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### An unusual case of osteoblastoma in shaft of fibula: Case report

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#### Abstract

**Background:** Osteoblastoma and osteoid osteoma are rare, benign, bone forming tumours. This is a rare case of osteoblastoma in shaft of a long bone, in an unusual location, causing a therapeutic dilemma.

**Aims & Objectives:** Osteoblastoma and osteoid osteoma are closely related lesions with similar histological patterns and indistinguishable radiographic features. This case was studied to understand the similarities and differentiating features of the two.

**Methods:** Here was a case of 18 years old male patient with history of bony swelling and pain in his right leg which relived with a dose of Aspirin. After thorough examination plain radiographs and CT scan of the part was done. Surgical excision of the lesion was done and sent for histopathology examination. Patient was adequately treated and followed up at 1,3,12 & 18 months post operatively to assess the involved site and evidence of recurrence.

**Result:** Plain radiographs and CT scan of the part involved provisionally diagnosed the lesion as osteoid osteoma. Histopathology examination found features suggestive of osteoid osteoma and a diagnosis of osteoblastoma was given, considering the size of the nidus. Patient was followed up at 1,3,12 & 18 months post operatively and there was no evidence of recurrence.

**Conclusion:** Osteoblastoma and osteoid osteoma were classified as variants of single tumour type based on a number of shared histological and radiographic features. Most significant difference between the two lesions is the size of the nidus. Thus, there may be transitional zone of uncertainty in establishing the correct diagnosis. Osteoid osteoma must be considered a differential diagnosis when the lesions are large and in unusual sites like long bones.

**Keywords:** osteoblastoma, osteoid osteoma, shaft, fibula

#### Introduction

Osteoblastoma and osteoid osteoma are benign bone lesions with histopathological similarities which has to be closely observed clinically and morphologically for appropriate management [1]. Osteoid osteoma has been first reported by Jaffe in 1935 [2, 3]. It is a benign non-progressive lesion with osteoblastic properties frequently affecting the appendicular skeleton [4]. Osteoid osteomas account for about 10% of clinically symptomatic bone tumour [5, 6]. It presents with a characteristic clinical history of night pain, which subsides on salicylate therapy [7]. Osteoid osteoma manifests in the first or second decade of life and has a predilection to meta-diaphyseal junction of long bones, viz. femur and tibia [8, 9]. They appear as a nidus surrounded by a sclerotic margin localized within the cortex which is picked by radiographs or CT scan. Unlike osteoid osteomas, osteoblastomas are larger in size which usually expands to more than 1.5 to 2 cm and margins are less sclerotic [10]. It has an affinity towards the spine and presents with neurological and mechanical symptoms of spine [11].

In literature, few nomenclature have been described by various authors to describe these apparently similar tumour types as osteoid osteoma, giant osteoid osteoma or osteoid osteoma of unusual size and benign osteoblastoma.

Jaffe described a classical osteoid osteoma as one having a small core of cellular and highly vascular nidus which is not more than 1.5cm having a sclerotic margins. Similar lesions with larger nidus having sclerotic boundaries were considered as giant osteoid osteomas by Jaffe [2]. Lichenstein called it as osteoid osteomas of unusual size. These lesions were differentiated from osteoblastomas by the absence of thick sclerosis in the periphery [12].

