CASE REPORT

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Endonasal removal of a large ethmoidal cementoblastoma*

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SUMMARY

Cementoblastoma is a benign tumour, which pertains to the family of fibro osseous lesions of the jaws. A small number of clinical reports of cementum containing tumours locating in the paranasal sinuses have been published during the last three decades. Ethmoidal cementomas often attain a large size; they can destroy surrounding bone, invade the orbit and the skull base and usually require radical surgery for complete excision. We present a new case of a large cementoblastoma located in the left posterior ethmoid in the close vicinity of the optic nerve canal. In the 40-year old woman, endoscopic endonasal computer-assisted surgery allowed for complete tumour removal. No intraoperative damage to the orbit and the optic nerve occurred. No residual tumour was found at the follow-up visit three years after the surgery.

Key words: cementum containing tumours, fibroosseous lesions, ethmoidal tumours, endoscopic surgery, computer-assisted surgery

INTRODUCTION

Cementomas (cementum containing lesions) are benign tumours, which originate from the periodontal membrane and thus occur most frequently in the mandible and maxilla. There are only a few reports of cementomas affecting ethmoidal sinuses. However, this rare tumour location presents a great challenge because of a potentially aggressive destruction of the surrounding anatomical structures: the orbit, the optic nerve canal and the skull base.

CASE REPORT

A 40-year-old woman was referred to the neurosurgical institute with recurrent attacks of vertigo of unknown origin. Routine neurological and ENT examination revealed no obvious pathology. Magnetic resonance tomography of the brain accidentally demonstrated a mass in the left posterior ethmoid. These findings were confirmed by computed tomography (CT), which showed a large dense lesion (total size 41x31x30 mm) occupying the entire posterior ethmoid and being in close contact with the posterior part of the orbit, anterior skull base, and especially with the optic nerve canal. The central part of the lesion sized 32x28x27 mm had density at the radiological bone. The CT scans also showed partial destruction of the left medial orbital wall and hyperostosis of the lateral part of the ethmoidal roof (Figure 1a, b). A solid bulky mass covered by thin mucosa was revealed by nasal endoscopy in the close proximity to the laterally displaced posterior part of the left middle turbinate (Figure 1c).

Despite its large size and compact structure, we attempted the tumour removal through an endonasal endoscopic approach. Under control of a 0^{o} endoscope, the "shell" of the tumour was perforated and its central part which had bone density was cut into several fragments using a sharp curette, Freer knife and cutting bur. The external part of the tumour had the density of spongy bone. A navigational system "Stealth Station TM" (Medtronic-Sofamor Danek, USA) was used for precise removal of the posterior and lateral parts of the mass attached to the bone of the optic canal. In particular, the system proved its usefulness when endoscopic control failed to differentiate between the posterior "shell" of the tumour and the anterior wall of the sphenoid sinus. In this situation, the navigational system precisely detected the distance between the two structures. The posterior "shell" was perforated with a chisel, and then completely removed and the sphenoid sinus was widely opened.

Histopathological examination revealed multiple round and ovoid calcifications (cementicles) surrounding with fibroblastic stroma (Figure 2). No bone trabeculae, atypia, or mitotic activity were observed. These pathological finding were classified as benign cementoblastoma.

Postoperative healing was rapid and complete. Endoscopic examination three years after the surgery revealed a large epithelized cavity in the posterior ethmoid, and CT scans confirmed the absence of residual tumour (Figure 3a, b).

