Journal of Plastic, Reconstructive & Aesthetic Surgery (2013) 66, 270–273

JPRAS
An International Journal of Surgical Reconstruction
www.JPRASurg.com

CASE REPORT

# Fronto-parietal osteoblastoma with secondary aneurysmal bone cyst: A case report

**Yoshitaka Kubota*, Nobuyuki Mitsukawa, Risa Arikawa, Shinsuke Akita, Kaneshige Satoh**

*Department of Plastic Surgery, Chiba University, 1-8-1, Inohana, Chuo-ku, Chiba 260-8677, Japan*

Received 20 March 2012; accepted 19 June 2012

**KEYWORDS**
Osteoblastoma;
Aneurysmal bone cyst;
Secondary;
Calvaria;
Frontal bone;
Parietal bone

**Summary** *Background:* Osteoblastomas and aneurysmal bone cysts each comprise 1% of primary bone tumours. As both osteoblastomas and aneurysmal bone cysts are not common, osteoblastomas with secondary aneurysmal bone cysts of calvaria are extremely rare. Only three cases describing a secondary aneurysmal bone cyst in the setting of a calvarial osteoblastoma can be found in the literature. We report the case of the surgical resection of the fronto-parietal osteoblastoma accompanying a secondary aneurysmal bone cyst.

*Case description:* The case is a 24-year-old male with a 2-year history of a painless lump in the hair-bearing region of the left fronto-parietal area without neurologic symptoms. Computed tomography showed an intradiploic tumour with maintained inner and outer cortex of the left front-parietal bones. 3.0-T magnetic resonance imaging showed a well-circumscribed, intradiploic, multilocular cystic tumour.

A gadolinium-enhanced sequence showed strong peripheral and septal enhancement. These findings were consistent with an osteoblastoma associated with secondary aneurysmal bone cyst. An *en bloc* tumour resection with a 10-mm horizontal margin was completed without complications. The calvarial defect was covered by calvarial bone graft harvested from the contralateral fronto-parietal bone. The postoperative course was uneventful. Pathological diagnosis was consistent with the osteoblastoma with secondary aneurysmal bone cyst. After a follow-up period of 2 years, there was no evidence of recurrence.

*Conclusion:* The combination of osteoblastoma and aneurysmal bone cyst of the calvaria is a rare clinical entity. Careful preoperative examination and complete resection of the tumour are essential.



* Corresponding author. Tel./fax: +81 43 226 2316.
*E-mail address:* kubota-cbu@umin.ac.jp (Y. Kubota).

1748-6815/$ - see front matter © 2012 British Association of Plastic, Reconstructive and Aesthetic Surgeons. Published by Elsevier Ltd. All rights reserved.
http://dx.doi.org/10.1016/j.bjps.2012.06.021

## Background

Osteoblastomas and aneurysmal bone cysts (ABCs) each comprise 1% of primary bone tumours.[1,2]

Osteoblastomas were first clearly defined by Lichtenstein in 1956, as a benign bone tumour of osteoblastic derivation, other than an osteoid osteoma.[3] Osteoblastomas, which comprise 3% of all benign bone tumours, are most common in young males and frequently arise on the vertebrae or long bones. Its characteristic pathological findings include a well-vascularised, osteoblastic connective-tissue stroma in which osteoid and new bone trabecula are deposited.

ABCs were first described by Jaffe and Lichtenstein in 1942, and subsequent reports were made by both of these authors.[4] Only 3% of ABCs are found in the head and neck, with the most common location being the mandible. ABCs are benign, thin-walled, blood-filled cavities that arise either primarily, or in association with other bone lesions. Primary and secondary ABCs differ with respect to their neoplastic mechanisms.[2] Primary ABCs are associated with increased expression of oncogenes USP6 and CDH11, which are absent in secondary ABCs. Secondary bone cysts form as a result of osteolysis following haemorrhage. Haemorrhage in turn results from a tumour-induced increase in venous pressure.

As both osteoblastomas and ABCs are uncommon clinical entities, especially in calvaria, an osteoblastoma accompanying a secondary ABC of the calvaria is quite rare. Only three cases describing a secondary ABC in the setting of a calvarial osteoblastoma can be found in the literature.[5–7]

## Case description

The patient, a 24-year-old male, presented to our clinic with a 2-year history of a painless lump in the hair-bearing region of the left fronto-parietal area. He had no history of trauma, surgery or infection of the affected area. The patient's medical history was unremarkable. He had an eight-pack-year smoking history. He had no history of exposure to environmental carcinogens. He denied headache, dizziness and/or nausea. The hemispherical, 6-cm mass was non-tender, and no deficits or other abnormalities were present on neurologic exam. The tumour had the hardness of bone and no pulsation, bruit or Tinel-like sign was evident. While the tumour was immobile on the skull, the scalp moved freely over it. The laboratory studies were unremarkable.

