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Research Article

Rare anatomical locations of Osteochondroma: A Case Series from a Tertiary Care Center.

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Abstract: ***Introduction:*** Osteochondroma also known as exostosis is the most common benign bone tumor, usually occurring in the metaphysis of long bones. Involvement of uncommon sites such as the rib, scapula, fibular neck and proximal humerus is rare and may present with atypical symptoms, posing diagnostic and therapeutic challenges.Our retrospective case series includes four patients with histopathologically confirmed osteochondromas arising from above four unusual anatomical locations treated at a tertiary care center. Clinical presentation, radiological findings, surgical management, histopathological examination, and functional outcomes were reviewed. **Conclusion:** Depending on the site of occurrence, osteochondromas can give rise to different local symptoms. Possibility of osteochondroma should be kept in mind during differential diagnosis of bony swelling in flat bones as well as small bones.

Keywords: Osteochondroma, Exostosis,Benign Bone Tumor

INTRODUCTION

Osteochondroma is the most common benign bone tumor, accounting for approximately 20–50% of all benign bone tumors and 10–15% of all bone tumors [1] Osteochondroma is the most frequently encountered benign bone-forming tumor. It is characterized by a cartilage-capped bony projection that maintains continuity with the cortex and medullary cavity of the parent bone. The lesion typically arises during skeletal growth and ceases to enlarge after skeletal maturity.

Nearly 90% of osteochondromas occur around the metaphyses of long bones, particularly the distal femur, proximal tibia [2] . Flat bones and small bones are less commonly affected. Osteochondromas arising from the scapula, fibular neck, rib, and humerus are rare and often produce symptoms related to compression of adjacent muscles, tendons, nerves, vessels, or thoracic structures[3,4.]

Patients with lesions at unusual sites frequently present with localized pain, swelling, cosmetic deformity, snapping phenomenon, limitation of joint movement, or neurovascular symptoms. Imaging with plain radiographs is generally diagnostic, while computed tomography and magnetic resonance imaging are useful for defining anatomical relations and cartilage-cap thickness.

Complete marginal excision remains the treatment of choice for symptomatic lesions. Histopathological confirmation is essential to exclude malignant transformation, particularly in adults with enlarging masses or thick cartilage caps.

Case description

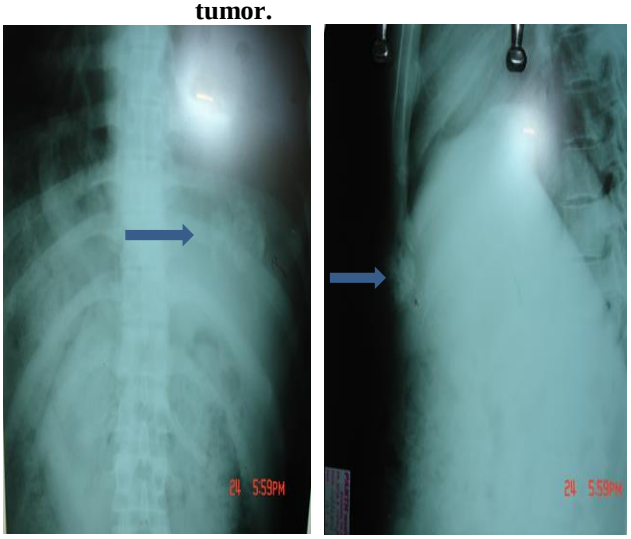
Case 1

A 40 yrs old male patient presented with swelling over right side of lower chest wall near distal part of sternum since 3 yrs. Initially small sized swelling gradually increased in size to present status over 3 yrs. On local examination- swelling

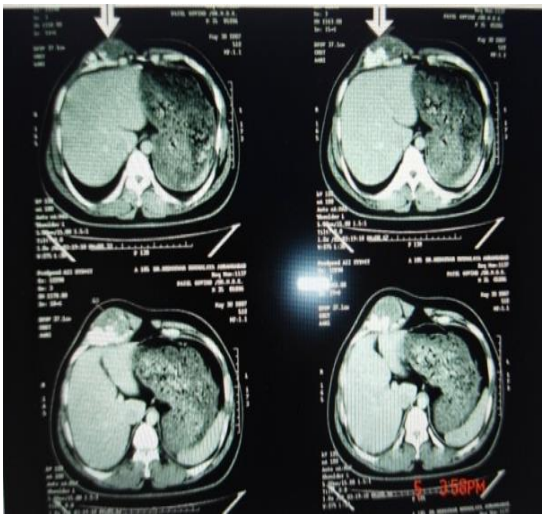
approximately 6 x 4 cm in size situated over anterior part of chest wall near distal most part of sternum on right side. It was firm hard, non-pulsatile, non mobile. Skin over swelling was normal & freely mobile, No restriction of chest movements or difficulty in respiration.