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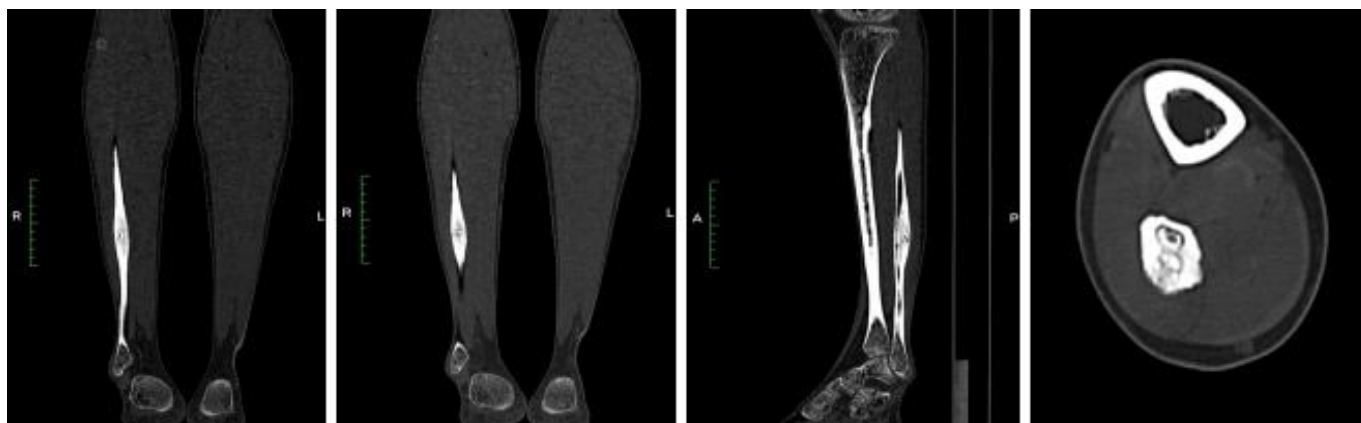
Radio frequency ablation, percutaneous CT guided procedures and excision of nidus are well accepted treatment modalities for osteoid osteoma<sup>[13]</sup>. Osteoblastomas need more aggressive approach of completely excising the tumour because they have a tendency of causing local destruction<sup>[14-17]</sup>.

Hence it is imperative to have a sound knowledge of these indistinguishable benign lesions and beware of the probable variations in their presentations in order to effectively manage the clinical entity. Here we present a case of large osteoblastoma affecting the fibular diaphysis, which is an unusual location and has never been reported earlier in any literature. We would also like to discuss the diagnostic and therapeutic dilemma faced during the management of this case.

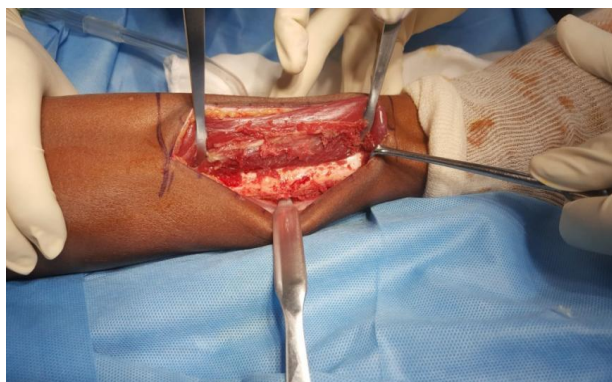
### Case report

An 18 year old male patient presented with 8 months history

of pain and a swelling over his right leg. The pain was diffuse and continuous which relived with a dose of Aspirin. On physical examination patient had tender mild swelling. After radiograph, we arrived at diagnosis of osteoid osteoma in fibular diaphysis. CT was arranged to look for size of the nidus and soft tissue status around the tumor. The scan revealed central nidus measuring 1.5cm with surrounding sclerosis and solid periosteal reaction. Patient was taken up for surgical excision of the tumor. After adequate exposure 12cm of distal third junction of fibula excised and sent for histopathology study. Postoperatively, the patient was pain free. Postoperative X-ray showed complete excision of the lesion. Histopathological examination reports mentioned features suggestive of osteoid osteoma, since the lesion is being greater than 1.5cm, osteoblastoma must be considered. The patient was followed up at 1, 3, 12- and 18-months post-surgery and there was no evidence of recurrence.



**Fig 1:** CT images of fibular Osteoblastoma



**Fig 2:** Intra operative photograph of the tumor.



**Fig 3:** The excised tumor measuring 12cm.

## Discussion

Osteoid osteomas more commonly affects the appendicular skeleton, with tibia and femur being the frequent loci<sup>[8,9]</sup>.

