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Solitary Osteochondroma of the Iliac Blade: A Rare Flat Bone Presentation Managed with Complete Surgical Excision

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Abstract

Introduction: Osteochondroma is the most common benign bone tumor, accounting for 20–50% of all benign bone tumors and typically arising from the metaphyses of long bones. Osteochondromas arising from flat bones such as the ilium are exceedingly rare, representing <5% of all osteochondromas. We report a rare case of a large solitary osteochondroma originating from the posterior-inferior part of the left iliac bone in a young female.

Case Report: We report a 21-year-old female with a solitary osteochondroma arising from the posteroinferior part of the left iliac bone. The lesion measured 4.3 × 2.7 × 2.5 cm with a cartilage cap thickness of 2.2 mm. Two magnetic resonance imaging (MRI) scans performed 1 year apart demonstrated an increase in lesion size, while the thickness of the cartilage cap remained unchanged. Surgical subperiosteal excision was performed using a vertical incision. The mass was removed with an osteotome, and bone wax was applied to the raw bone surface for hemostasis. Histopathological examination confirmed a benign osteochondroma without atypical features. At follow-up, the patient reports complete satisfaction with the resolution of deformity and no recurrences.

Discussion: Pelvic osteochondromas are rare and often present late due to their deep location. This case highlights a symptomatic flat-bone osteochondroma presenting with mechanical and cosmetic complaints. MRI findings supported a benign nature. Complete marginal excision, including the cartilage cap, is curative and minimizes recurrence risk.

Conclusion: This case emphasizes the rare location of osteochondroma in the iliac bone and demonstrates that timely surgical management can lead to excellent cosmetic and functional outcomes without recurrence. Early recognition and complete excision are key to successful treatment of flat-bone osteochondromas and prevention of complications.

Keywords: Osteochondroma, Iliac bone, Flat bone tumor, Pelvic osteochondroma, Surgical excision, Cartilage cap.

Introduction

Osteochondroma represents the most common benign bone tumor, accounting for 20–50% of all benign bone tumors and approximately 10–15% of all bone tumors. It is defined as a cartilage-capped bony projection arising from the external surface of bone, characterized by continuity of both cortical and medullary components with the parent bone [1]. Osteochondromas are developmental lesions arising from aberrant cartilage proliferation at the perichondral ring or physeal cartilage herniation [2]. They predominantly occur in the metaphyseal regions of long bones, particularly around the knee, while flat bone involvement, such as the pelvis or scapula, is rare, comprising only 3–5% of cases. Among pelvic sites, the iliac bone is the most frequent location, though such lesions remain rare overall. Surgical excision is indicated for pain, deformity, mechanical or neurovascular issues, or suspected malignancy. Complete resection of the cartilage cap minimizes recurrence, which is <2% [3].

We report a rare, large osteochondroma from the posterior-inferior left ilium in a young adult, highlighting its uncommon flat-bone origin and successful surgical management.

Case Report

A 21-year-old female patient presented to our orthopedic

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outpatient department with complaints of a progressively enlarging mass over the left hip region. The patient reported cosmetic deformity causing significant psychological distress, pain localized to the area of the swelling, and practical difficulty wearing normal clothing due to the prominence of the mass. The swelling produced noticeable asymmetry; symptoms had progressed over several years with a mild increase in the past year. She denied trauma or a family history of bone tumors. Past medical history was unremarkable.

On examination, there was a hard, irregular, well-defined, non-tender mass fixed to bone over the posteroinferior left iliac bone with normal overlying skin (Fig. 1). Hip range of motion and neurological exam were normal; no other skeletal abnormalities were detected (Fig. 2).

Imaging studies were obtained. Lateral pelvic radiograph showed a cauliflower-like bony outgrowth emanating from the left iliac bone.

Magnetic resonance imaging (MRI) demonstrated a well-defined osteochondroma measuring 4.3 × 2.7 × 2.5 cm from the posterior-inferior left iliac bone with a cauliflower morphology and a cartilage cap 2.2 mm thick. There was a mild mass effect on the left gluteus maximus (Fig. 3). Comparison with MRI 1 year earlier showed no change in cap thickness but a slight overall size increase. These features were consistent with a benign osteochondroma without signs of malignant transformation.

