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Dr. Mazharuddin Ali Khan
Professor and Head of the Department, M.S (Ortho), M.ch (Ortho) UK, Department of Orthopaedics, Owaisi Hospital and RESEArch Centre, Deccan College of Medical Sciences, Hyderabad, Telangana, India

Dr. Shaik Vazeeruddin
Senior Resident, Department of Orthopaedics, Owaisi Hospital and Research Centre, Deccan College of Medical Sciences, Hyderabad, Telangana, India

Dr. D Kalyan Reddy
Post Graduate, Department of Orthopaedics, Owaisi Hospital and Research Centre, Deccan College of Medical Sciences, Hyderabad, Telangana, India

Dr. Mohammed Rameezuddin Siddiqui
Post Graduate, Department of Orthopaedics, Owaisi Hospital and Research Centre, Deccan College of Medical Sciences, Hyderabad, Telangana, India

Corresponding Author:
Dr. Mazharuddin Ali Khan
Professor and Head of the Department, M.S (Ortho), M.ch (ortho) U.K, Department of Orthopaedics, Owaisi Hospital and Research Centre, Deccan College of Medical Sciences, Hyderabad, Telangana, India

Non ossifying fibroma of proximal tibia managed with curettage and calcium sulphate pellet grafting: A case report

Dr. Mazharuddin Ali Khan, Dr. Shaik Vazeeruddin, Dr. D Kalyan Reddy and Dr. Mohammed Rameezuddin Siddiqui

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Abstract
Non-ossifying fibromas (NOFs) are a common type of benign fibrous lesion that tend to occur in the metaphysis of the long bones in the lower extremities. Approximately seen in 30% of young patients in their first or second decade of life. These tumours occur almost twice as often in males as in females. Typically, NOFs are asymptomatic and lesions are found incidentally. A lesion is usually self-limiting and disappears by the age of 20 to 25 years in most cases. Lesions are considered to be a developmental bone defect rather than a true neoplasm. We are presenting a case of Non Ossifying fibroma of right proximal tibia in 16 years old boy with no evidence of fracture, successfully treated with curettage and calcium sulphate pellet (CaSP) grafting

Keywords: Non-Ossifying Fibroma, Tibia, Metaphysis, Calcium sulphate pellets (CaSP)

Introduction
None ossifying fibromas (NOFs) is a common occurrence in children and young adolescents commonly seen in lower extremities about 80% (Distal Femur > Proximal Tibia > Distal Tibia), uncommon in Proximal Femur and Proximal Humours. NOFs are often discovered by chance, patient requires x-rays for another reason, such as a knee injury. NOFs can be diagnosed based on its presentation on plain radiographs where it typically appears as a small, cortical osteolytic lesion. Lesions are usually self-limiting and disappears by the age of 20 to 25 years in most of the cases. Therefore, lesions are considered to be a developmental bone defect rather than a true neoplasm. Multiple non-ossifying fibromas are associated with neurofibromatosis type (NF1) and Jaffe Campanacci syndrome.

Case Report
A 16 year old male child presented to orthopaedic outpatient department with complaints of pain in the right knee after history of fall 1 month ago. A dull aching pain which was progressive in nature, aggravates on movements. Child was performing his daily activities and walk without support. Pain associated with swelling over anteriomedial aspect of proximal leg, which was progressive with approximately 3x4 cm in size over proximal leg (Figure No 1).
On examination tenderness over swelling and firm in consistency: overlying skin was normal in colour and texture, no lymphadenopathy, no visible pulses and no distal neurovascular deficit; range of motion of right knee was within normal range, no other joints involvement. No history of fever and weight loss.
Radiograph of affected right leg shows lesion over anteriomedial aspect of proximal tibia. Lesion was solitary, eccentric and lytic lesion surrounded by sclerotic rim in the metaphysis of a long bone, adjacent to the physics with its long axis parallel to the axis of the bone (Figure No 2) .The external outline of the cortical layer at the level of the lesion was poorly visible. Haematological investigation was showed unremarkable.

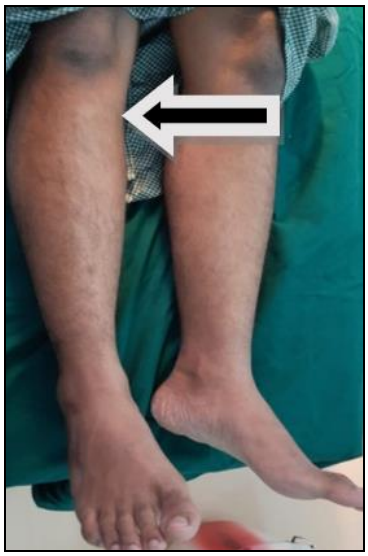


Fig 1: Showing swelling over right proximal leg.