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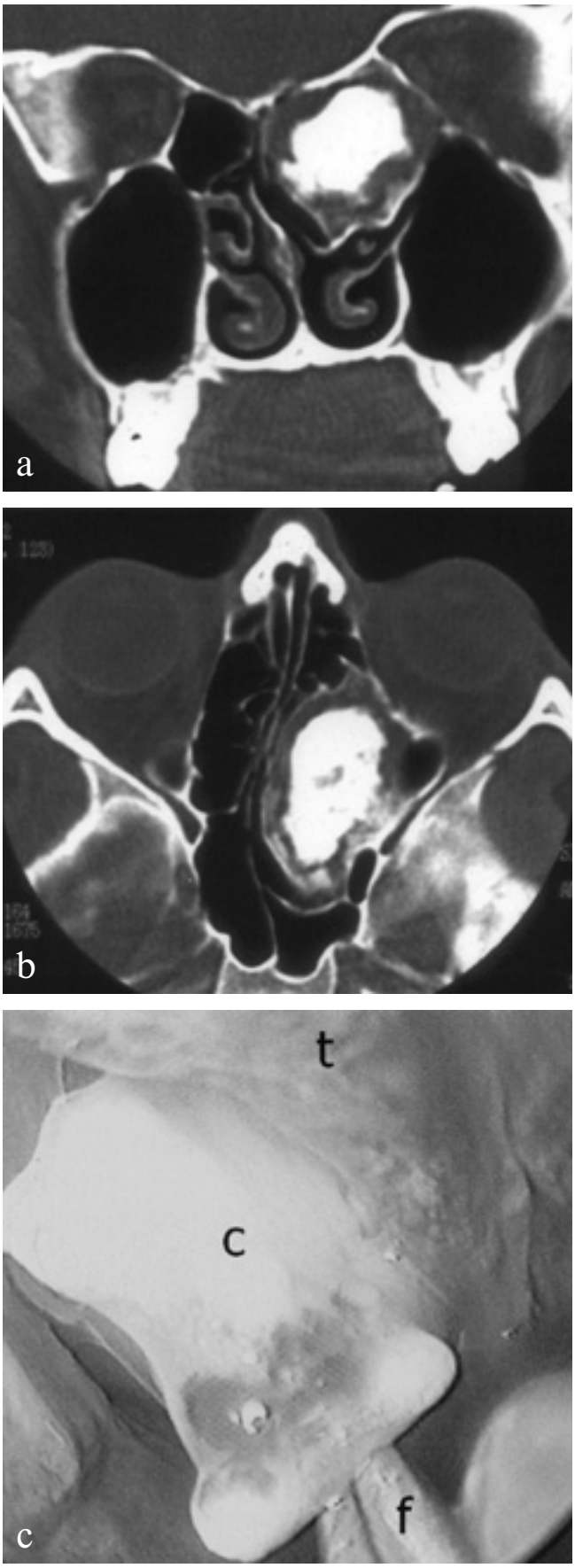

Figure 1. Preoperative CT-scans: coronal (a), axial (b), and endoscopic appearance (c) of the tumour: t – superior turbinate; c – tumour; f – forceps.

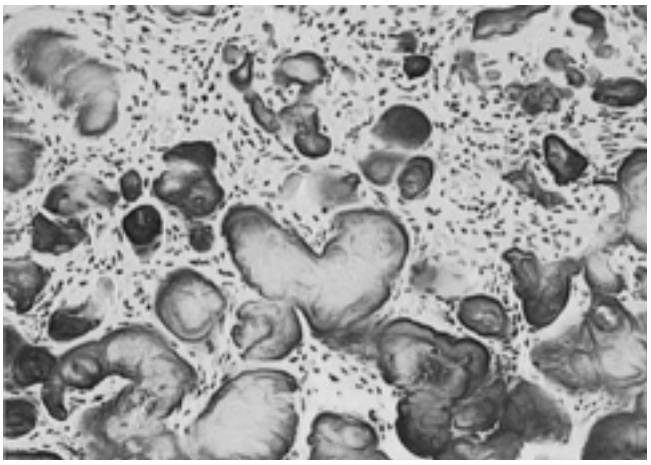

Figure 2. Morphological structure of the tumour: multiple round and ovoid calcifications (cementicles) surrounding by fibroblastic stroma. Haematoxylin-eosin staining (x200).

DISCUSSION

According to the WHO classification, fibro-osseous cementum-containing lesions are grouped together under the heading of "cementoma" and are divided into four subgroups on the basis of clinical, histological, and radiographic features. This classification defines the following types of cementum-containing lesions: benign cementoblastoma (true cementoma), cementifying (or cemento-ossifying) fibroma, periapical cemental dysplasia and gigantiform cementoma [1]. However, the name and classification of these lesions are somewhat confusing and continue to change. In a series consisted of 127 cases of cemental tumours, Ackermann and Altini [2] found no single case of periapical cemental dysplasia and suggested that the latter was a variant of gigantiform cementoma. The authors recommended the following classification for cementum containing tumours: cemento-ossifying fibroma, cementoblastoma, and cemento-osseous dysplasia (single, multiple, and florid sub-types). Regezi [3] asserts that this segregation is essentially academic because the clinical behaviour of these tumours is the same.

