Giant Osteochondroma of the Proximal Fibula: A Rare Case

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ABSTRACT

Osteochondroma is one of the most common benign tumors arising from the ends of the long bones which are characterized by irregular bony growth covered by cartilaginous cap. The tumor mass tends to grow eccentrically more, rather than centrifugally. We are reporting a case of 17 year old female who presented to our Outpatient department with large, hard, painful, irregular swelling over anterolateral aspect of right knee. After a series of radiographic screening and its confirmation through CT the tumor was surgically excised and histopathological reports showed benign nature of the tumor mass excised.

Keywords
Osteochondroma, Proximal fibula, Benign tumor

Introduction
Fibula is not a common location of primary bone tumours. Bone tumours of fibula comprises 2.5% of primary bone lesions [1,2]. The tumours most commonly arising from proximal fibula are Osteochondromas, Giant cell tumours, Osteosarcomas, and Ewing’s sarcoma. Osteochondromas are solitary in 90% cases but they can be sessile or pedunculated also. The tumour mass is usually covered by a cartilaginous cap. Osteochondromas clinically present as painless masses or bony swelling; however, due to their closed vicinity to neurovascular bundles they can also present as compressive neuropathy of peroneal nerve or vascular compression syndrome or a skeletal deformity or pseudoaneurysm of popliteal vessels [3]. Depending upon the growth, surgical treatment option of proximal fibular osteochondroma may vary from debulking of large mass to resection of proximal fibula [4]. In our case the main indication of surgery in form of resection of proximal fibula was cosmetic one and intense pain with associated restricted range of motion in right knee.

Case Description
A 17-year old female presented to our Outpatient department with pain, swelling, and difficulty in walking and deformity in anterolateral aspect of right proximal leg. Patient was asymptomatic 6 years back when she noticed swelling which was small and painless initially and lateral on progressed with time to an enlarged painful irregular mass. There was no history of trauma, fever or weight loss. Pain was initially dull aching and intermittent and later become continuous and increased on movement.

On examining the patient clinically, a large swelling was present on the anterolateral aspect of proximal part of (R) leg of size about 12 × 11 × 10cm. The swelling had gradually increased from the size of approximately 3 × 4 cm to present size of this in last six years.

The swelling was fixed to bone, irregular in appearance, hard in consistency, and tender to touch. The swelling was extending to the posterior side of the tibia also and prevent the
terminal flexion at the knee joint. There was no
distal neurovascular deficit and nerve conduction
study showed normal parameters for common
peroneal nerve. Plain radiograph showed a large
irregular mass arising from the proximal fibula
and the major part of the tumour mass had
grown medially and posteriorly towards the tibia
(Figure 1). Computed tomography showed a
large growth arising from the proximal fibula
with scalloping of the proximal tibia due to
erosion on the posterior surface adjacent to the
tumour mass (Figures 2 and 3).

Surgical Procedure
The patient was given combined spinal and
epidural block. The tourniquet was applied with
patient in supine position. A linear incision of
about 5 cm was given along the biceps femoris
tendon and then the incision was extended
posterior to fibular head and then extended
along the fibular shaft (Figure 4). Superficial
dissection was done and common peroneal
nerve was explored and isolated. Along with it
depth peroneal nerve branch were also explored
through the fibromuscular tunnel. After this
dissection was proceeded distally at the level of
planned fibular ostectomy and tumor excision
was performed along with removal of fibular
head.

The excised tumour mass was sent for
histopathology and it confirmed the diagnosis
of osteochondroma and showed no evidence
of malignant transformation. The recovery
of the patient was uneventful with no distal
neurovascular deficit and no complaint of
knee laxity on walking. The patient was
subsequently followed up which include any
wound complication, nerve defect, pain, any
abnormal growth and showed no evidence
of recurrence of any mass or pain or any
neurological deficit after 6 months and 1 year
of follow up.

Discussion
Osteochondromas or osteocartilaginous
exostoses are the most common benign tumours
of the bone [2]. These are benign lesion derived
from aberrant cartilage and may take the form of
solitary osteochondroma or multiple hereditary
exostoses [5].

Solitary osteochondroma usually present as
non-tender, slow growing masses. They produce
symptom by mass effect over the adjacent
structures like bone, nerve, vessels and muscles
[6]. Fibula is not a common location for
primary bone tumours and the incidence of
primary bone tumours in the fibula is 2.5% [3].
Solitary osteochondroma are usually located at
the ends of the long bones and present as non-tender painless masses [7]. They may continue to grow till the skeletal maturity. Once the physis is fused there growth ceases. Growth in osteochondroma after physeal fusion should arouse the suspicion of malignant changes and should be investigated [8]. These lesion have been reported to spontaneously regress or even resolute during childhood and puberty. The osteocartilaginous growth may be sessile or pedunculated and in 90% of the cases they arise as a solitary lesion. The tumour is mainly composed of bone but the end is usually covered by a cartilaginous cap, which is composed of hyaline cartilage. Osteochondromas commonly present as masses or bony lumps; however, due to their closed vicinity to neuro-vascular bundle can cause compressive neuropathy of peroneal nerve [1] or vascular compression syndrome [2] or a skeletal deformity or pseudoaneurysm of popliteal vessels [4]. A malignant transformation to a chondrosarcoma [approximately 1% for solitary and 20% for patients with multiple lesions] is rare and it should be suspected if tumor is suddenly increasing in size and if there is increase in pain and other symptoms. The diagnoses of osteochondromas are always confirmed by doing radio graphical studies of the affected areas. CT scan and MRI are used to see the bony outline neurovascular status and soft tissue lesions, angiography and colour Doppler may be used to diagnose vascular lesions. Nerve conduction studies are done in the preoperative and post-operative period for assessment of neural function. Bone scans may be helpful in making the diagnosis but they cannot differentiate between benign active osteochondroma and chondrosarcoma because both of them show increased radiotracer uptake. The management is usually surgical with enblock excision of the tumour mass (Figure 5).

In our case the main concern was increase in size of swelling which was causing intense pain and difficulty in movement of knee which was affecting day to day activity of patient. Another concern was of malignant potential of the swelling and its involvement with the surrounding structure such as nerve and vessels. Before excision a CT and colour Doppler was done to rule out any associated vascular lesion. Recurrence after the excision is a rare entity but has been observed and may be attributed to incomplete removal of lesions contiguous with the physis or incomplete removal of cartilaginous cap.
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References