Computed tomography (CT) demonstrated a well-circumscribed 53 × 38 × 43-mm homogenous hypodense tumour in the diploic space of the left fronto-parietal bone (Figure 1). The continuity of both the outer and inner tables of the skull was maintained in spite of the cortex being thinned.

3.0-T T1-weighted magnetic resonance imaging (MRI) showed a well-circumscribed, intradiploic, multilocular, cystic tumour. The tumour displaced the brain parenchyma without midline shift. The underlying dura mater and brain parenchyma showed no signal intensity change. Neither brain oedema nor hydrocephalus was noted. The overlying subcutaneous tissue appeared normal. A gadolinium-enhanced fat-suppressed T1-weighted gradient-echo sequence showed strong peripheral and septal enhancement of the tumour (Figure 2). Signal-intensity change suggesting intraosseous horizontal extension of the tumour was not evident.

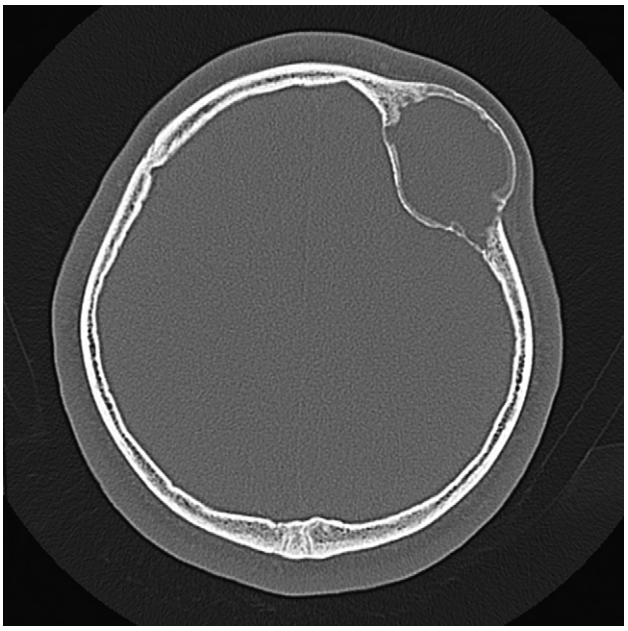

**Figure 1** Preoperative computed tomography without contrast medium showing a well-demarcated, intradiploic mass of the frontal and left parietal bone. The inner and outer cortical plates are maintained despite thinning.

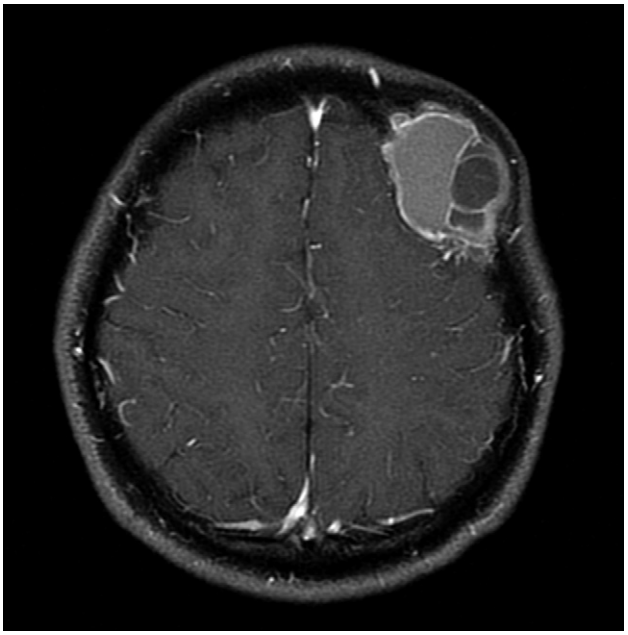

**Figure 2** Preoperative 3.0-T magnetic resonance imaging. Gadolinium enhanced fat-suppressed T1-weighted gradient-echo sequence shows a well circumscribed, intradiploic, multilocular, cystic tumour with marginal and septal enhancement of the tumour.