X ray showed bony swelling over right ninth rib. CT scan confirmed the bony swelling arising from surface of rib .

Fig. 1: X-ray—AP view and lateral view showing tumor.

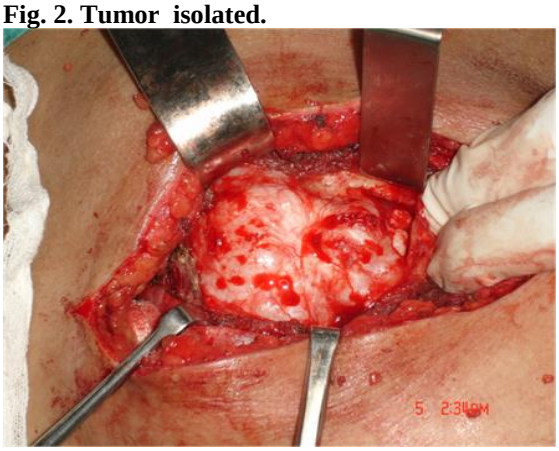


CT scan showing tumor



Patient was taken under General Anaesthesia in supine position. Incision taken directly over the swelling. Skin, subcut, muscle cut. Swelling was reached and removed completely from the surface of rib. Bony mass was sent for histopathological study. Surface of rib was cauterized and bone wax was applied over cauterized area. As there was small rent in pleura, we put Foleys catheter as a chest drain. Romovac drain & Foleys catheter was removed after 2 day. Suture removal was done on 14 th day.

Fig. 2. Tumor isolated.



Tumor excised completely.

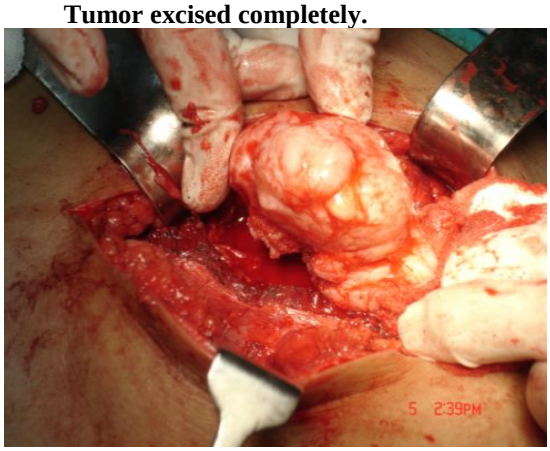
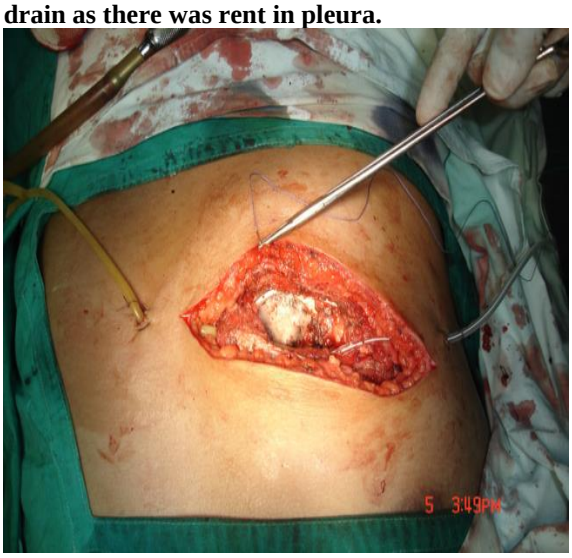


Fig.3. Foleys catheter kept as chest drain as there was rent in pleura.



Postop clinical photo.

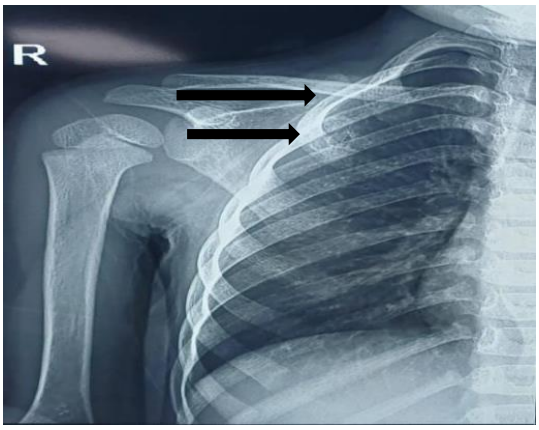
Subsequently, histological examination confirmed the diagnosis of osteochondroma and showed the lack of dysplastic changes. Follow-up visit showed no recurrence.