Given the patient's pain, cosmetic concerns, and mechanical interference with daily activities, elective surgical excision was planned. We opted for an extraperiosteal excision to achieve complete removal of the cartilage cap while limiting morbidity. Although alternative pelvic approaches have been described – such as endoscopic excision, which offers reduced soft-tissue disruption but may compromise exposure, and wider oncologic resections reserved for lesions with suspicious malignant features – these techniques do not provide added benefit over open extraperiosteal excision for a clearly benign, well-defined osteochondroma.

Surgical technique

Under general anesthesia, a vertical incision was made over the mass (Fig. 4). Dissection proceeded through the subcutaneous tissue; muscles were elevated to expose the exostosis arising from the posteroinferior ilium. The lesion was extraperiosteally excised en bloc from its bony base using a sharp osteotome. Irregular cancellous bleeding was controlled, bone wax applied, the wound irrigated, and closed in layers without complication (Fig. 5, 6).

Recovery was uneventful. The patient reported relief of discomfort, improved cosmesis, and the ability to wear normal clothing. At 1-year follow-up, the scar was well healed, pelvic contour symmetric, and radiographs showed no residual mass or recurrence (Fig. 7). Pre-operatively, the patient had moderate pain (Visual Analog Scale [VAS] 6/10) and functional and cosmetic limitations, reflected by a musculoskeletal tumor society (MSTS) score of 19/30, warranting surgical excision. At 6 months, pain had markedly decreased (VAS 1/10) with corresponding improvement in function (MSTS 27/30). By 12 months, the patient was pain-free (VAS 0/10), fully functional, and cosmetically satisfied, achieving a final MSTS score of 30/30.

Grossly, the specimen was a lobulated bone with a cartilage cap. Histology showed mature trabecular bone covered by a thin hyaline cartilage cap with endochondral ossification at the cap base and no atypia, confirming benign osteochondroma (Fig. 8).

Discussion

This case underscores key features of osteochondroma occurring at an atypical anatomical site. Flat bone osteochondromas grow from membranous bone and may present later in adolescence or adulthood, often with more pronounced symptoms due to spatial constraints, even nerve root compressions and spinal symptoms [4]. Osteochondromas of the iliac bone frequently remain asymptomatic for long periods due to their deep pelvic location and extensive soft-tissue coverage. As a result, they may attain substantial size before detection, with lesions up to 16 × 15 × 10 cm reported in the literature [5]. Early diagnosis of flat-bone osteochondromas, therefore, requires a high index of suspicion, particularly in young adults presenting with unexplained pelvic masses or pain.

Radiological evaluation is essential in the diagnosis and characterization of osteochondroma. Advanced imaging modalities, such as computed tomography and MRI, allow for superior anatomical delineation, precise measurement of the cartilage cap, and evaluation for features suggestive of malignant transformation. Cartilage cap thickness is regarded as the most reliable imaging criterion for differentiating benign osteochondroma from secondary chondrosarcoma, with reported sensitivity and specificity approaching 100% when the 2 cm threshold is applied in adults. The absence of these features in our patient, along with the persistently thin cartilage cap, strongly supported the benign nature of the lesion. Given the presence of clear indications for intervention, namely, pain, mechanical symptoms, and cosmetic concerns, and considering the curative potential of complete excision with recurrence rates <2% [3], surgical removal of the lesion was deemed the most appropriate management strategy for this patient. The differential for a sessile lesion on the iliac blade includes parosteal osteosarcoma, periosteal chondroma, and surface

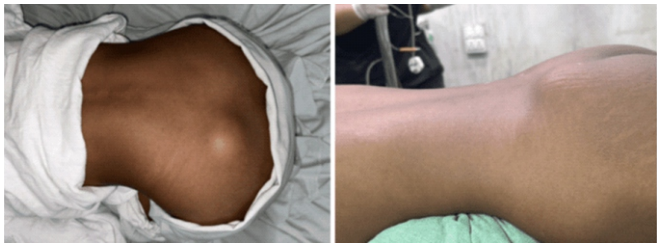

Figure 1: Clinical photographs demonstrating a prominent swelling over the left posterior iliac area.