Cemental tumours occur most frequently in the mandible and they are less common in the maxilla. Their location in the ethmoid and sphenoid sinus is extremely rare; few cases of cementoma and cemento-ossifying fibroma have been reported before [4-10]. The reason for cementoma development in the ethmoidal cells is unclear. These tumours can be the result of periodontal membrane ectopia or incomplete migration of the medial part of the nasal analogue. It has been also suggested that primitive mesodermal cells in the ethmoidal sinus could differentiate under certain conditions into periodontal membrane and thus form cementum-containing lesions [7]. In some but not all cases when the tumour arises in an unusual site, cementomas attain a large size, behave aggressively destroying bone, are associated with a high risk of recurrence, and require radical surgery for complete excision. All authors agree that this behaviour is typical for ethmoidal cementomas and radical external approaches (e.g. transglabellar, subcranial, lateral

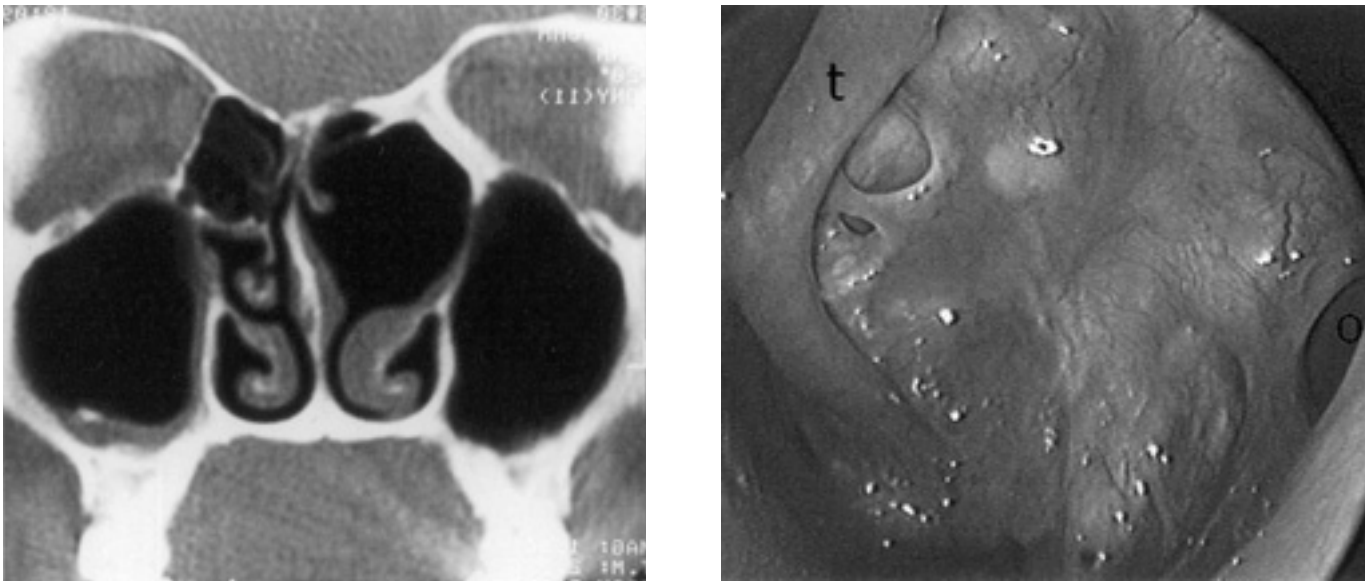

Figure 3. Postoperative coronal CT-scan (a) and endoscopic picture (b): t – superior turbinate; o – maxillary ostium.

rhinotomy, or maxillectomy) were used in these cases. It seems that our case is the first report of successful surgical treatment of a compact cementum-containing lesion through the exclusively endonasal approach. This particular tumour was revealed accidentally at a relatively early stage when it had not produced extensive damage to the surrounding organs. Endoscopic surgery prevented further bone destruction and visual disturbance which inevitably would be caused by later grow in the tumour. Computed assisted surgery facilitated complete excision without damage to the orbit and the optic nerve canal.

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ERRATUM

Supplement 18. “Position Paper on Rhinosinusitis and Nasal Polyps”, by Wytske Fokkens, Valerie Lund, Claus Bachert, Peter Clement, Peter Hellings, Mats Holmström, Nick Jones, Livije Kalogjera, David Kennedy, Marek Kowalski, Henrik Malmberg, Joaquim Mullol, Desiderio Passali, Heinz Stammberger, Pontus Stierna. The author names did not appear on the front cover, but only on the inside. As a result, the position paper can not easily be found in Pupmed when searched for authors. This erratum is to correct that. Please cite as: Fokkens et al., Position Paper on Rhinosinusitis and Nasal Polyps, Rhinology 43, Suppl 18, pages xx

In supplement 18, a mistyping has occurred in the name of one of the authors. Dr. Helllings must be Dr. Hellings.

ERRATUM

In the article by Neves Pinto et al.: " Nasal septum giant pyogenic granuloma after a long lasting nasal intubation: a case report " two errors are present in the text:

pg 67, column 1, line 1 and line 3 - correct year is 1967

pg 68, column 1, 2nd paragraph, 11th line - female patient 25 years old