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# Paranasal sinus osteomas: Diagnosis and treatment

## Ostéomes des sinus paranasaux : diagnostic et traitement

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### Summary

**Introduction.** Osteoma is the most common benign tumor of the nose and paranasal sinuses. It is a slow-growing bony tumor, often asymptomatic, occurring mainly in frontal and ethmoid sinuses. Theories regarding the origin of osteomas are still discussed. The aims of the study were to describe diagnosis circumstances in our series and to set out our respective indications for open and endoscopic approaches in the treatment of nasosinus osteomas.

**Patients and methods.** A retrospective study was conducted on the files of all the patients treated for a paranasal sinus osteoma in our department between 1990 and 2013. Diagnosis circumstances and kind of treatment were collected and analyzed.

**Results.** The files of 45 patients (mean age: 49.2; sex-ratio: 1.19) could be collected. The most common symptom was headache found in all patients. The most common location was the frontal sinus (30 cases). Thirty-nine open procedures were performed. Four osteomas were removed under endoscopic assistance. In one case, a combined approach has been used. Overall complication rate was 11.1%. Symptoms improved in all patients. Two recurrences were observed.

**Discussion.** Surgical indications in paranasal sinus osteomas are theoretically well codified. However, approaches remain controversial. In our experience, the preferred approach was the open one. Endoscopic techniques, when indicated, are more challenging and need sophisticated instrumentation and a long learning curve.

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**Keywords:** Osteoma, Paranasal sinusitis, Endoscopic surgery

### Résumé

**Introduction.** L'ostéome est la tumeur bénigne la plus fréquente des fosses nasales et des sinus paranasaux. Il s'agit d'une tumeur de croissance lente, souvent asymptomatique, se localisant préférentiellement dans le sinus frontal et l'ethmoïde. Les théories concernant l'origine des ostéomes restent débattues. L'objectif de cette étude était de décrire les circonstances diagnostiques dans notre expérience et d'établir nos indications respectives entre voies d'abord cutanées et endoscopiques dans le traitement des ostéomes naso-sinusiens.

**Patients et méthodes.** Une étude rétrospective sur dossiers a été menée concernant l'ensemble des patients traités dans notre service pour un ostéome sinusien paranasal entre 1990 et 2013. Les circonstances de diagnostic et le type de traitement mis en route ont été recueillis et analysés.

**Résultats.** Les dossiers de 45 patients (âge moyen : 49,2 ans ; sex-ratio : 1,19) ont pu être analysés. Le symptôme le plus fréquent a été la céphalée, présente chez tous les patients. La localisation la plus fréquente a été le sinus frontal (30 cas). Trente-neuf patients ont été opérés par voie cutanée, 4 par voie endoscopique et 1 par voie combinée. Le taux global de complications était de 11,1 %. Les symptômes de tous les patients ont été améliorés. Deux récurrences ont été notées.

**Discussion.** Les indications chirurgicales dans le traitement des ostéomes des sinus paranasaux sont théoriquement bien codifiées. Les voies d'abord restent cependant controversées. Dans notre expérience, la voie d'abord cutanée a été préférée dans la majorité des patients. Les techniques de résection endoscopique, lorsqu'elles sont indiquées, sont techniquement plus complexes et nécessitent une instrumentation et une formation adaptées.

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**Mots clés :** Ostéome, Sinus paranasal, Chirurgie endoscopique

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## Introduction

Osteoma is the most common benign tumor of the nose and paranasal sinuses. It is an often asymptomatic slow-growing bony tumor, occurring mainly in frontal and ethmoid sinuses. There are several theories regarding the origin of osteomas (traumatic, infective, embryologic) but they are still discussed. The true incidence of these tumors is unclear since they are frequently asymptomatic and diagnosed incidentally on routine X-rays. It affects 0.43 to 1% of the population [1–4]. Complications such as chronic sinusitis and mucoceles may occur with potential intraorbital or intracranial complications. Surgical treatment is usually required, particularly in symptomatic forms. Open approaches are common. Endonasal endoscopic, aided or not by navigational systems surgery, gains in popularity since several years thanks to the development of specific instrumentation. These systems allow the surgeon for a better intraoperative control making removal of frontal and frontoethmoidal sinus osteomas safer and lowering the complications and the morbidity. The aims of our study were to describe the diagnosis circumstances in our series and to set out our respective indications for open and endonasal endoscopic approaches in the treatment of nasosinus osteomas.

## Patients and methods

A retrospective study was conducted on the files of all the patients treated in our department between 1990 and 2013 for a paranasal sinus osteoma. Data concerning demographic information, clinical presentation, radiographic findings, localization of the lesion, surgical approaches and postoperative course were collected and analyzed.

## Results

### Population characteristics

The files of 45 patients (mean age: 49.2; extreme: 10–73; sex-ratio: 1.19) could be collected.

### Clinical data

History of facial trauma and polypectomy for nasal polyposis was reported respectively in 4 and 2 cases. A history of chronic rhinosinusitis was reported in 9 cases.

The most common presenting symptom was headache found in all patients. Associated nasal obstruction was found in 13 (bilateral in 7, unilateral in 6) and anosmia in 7 patients (table 1). No neurologic deficiency was found.

### 1.1. Computer tomography scan (CT-scan) results

Osteoma was usually described as a well-circumscribed, hyperdense and homogenous mass. Lesions were most

**Table 1**  
Clinical examination data in the present study population.

	n (%)
Facial asymmetry	22 (48.8)
Paranasal sinus polyposis	7 (15.5)
Ptosis	3 (6.6)
Decreased visual acuity	3 (6.6)
Proptosis	3 (6.6)
Stenosis of the lacrymonasal duct	1 (2.2)

commonly located in the frontal sinus (30 cases) (fig. 1), followed by the ethmoidal cells (9 cases – fig. 2) and the fronto-ethmoidal region (6 cases). Orbital extension was described in 8 cases (fig. 3). Associated frontal mucocele and paranasal sinus polyposis were reported respectively in 3 and 8 cases.

The colonoscopy performed in 2 cases in order to look for a possible Gardner syndrome, was negative.

### 1.2. Surgical approaches

Forty-four osteomas were removed surgically, by mean of an open approach in 39 cases (88,63%), endoscopic assistance in 4 cases and a combined approach in 1 case (fig. 4). Abstention was decided in 1 patient because of a very small asymptomatic ethmoidal osteoma.

Concerning the open approaches, the Lynch-Howarth approach was the main one used for frontal sinus osteoma. Bicoronal approach were used for voluminous frontal



**Figure 1.** Preoperative CT coronal and axial view demonstrating frontal osteoma.

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