Case 2

A 5 year old female child came with a swelling over right side of her back since 1 year. Swelling was small initially which gradually increased to present size. There was no similar swelling elsewhere in body. On local examination there was a smooth, rounded, protruding, hard, and sessile lump palpated over the right scapula on its dorsal surface over its medial border .It moved with movement of scapula.

X ray showed solitary bony mass along medial border of scapula .CT scan showed evidence of well defined bony mass arising from medial border of scapula supporting the diagnosis of osteochondroma.

Fig.4 X ray showing scapular tumor.



CT scan showing location of tumor.

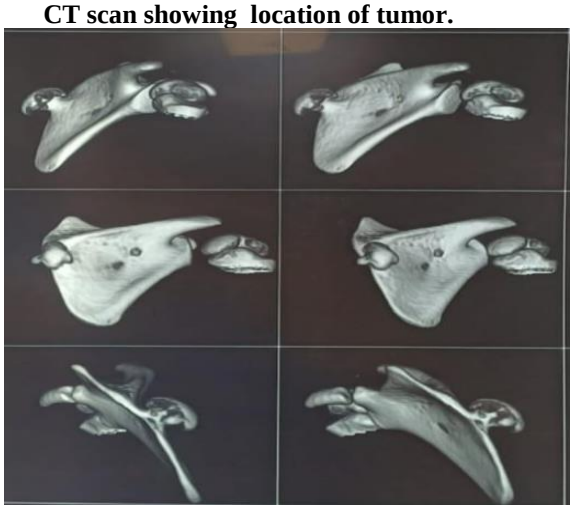
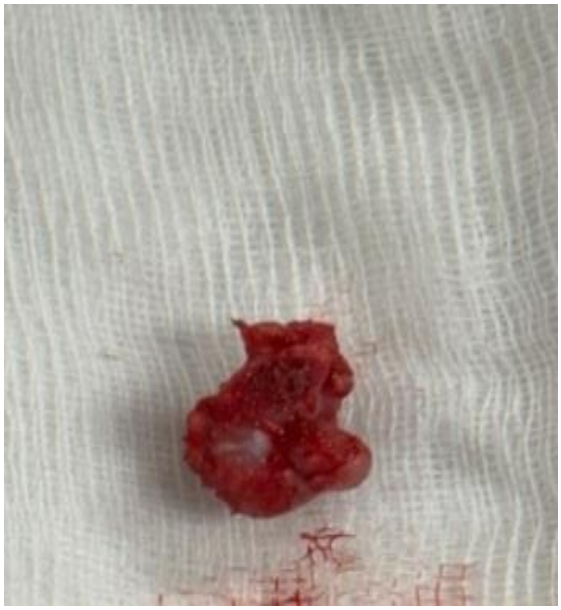


Fig.5 Clinical photograph

Patient was operated under General Anaesthesia in prone position .Inscision was taken directly over swelling .Skin subcut,fascia cut. Swelling was isolated from surrounding structures and was excised completely from base. Sample was sent for histopathological examination. It showed homogenous cartilaginous material, bony trabeculae, and connective tissue suggestive of osteochondroma.

Fig.5 Intraop photo showing tumor. **Excised tumor mass**

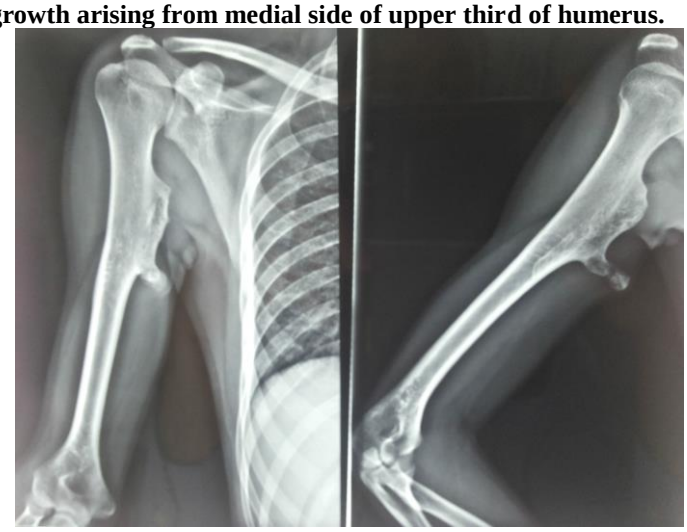


Shoulder and scapular exercise started immediately postop. Sutures were removed on 14 day. The patient on 3 month follow-up showed no recurrence of tumor.

