A Case Report on Symptomatic Therapy Solitary Osteochondroma of Left Distal Femur

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ABSTRACT: Osteochondroma is a benign bone tumor that develops near the growth plate, commonly during childhood or adolescence. It can be solitary or multiple, with genetic mutations in EXT1 and EXT2 genes playing a significant role in its development. This case report presents a 22-year-old male with a two-year history of pain and swelling in the left digital femur, which worsened over two months, causing mobility issues unresponsive to medication and physiotherapy. Examination revealed a hard, immobile, osseous mass with intact skin, and imaging confirmed a sessile osteochondroma with mild joint effusion and ligamentous involvement. Surgical excision was performed successfully, and post-operative recovery was uneventful, with significant symptom relief within 48 hours. The patient was discharged on appropriate medication and experienced complete functional improvement at follow-up. This case highlights the importance of early diagnosis, imaging, and surgical intervention in symptomatic osteochondroma for optimal outcomes.

KEY WORDS: Osteochondroma, Benign bone tumor, Solitary osteochondroma, Hereditary multiple exostoses (HME). Genetic mutations (EXT1, EXT2). Cartilaginous cap, Femoral osteochondroma, Subperiosteal excision

INTRODUCTION:

An osteochondroma is a benign (noncancerous) tumor that develops during childhood or adolescence.It is an abnormal growth that forms on the surface of a bone near the growth plate.Growth plates are areas of developing cartilage tissue near the ends of long bones in children[1,2] The exact incidence of osteochondromas is unknown since many of these tumors are asymptomatic and therefore remain undiagnosed. Besides, the incidence varies depending on the type. Solitary osteochondroma is approximately six times more frequent than HME . It is generally found within the first four decades, with 75% of such lesions arising before the age of 20 years[3] . There are two types of osteochondroma , namely Solitary osteochondroma, Multiple osteochondroma. The exact cause of osteochondroma is unknown, but it's thought to be related to a genetic abnormality[4]

Risk factors :

- **Genetics:** Mutations in EXT1 and EXT2 genes are the main cause, leading to abnormal cartilage development and osteochondroma formation.
- **Family history:** Individuals with a family history of MHE are at a significantly higher risk of developing osteochondromas.
- **Gender:** Males tend to have a higher incidence of osteochondromas compared to females.
- **Age:** Most osteochondromas develop during childhood and adolescence, when bone growth is most active[5]

Pathophysiology:

separation of a fragment of epiphyseal growth plate cartilage

⇩

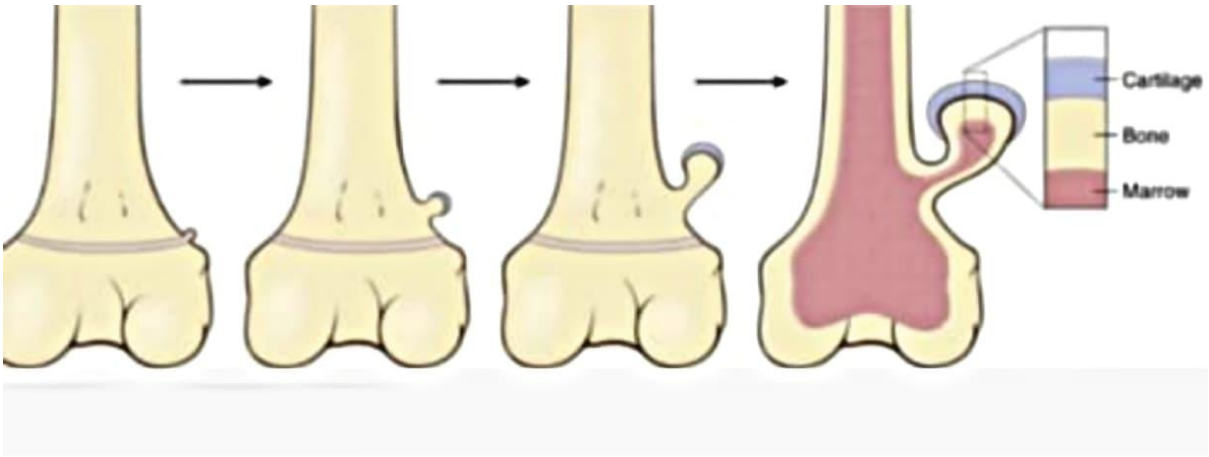
herniates through the periosteal bone cuff

