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Surgical management of aneurysmal bone cyst of fibular head with en bloc excision: A case report

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Abstract
Aneurysmal bone cysts (ABCs) are benign but locally destructive, blood filled reactive lesions of the bone. Although a wider age group may be affected, most commonly they are seen in patients younger than 20 years of age, with a slight female preponderance. Most common sites include metaphysis of femur followed by tibia and then humerus. Vertebral lesions involving the posterior elements are common. Aneurysmal bone cyst of proximal fibula is a rare and uncommon. Here, we report a case of 32 year old male with classic histologic, clinical, and radiographic findings that was treated by en bloc resection.

Keywords: Aneurysmal bone, blood, bloc excision

Introduction
Aneurysmal bone cyst (ABC) is classically explained as a non malignant lesion budding mostly in the metaphyses of long bones and in vertebral bodies [1]. Typical histological picture shows blood filled spaces separated by connective tissue septa containing osteoclast-like giant cells, fibroblasts and reactive woven bone [4]. The distal femur, proximal tibia, proximal humerus followed by spine with its preference being metaphysis of long bones are most common sites of its occurence. Aneurysmal bone cyst itself accounts for less than 6% of all bone tumours and is 4 times more rarer than osteosarcoma [3]. The etiology of Aneurysmal bone cyst still remains uncertain however many anticipated that it may result from local circulatory interruption which leads to increased venous pressure and local hemorrhage production. Lesions usually appear on x-rays films as expansile and lytic. magnetic resonance imaging and Computed tomography often show a heterogeneous lesion with fluid-filled cystic spaces encircled by a thin rim of bone [4]. Standard management of ABCs with marginal, yet complete surgical excision has shown satisfactory results.

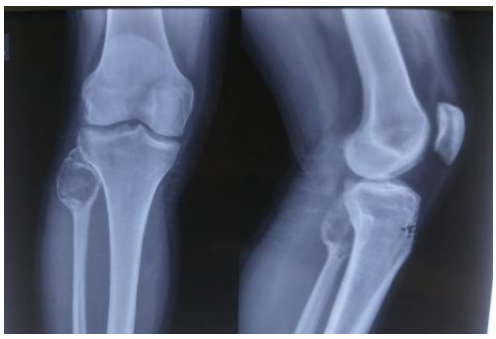

Fig 1: X RAY Showing Lytic Lesion of Left Head of Fibula

Case Report
A 32 year old male presented to our opd with pain and gradual swelling in proximal third left leg since 2 years. There is no history of trauma, fever. There were no associated symptoms. On clinical examination, a swelling was present in the anterolateral aspect of proximal right leg. Swelling was tender on deep palpation, bony hard in consistency, ovoid in shape,

irregular margin, non mobile. without any other signs of inflammation like erythema, induration. Movements of the knee joint were non restricted and he had normal bipedal gait. Routine Blood investigations and Chest X-ray were in normal limits. Plain radiograph of the knee joint with leg in anterio-posterior and lateral view revealed an expansile lytic lesion that elevates the periosteum at proximal end of fibula, limited by a thin shell of cortical bone (Figure-1). MRI of right knee joint with leg showed that there is a heterogenous enhancing expansile lesion of size 4.9x3.5x3.2cm in proximal epimetaphysial region of fibula with blood fluid levels (Figure-2).

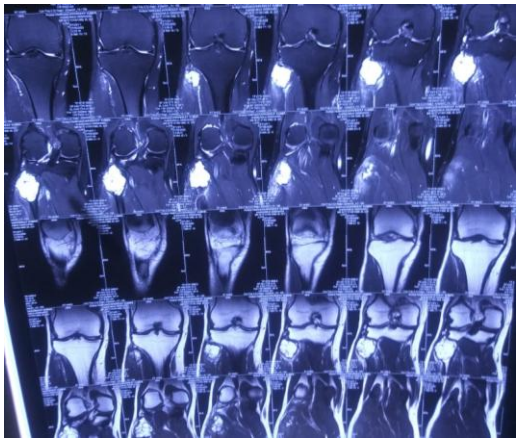

Fig 2: Mri Showing Heterogenous Enhancing Expansile Lesion

Surgical Procedure

Patient was then explained in detail about the treatment Patient underwent operation in the supine position under spinal anesthesia. The posterio-lateral approach was used to explore the lesions and neurovascular bundle (figure 4). The incision started approximately 5 cm proximal to the fibular head and extended along the border of the biceps muscle to the fibula; it then straightened and further extended along the line of the fibular shaft approximately 5 cm below (figure 4). First, the common peroneal nerve was explored and approached with the intent of mobilizing the common peroneal nerve and opening and exposing the common peroneal and deep peroneal nerve branches throughout the fibromuscular tunnel with meticulous disection (figure 4). Second, en bloc resection of the proximal fibular was performed. To avoid instability at knee joint Reconstruction consisting of repairing the lateral collateral ligament and reinsertion of the biceps femoris tendon on the lateral condyle of the tibia done with ethibond and suture anchors (figure 6)

Above knee slab was used full-time for the first 4 weeks postoperatively. For the subsequent 2 weeks, patients were allowed to perform gentle knee motion exercises. After 6 weeks, the patients were allowed to gradually progress to full weight bearing.

