al iza tion of the or bital con tent s and the tu mor ex tent dur ing sur gery. Ac cord ingly, osteomas tend to dis place intraorbital struc tures rather than erode into them; hence we re moved the osteoma ten derly and care fully with out injury to the intraorbital con tent s. There were no clini cally com pli ca tions such as dis plopia or blind ness and no cos metic com plaint. The long term prog no sis for these tu mors is ex cel lent. Malign ant change has not been re ported. Recurrence after proper ex ci sion is rare.

In sum mary, osteomas are slow grow ing be nign le sions. A large sinunasal osteoma as our case with deep ex ten sion into the orbit cavity is ex tremely rare. Most osteomas are asymp tom atic and are in ci den tally found on radiologic ex amina tions. The CT scans are stan dard tests re quired for the plan ning of treat ment. Sur gery is gen er ally ac cepted for symp tom atic osteomas. Whether intranasal en do scopic or ex ter nal ap proach, the best de cisions must be made based on in di vid ual presen ta tion.

REFERENCES