⇩

Persistent growth of this cartilaginous fragment and its subsequent enchondral ossification (maturation)

⇩

subperiosteal osseous excrescence(Cartilage cap projects from the bone surface)[6]



The development of an osteochondroma,beginning with an outgrowth from the epiphyseal cartilage.

signs and symptoms :

An osteochondroma often presents as a painless, hard lump or bump under the skin, most commonly near a joint, and usually causes no symptoms unless it compresses nerves or tendons, leading to pain, numbness, or weakness depending on its location and size; other potential signs include **noticeable limb length discrepancies, joint pain, and deformity**, especially if multiple osteochondromas are present; in most cases(1,5)

Diagnosis:

Physical exam A firm mass near a joint that can't be moved, Painless mass near a joint, Numbness and tingling, Snapping of tendon over tumor, and Restricted range of motion[7,8]

Imaging tests

- Osteochondromas are often diagnosed using X-rays.
- Sessile or broad based osteochondromas may require a CT scan or MRI[9]

Surgery:

Excision is **a surgical procedure that removes an osteochondroma, a benign bone tumor, and some surrounding tissue**. The surgery is usually simple and patients can often resume normal activities soon after.

Procedure

- The surgeon makes an incision over the tumor
- The tumor is removed at the level of the bone
- The cartilage cap, stalk of bone, and any bursa (fluid sac) are removed [10]

Complications

- In some cases, surgery may be more complicated if blood vessels or nerves are involved
- Surgical difficulties may occur depending on the tumor location[6,11]

Treatment: Currently, **there is no established pharmacological treatment for osteochondroma**, meaning there are no medications specifically designed to target and shrink the tumor; the primary treatment option for symptomatic osteochondromas is surgical excision to remove the affected bone growth if it causes pain or complications; for asymptomatic osteochondromas, observation and monitoring is usually the preferred approach

Management of symptoms: If an osteochondroma is causing pain, pain medications like nonsteroidal anti-inflammatory drugs (NSAIDs) may be used to manage symptoms while monitoring the lesion. [3,4]

- **Physical therapy:** Consider working with a physical therapist to develop a personalized exercise program tailored to your needs.

CASE PRESENTATION:

A 22 years old male was admitted in the department of orthopaedics with pain and swelling in left digital femur since 2 years. He have difficulty in walking and sitting crossed legs and getting up from ground since 2months and it was not relieved by medication and physiotherapy.

Physical examination:

On examination , A hard, immobile, oval osseous mass (6 × 5 cm) was noted on the anteromedial lower femur with tight but intact skin. It was tender, irregular, and arose from the metaphyseal-diaphyseal zone. No neurovascular compromise was present. Knee motion was painless up to 100°, with pain and skin stretching beyond. Ligamentous and meniscal exams were normal.

Investigation:

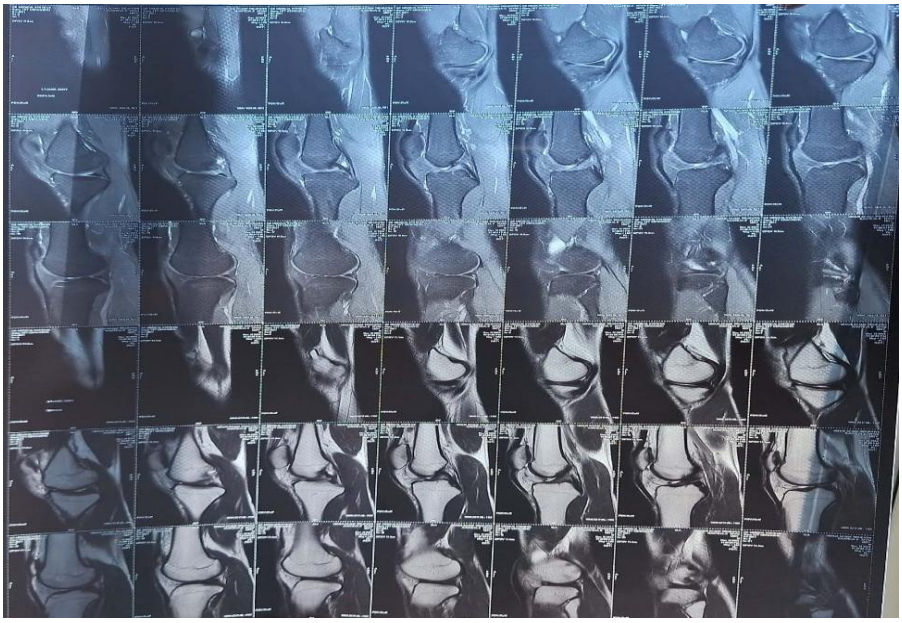
CBC : WITH IN NORMAL LIMITS

X-RAY: A Sessile osseous mass originating from the anteromedial region of the lower left femur