Case -3

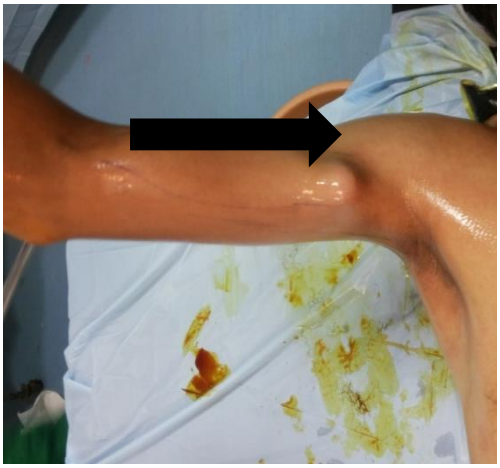
A 12 year old boy presented with complaint of swelling over right arm since more than 3 years .Swelling initially was small in size which gradually increased to present size. On local examination there was bony hard, nonmobile, nonpulsatile and nontender swelling around 5 x 3 cm cm in size over medial aspect of upper third arm. Skin over swelling was normal and freely mobile. Shoulder joint movements was normal. Radial pulse was present.

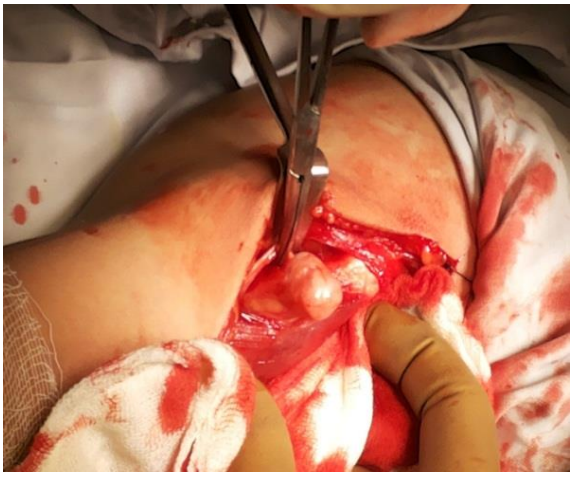
Fig.5 X ray showed bony growth arising from medial side of upper third of humerus.



Patient was taken in supine position under General Anaesthesia..The tumor was exposed by a Delto-pectoral approach which was extended distally in the medial part of the arm. First the neurovascular structures were separated from the tumor and the tumoral borders were isolated. Then the muscles were reflected from bone. This allowed clear exposure to the base of the osteochondroma. Multiple drill holes were placed around the base of the tumor. These drill holes were connected to each other using an osteotome. This technique avoided a possible fracture through the proximal humerus..The remaining portion of stalk was curetted and was then cauterised. Negative suction drain was inserted and closure was done in layers. Pendulum exercises and range of motion exercises were started on next day of surgery.

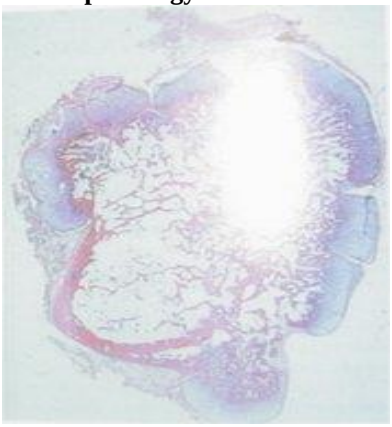
Fig.6 Clinical photograph. **Tumor after isolation from surrounding structure**





Tumor sample was sent for histopathology and it confirmed the diagnosis of osteochondroma.

Fig.7 Histopathology of osteochondroma.