Biopsy report showed multiple cavernous cystic cavities of variable size filled with blood and separated by thick fibro collagenous septae suggestive of Aneurysmal Bone Cyst of Proximal Fibula. Post operative (Anteroposterior and Lateral) radiographs showing en-bloc excision of ABC from proximal end of fibula (Figure-)

Discussion

In 1942 Jaffe and Lichenstein described aneurysmal bone cyst is a bony tumor which is osteolytic described by generally non-endothelialized spaces of various diameters, several sponge-like blood or serum filled. More than 90% cases of ABS are reported earlier the age of thirty, although it is a rare occurrence at the age of 32 as reported here [6]. Aneurysmal bone cyst commonly located at the metaphysis region of long bones mostly proximal humerus, distal femur or in vertebral bodies and is eccentrically and expansile . Differential diagnosis of aneurysmal bone cyst comprise Giant cell tumor, osteoblastoma, chondroblastoma, chondromyxoid fibroma nonossifying fibroma and fibrous dysplasia. Aneurysmal bone cyst is distinguished with Unicameral bone cyst by MRI where the presence of a intralesional septations and double-density fluid level usually suggests an aneurysmal bone cyst. Given that the incidence of Aneurysmal bone cyst in proximal fibula is very low, treatment options are also few.[7] Routine treatment procedure for Aneurysmal bone cyst is curretage and bone grafting, but since here the lesion involves the proximal end of fibula completely en-bloc excision is preferred . The precise etiology of aneurysmal bone cyst remains unknown. Biesecker *et al* states that because ABC's are frequently accompanied by associated lesions and because these associated lesions are rarely accompanied by ABC's, it is probable that ABC's are secondary to the associated lesions of bone therefore, the inaugural event of the genesis of ABC's most likely is an antecedent, primary lesion of bone.[8] The next step in the pathophysiologic development of an ABC is probably the production of an abnormal vascular component by the precursor lesion of bone an arteriovenous fistula. While the tumor can be hostile in growth, it is benign and can be successfully treated with surgical excision. Few also have explained en bloc excision with allograft reconstruction for bony stability [9].

Fig 3: showing swelling over the lateral aspect of the knee

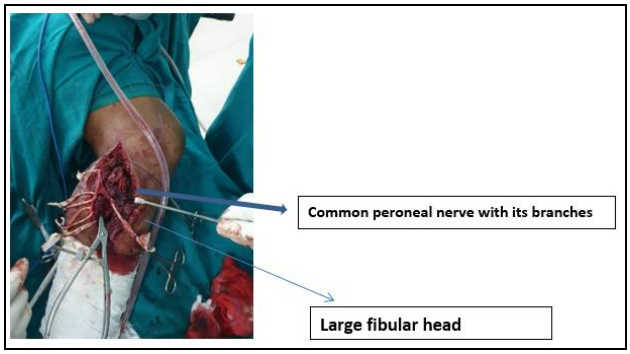

Fig 4: Intra op image showing meticulous dissection of the common peroneal nerve &its branches with large fibular head

Fig 5: Large fibular head resected

Fig 6: post resection repair of the LCL and Biceps femoris with ethibond and suture anchors

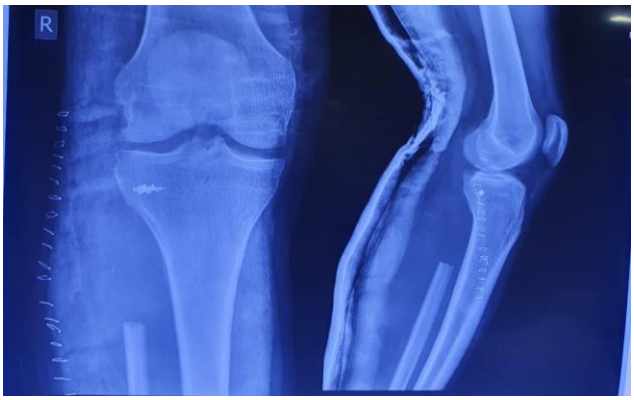

Fig 7: post op check x ray of the patient

Conclusion

Based on the literature till now, aneurysmal bone cyst developing at the level of proximal fibula is rare. Here we report a rare case of aneurysmal bone cyst at proximal end of fibula which was effectively managed with en-bloc excision.

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