Picture 1:This image shows x-ray report of the patient

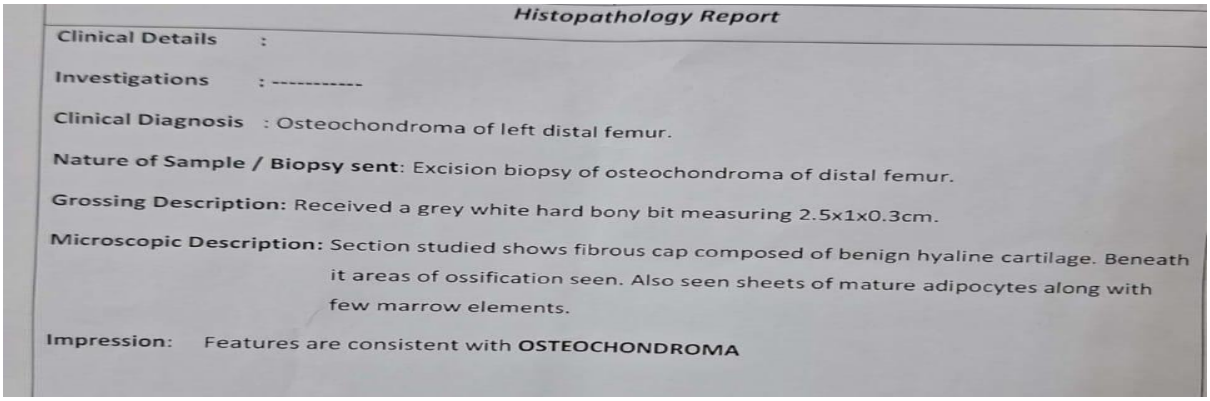
MRI: A bony outgrowth with cartilaginous cap in medial aspect of left distal femur at meta diaphyseal region causes mass effect on adjacent soft tissue.

- like benign sessile osteochondroma.
- grade 1sprain of anterior cruciate ligament
- grade 2 signal in posterior horn of medial meniscus
- no obvious tear surroundings of tumor
- Mild joint effusion extending into supracapsular bursa region.



Picture 2:This image shows MRI report of the patient

FNAC report of the patient revealed that Features are consistent with Osteochondroma.



Histopathology Report

Clinical Details :

Investigations : ----------

Clinical Diagnosis : Osteochondroma of left distal femur.

Nature of Sample / Biopsy sent: Excision biopsy of osteochondroma of distal femur.

Grossing Description: Received a grey white hard bony bit measuring 2.5x1x0.3cm.

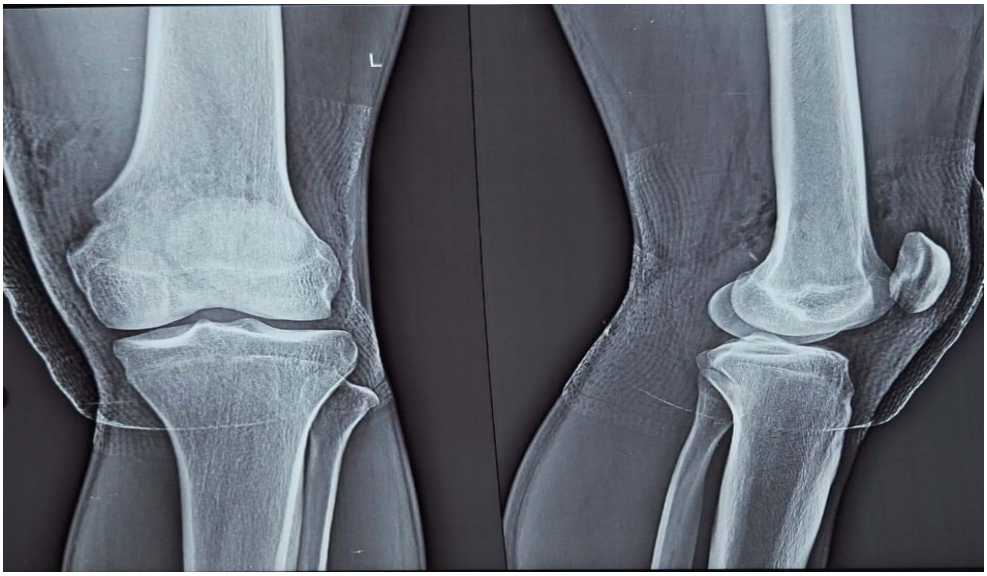
Microscopic Description: Section studied shows fibrous cap composed of benign hyaline cartilage. Beneath it areas of ossification seen. Also seen sheets of mature adipocytes along with few marrow elements.