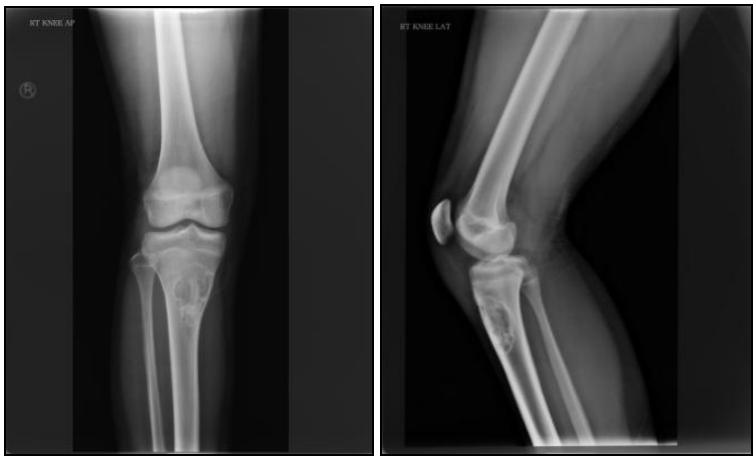


Fig 2: (I) and (II) showing osteolytic, multiloculated septate with sclerotic rim over anteromedial metaphyseal region of right tibia

Magnet resonance imaging of right leg showed well defined lobular multistate altered signal intensity lesion eccentrically located in the met diaphysis of the proximal tibia. The lesion measures 5.6 x 2.8 x 3.7 cm (CC X AP X TR) and is seen causing variable thinning of the surrounding cortex with peripheral bone layer (sclerotic margin). The lesion demonstrates narrow zone of transition. It is heterogeneously hyper intense on T1, T2 with chorine content within. The surrounding met epiphysis show EDEMA. The surrounding pre tibia soft tissue EDEMA of concern for benign tumour, possibly Non ossifying fibroma (Figure No 3.

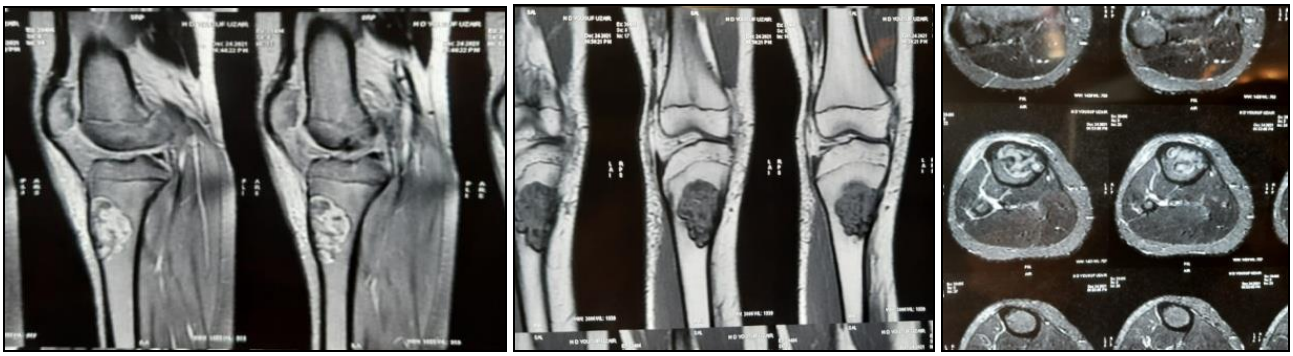
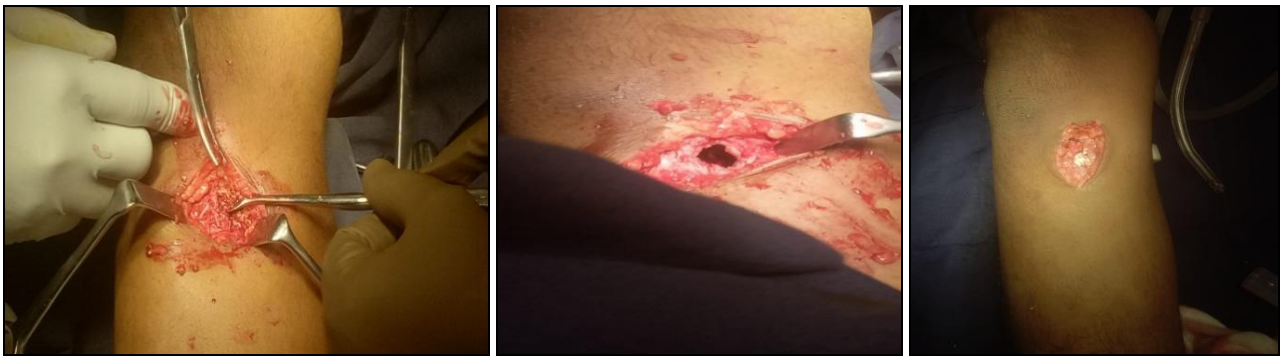


Fig 3: Showing T1 and T2 with hyperintense well defined lobular multistate altered signal intensity lesion eccentrically located in the met diaphysis of the proximal tibia.