In our case, presence of benign lesion with radiological characteristics of osteoid osteoma in fibular diaphysis brings about a clinical dilemma due to rarity of the location<sup>[18-20]</sup>.

After a detailed review of literature we found very few reported cases of fibular osteoid osteoma. These lesions have a tendency to affect meta-diaphyseal junction of the fibula<sup>[20]</sup>. Hence a diaphyseal lesion in our scenario makes it an unusual presentation.

Stress reactions of fibula, old fractures, intra-cortical haemangioma and healed previous low grade infection were the few differentials which were considered although clinical history did not show possible correlation<sup>[21-23]</sup>.

CT scan confirmed the presence of central nidus and peripheral sclerosis. Central nidus of 1.5 cm and a peripheral bone reactive sclerosis almost extended close to 8 cm. This unusually large central nidus is more in favour of osteoblastomas. However, osteoblastomas have a tendency towards axial skeleton and very rarely can affect the long bones<sup>[11]</sup>.

However in our patient, since dull aching pain was present throughout the day and there was absence of night cries which is classically associated with osteoid osteoma made us consider the differential diagnosis of osteoblastoma. Considering the osteoid osteoma or osteoblastoma as differentials brings about a diagnostic and therapeutic dilemma. Diagnosis of bone lesions can be established by histo-pathological examination of biopsied specimen, since we are dealing with two bone tumours which are histologically similar it is prudent to discuss the definitive treatment options available for both the entities. Non-operative management, radio frequency ablation, percutaneous CT guided procedures and surgical excision of nidus are few treatment modalities for osteoid osteoma<sup>[24]</sup>.

Osteoblastomas have a tendency for recurrence and malignant transformation and hence surgical excision with reconstruction of the defect is the mainstay treatment<sup>[25]</sup>. En bloc resection of the tumour might prevent possibility of recurrence but has disadvantages of functional morbidity and need for general anesthesia. Although percutaneous procedures might suffice for osteoid osteoma, it may not provide biopsy material for confirming the histo-pathological diagnosis. In existing literature there are case reports not only about recurrence of osteoid osteoma but also about transformation of osteoid osteoma to osteoblastoma<sup>[26]</sup>.

In our case considering the location and size of the lesion we decided to excise the lesions from the margins of sclerotic bone response. Since fibular diaphysis is expendable, there was no functional morbidity and resected bone was available for histo-pathological confirmation. Although Osteoid osteoma and osteoblastoma can be considered two distinct entities in regard to their topographic preponderance, clinico-radiological presentation and natural course of the disease, they share similar histologic features with subtle differences which makes them difficult to differentiate. A central nidus of 1.5cm made the diagnosis more in favour of osteoblastoma<sup>[10]</sup>.

However, presentation of osteoblastoma in fibular diaphysis makes it a unique case report, which to our knowledge is not reported in existing literature.

## Conclusion

Osteoid osteoma and osteoblastoma are common benign bone

lesions which has a well documented description for topographic and clinic-radiological presentation. However presence of these lesions in unusual locations might pose diagnostic and therapeutic challenges. Fibular diaphysis is an unusual location for both these histologically similar bone lesions and hence makes it very unique clinical scenario. A large central nidus of 1.5cm was confirmed by CT scan which made the diagnosis of osteoblastoma more likely. In contrast to osteoid osteoma, Osteoblastomas behave more aggressively with possibilities of recurrence and malignant transformation and hence it is ideal to direct the treatment modality towards osteoblastoma, if histopathological diagnosis is not achieved. It is prudent to achieve biopsy diagnosis in any bone lesions. However, since fibular diaphysis is expendable in its middle third, en-bloc excision of the lesion would serve as diagnostic and therapeutic modality without causing any functional morbidity, thereby avoiding an additional surgical procedure.

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