Impression: Features are consistent with **OSTEOCHONDROMA**

Picture 3:This image shows FNAC report of the patient

Treatment:

Subperiosetal excision was performed under local anesthesia.The surgical procedure for an osteochondroma is called **an excision**, where the entire tumor, including its stalk and cartilage cap, is completely removed from the bone at the level of normal bone tissue, essentially "cutting it off" from the affected area; this is usually done through a small incision directly over the tumor to access and remove it completely, aiming to preserve surrounding tissues and structures.



Picture 4:This image shows x-ray report of the patient

- **Purpose:** To alleviate pain and functional limitations caused by the osteochondroma by removing the tumor completely.
- **Procedure details:**
  - The surgeon makes an incision over the tumor site to expose the bone.
  - The osteochondroma is carefully separated from the normal bone at its base, ensuring the cartilage cap is fully removed.
  - Any associated bursa (fluid sac) may also be removed .

LIFE STYLE MODIFICATION ADVISED:

Simple exercises for osteochondromas:

- **Walking:** Start with short walks around the house and gradually increase distance and pace.
- **Leg raises:** Lie on your back and slowly lift one leg at a time, keeping your knee straight
- **Ankle circles:** Gently rotate your ankles clockwise and counterclockwise.
- **Knee flexion and extension:** Bend and straighten your knee while lying down.
- **Static stretches:** Hold gentle stretches for the hamstrings, quadriceps, and calf muscles.

Important considerations:

- **Pain management:** If you experience significant pain, stop the exercise and consult your doctor.
- **Ice packs:** Applying ice packs to the surgical site can help reduce swelling and discomfort.

The patient was prescribed Pre OP Inj. Monocef (1gm-IV) , inj.tt (1/2CC-IM),inj. Lignocane (0.5ml-SC), inj.Pan (40mg-IV), INJ.Emeset(4mg-IV), tab. Dulcoflex (5mg-P/O). Post OP orders Inj.Monocef (1gm-IV-BD),Tab.Pan(40mg-P/O-OD),Inj.ketorolac(30mg-IM-BD),Tab.Chymoral forte(P/O-BD) from day-3.

OUTCOME AND FOLLOW-UP:

The patient reported significant symptom relief within 48 hours post-procedure. At the 2-week follow-up, the surgical site had healed well.

DISCHARGE MEDICATION : Tab.cefixime(200mg-P/O-BD),Tab.Pan(40mg-P/O-OD),Tab.hifenac – SP(100/325/15mg-P/O-BD),Tab.shelcal(500mg-P/O-OD).

DISCUSSION:

Osteochondromas are the most common benign bone tumors and generally originate from the metaphyseal and diaphyseal side of long bones. These tumors normally do not have any symptoms; however, they may be symptomatic with mechanical symptoms or from neurovascular compression, and hence load intervention is indicated. In this case, by virtue of his functional impairment and chronic pain, resection was deemed necessary. Radiographic findings of a sessile lesion with cartilage cap were confirmatory. Surgery remains the gold standard in symptomatic osteochondromas after conservative management has failed. Mild ligamentous strain and joint effusion lent weight to the mechanical impact of the lesion. Uneventful recovery of the patient after surgery validates excision to be the better choice in symptomatic-osteochondromas. **CONCLUSION:** Mostly, osteochondromas are benign, but some can cause significant functional impairment and impairment of quality of life when symptomatic. The current case demonstrated the value of clinical examination, imaging, and early surgical intervention. Simple resection provided immediate pain relief and restored function, thereby confirming the authoritative surgical approach to symptomatic cases. Continued follow-up over several years is indicated to check for recurrence and complete recovery.

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