Right proximal leg lesion showed Non ossifying fibroma increased in size as confirmed from radiological investigation with variable thinning of the surrounding cortex with peripheral bone layer (sclerotic margin) which was risk for fracture, is the indication for operative procedure. Non ossifying fibroma is solitary, benign lesion which is symptomatic and large in size, patient was posted for surgery: curettage and Calcium sulphate pellet (CaSP) grafting to fill bony defect (Figure no 4).



(1) (II) (III)

Fig 4: Showing procedure of curettage (I) filling bony defect (II) with calcium sulphate pellet (CaSP) graft(III)

Gross appearance during Intra-op: Well circumscribed, reddish yellow discoloration and having sclerotic borders (FIGURE NO 5) Sample was sent for Histopathological examination (Figure No 6).

Fig 5: Showing gross appearance of reddish yellow discolouration with sclerotic margins

Fig 6: Showing sample for biopsy

Histopathological examination showed spindle-shaped fibroblasts in whirled or storiform pattern, multinucleated giant cells, and foamy histiocytes with hemosiderin pigmentation, suggestive of none ossifying fibroma (Figure No 7).

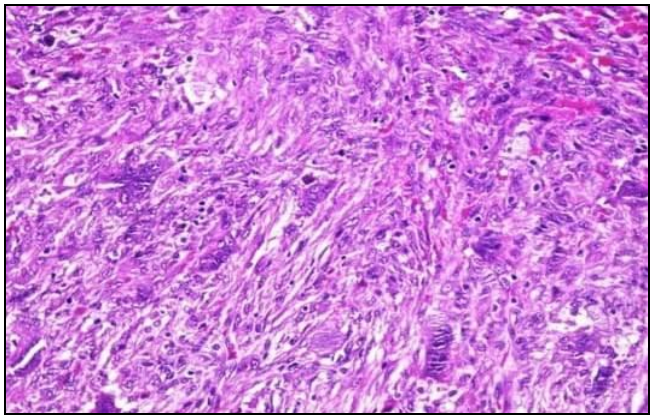


Fig 7: Showing spindle shaped fibroblasts arranged in whirled or storiform pattern with multinucleated giant cells

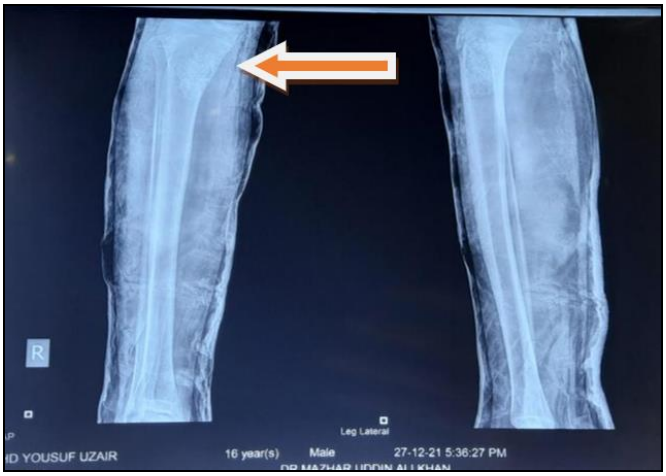


Fig 8: Showing post op x-ray of metaphyseal bony defect filled with calcium sulphate pellet (CaSPs) graft of right proximal tibia immobilised with cast

Discussion

Non ossifying fibromas (NOFs) are benign and non-aggressive fibrous lesions of bone considered to be developmental defect occurs within the metaphysis of growing long tubular bones in children's sometimes its extent into the diaphysis, mostly commonly around knee joint. These lesions spontaneously resolves in some cases they can persists which continuous till adulthood due to asymptomatic nature. However large lesions may become symptomatic with a risk of pathological fractures. In our case lesion is in large in size and symptomatic for which we performed curettage and calcium sulphate pellet (CaSP) grafting along with biopsy. On histological analysis no mitosis or pleomorphism is present to suggest malignancy, so it's a benign lesion. NOFs arises

within the cortex usually arise from posterior wall of tubular bone and involvement of medial rather than lateral osseous surface is characteristic. An epiphyseal location is distinctly uncommon and has been reported only in unusual cases of multifocal lesions. For this NOFs, surgeons make an incision in the bone to create a window. The tumour is completely curetted and the remaining cavity is then packed with calcium sulphate pellet (CaSP) grafting. The patient is usually placed in a cast or brace for six weeks and then can undergo protected weight bearing for another six weeks. It usually takes 3-6 months before a child can return to regular activities. The aim of this study was to evaluate the outcome and efficacy of a single-stage procedure, comprising curettage of the lesion and calcium sulphate pellet (CaSP) grafting, in skeletally immature patients with large, symptomatic NOFs of the lower extremity, and the possible limitations of the procedure.

Conclusion

Symptomatic and large NOFs lesion need to operate with curettage and bonegraft.to extract bone graft need to operate other anatomical site. Calcium sulphate pellet (CaSPs) is good alternative to the bone grafts to fill bone defects, as its is safe, cheap, convenient and easy methodn.no need to extract bone graft.

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