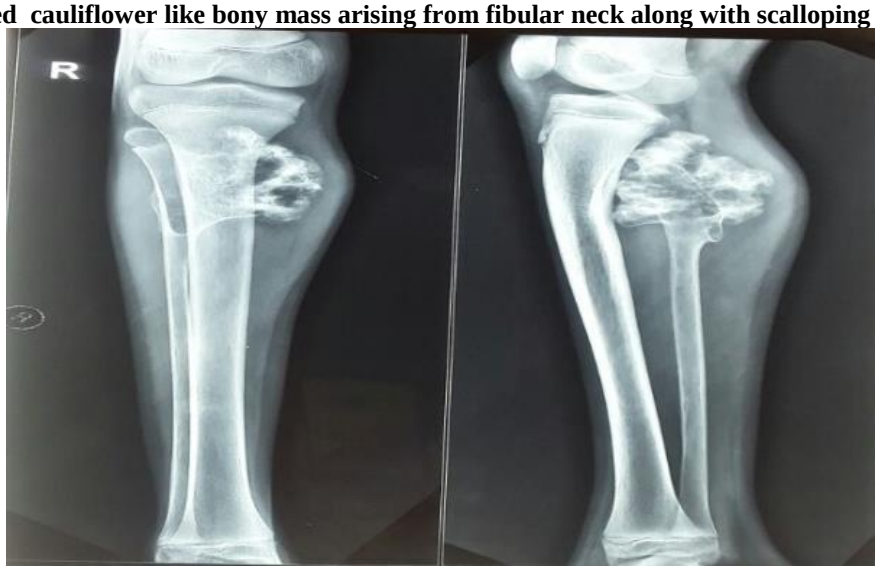


Patient on 3 month and 6 month follow-up visit showed no recurrence.

Case 4

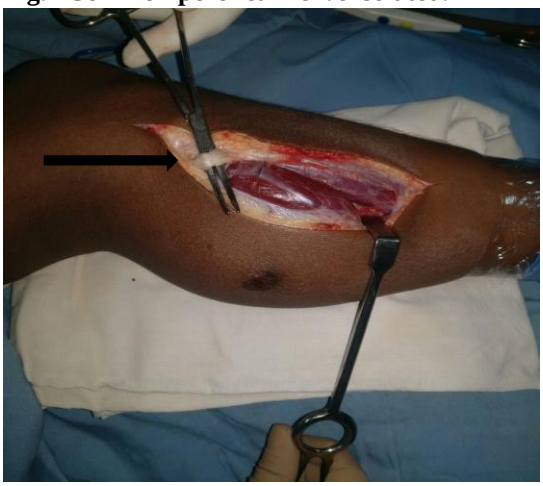
A 14 year old male presented with chief complaint of swelling over right upper third leg since 2 years. Insidious in onset and gradually progressed to present size. On clinical examination, a large swelling was seen over right proximal leg, on anterolateral aspect, approximately 5 x 3 cm in size. It was bony hard ,non tender swelling fixed to bone . There was no involvement of common peroneal nerve.

Fig.7 X ray showed cauliflower like bony mass arising from fibular neck along with scalloping of tibia.



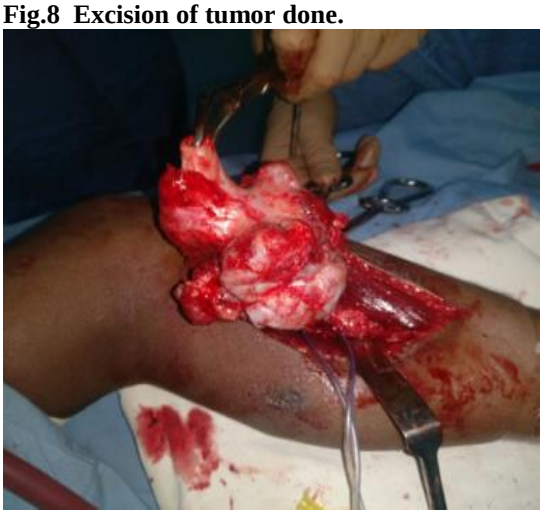
Patient was placed in lateral position under General Anaesthesia with pillow kept between two legs .Surgery was performed under tourniquet. A linear incision was taken just posterior to fibula along the line of biceps femoris tendon . After a superficial surgical dissection, common peroneal nerve was isolated. The nerve was mobilized and it was retracted by infant feeding tube. Muscles were stripped and fibula was exposed. En-block excision of tumour was performed and a small portion of head of fibula was left, where fibular collateral ligament was attached .

Fig.7 Common peroneal nerve isolated.

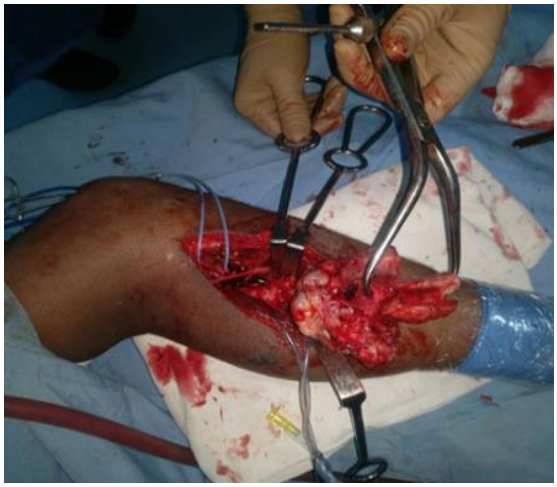


Tumor was seperated from surrounding structure .

Fig.8 Excision of tumor done.



After excision of tumor.



Wound closed in layers over drain. Above knee slab was applied for 2 days, with the ankle in neutral position, to prevent early muscle contracture and to help in pain management. Drain and slab were removed after 48 hours and mobilisation was started. Histopathogical study confirmed the diagnosis of osteochondroma with bony trabeculae, enchondral ossification and hyaline cartilage cap.

Patient was subsequently followed up after 3 months and 6 months and showed no evidence of recurrence after surgery.

DISCUSSION

An osteochondroma was first described by Sir Astley Cooper, in 1818. It is the most common benign developmental tumour of the appendicular skeleton, which is characterized by an abnormal, ectopic, endochondral ossification around the physis Osteochondromas are fairly frequent, affecting about 3% of the population. Osteochondromas are the most often asymptomatic, but complications can arise, in particular, if the tumor is voluminous or if it is located in an at-risk anatomic site. Three types of complications occur : 1] Extrinsic, secondary to compression or irritation of an anatomical structure neighboring the exostosis . 2] Intrinsic, related to a fracture of the base of the pedicle or a malignant transformation 3] Mixed, related to bone deformations and interference with joint clearance, most often encountered in multiple exostoses disease.[6]

The reported incidence of malignant degeneration of the exostoses varies greatly, ranging from 3 to 25%. [5]

As the mediastinum and lungs move during respiration, the spurs of exostoses of rib could damage the adjacent structures; causing life threatening conditions such as pneumothorax by injuring the lung, or hemothorax by injuring the diaphragm, pleura or heart.[13] It is generally believed that the risk of malignant degeneration of an isolated lesion to chondrosarcomain rib is around 1%–2%.[11-12]. Because of these future potential complications, it is always recommended to excise this tumor. [13]

Scapular osteochondroma can cause symptoms including swelling, cosmetic discomfort, pain, crepitus, and mechanical difficulty/ dysfunction, snapping, pseudo-winging, weakness, and pressure effects on circumferential structures including nerves and vessels [11-12]. The patient can also have difficulty/inability to sleep in supine position in case of dorsal scapular osteochondroma . Pain can also occur due to irritation and inflammation of overlying soft tissues, bursitis of overlying swelling [13], fracture at stalk of pedunculated osteochondromas, or rarely due to malignant transformation. In our case cosmetic issue and difficulty in sleeping in supine position was the main concern and hence surgical excision was done.

Complications of a proximal humerus osteochondroma may include mechanical shoulder impingement, restriction of joint movement, nerve or blood vessel compression from proximity to the axilla, painful bursitis, pathological bone fracture, and a small risk of malignant transformation into chondrosarcoma. Hence excision of osteochondroma becomes necessary.

A proximal fibular osteochondroma may distort the normal anatomical course of nerves and vessels and it may lead to vascular compression syndromes and a pseudoaneurysm or peroneal nerve paralysis [7-10].In our case deformity of upper tibia, cosmotic issue were the main concern . So for these concern and to prevent future complications we did the excision of tumor.

Complications like nerve injury, vascular injury, bone fracture ,compartment syndrome from intense muscle swelling, recurrence of tumor may occur during and after surgical excision of osteochondroma. Hence meticulous isolation of tumor from surrounding structures and then its excision is utmost important. Recurrence do occur mainly due to incomplete removal of osteochondroma. In our series we did not had any complications or recurrence.

CONCLUSION

Although osteochondroma predominantly affects the metaphysis of long bones, it may occur at unusual sites with varied clinical presentations. A suspicion of an osteochondroma at unusual locations is mandatory in narrowing down any differential diagnoses Careful clinical evaluation, appropriate imaging, and complete surgical excision provide excellent functional recovery and minimize recurrence.

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