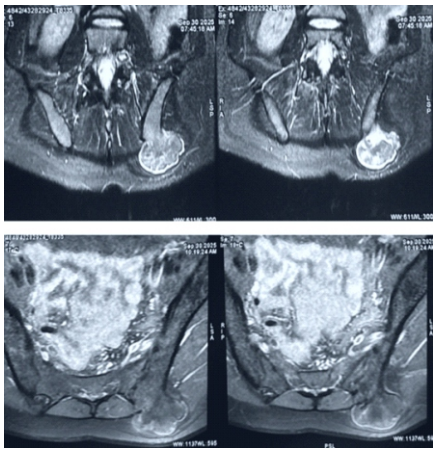

Figure 3: Magnetic resonance imaging showing well defined exostosis mass from posterioinferior part of left iliac bone.

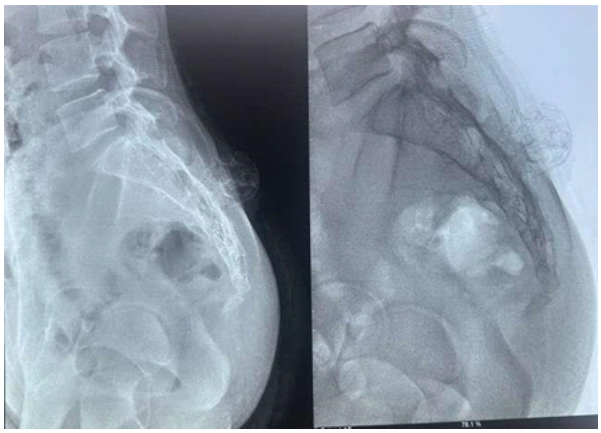

Figure 2: Lateral radiographs showing a cauliflower like bony outgrowth.

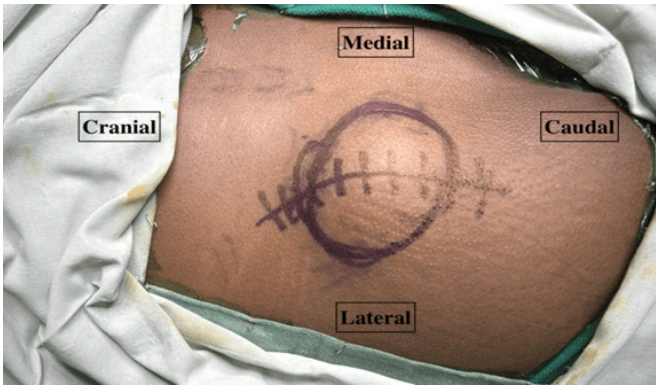

Figure 4: Borders of the tumor and incision marked before surgery.

chondrosarcoma. In this case, MRI findings – medullary continuity, a thin uniform cartilage cap, and absence of aggressive characteristics – strongly indicated a benign osteochondroma. This was later confirmed in histopathology, which showed a hyaline cartilage cap without atypia, confirming the diagnosis.

The patient outcome in our case exemplifies the excellent results achievable with complete surgical excision of symptomatic osteochondromas. These outcomes align with published literature demonstrating high patient satisfaction rates following osteochondroma excision. Although the patient demonstrated favorable short-term and 1-year outcomes, which provide a reassuring early assessment, longer observation is still important to fully exclude late recurrence or delayed complications. We plan structured follow-up with clinical evaluation and radiographs every 6 months for the next 2 years, followed by annual reviews. Any new symptoms, rapid growth, or concerning radiographic changes will be evaluated promptly with MRI and, if needed, histologic reassessment.

Conclusion

Solitary iliac osteochondroma is rare and often diagnosed late due to its deep pelvic location and minimal symptoms. MRI is crucial for confirming cortical continuity, assessing cartilage cap thickness, and ruling out malignancy. Surgical excision is indicated for pain, deformity, or mechanical issues, and complete cap removal prevents recurrence. The patient achieved full symptom relief, cosmetic improvement, and no recurrence on follow-up, with histology confirming benignity.

This case reinforces key principles: maintaining clinical suspicion for pelvic osteochondromas in young adults with unexplained pelvic masses, using MRI for preoperative assessment, and ensuring meticulous excision to achieve durable outcomes.

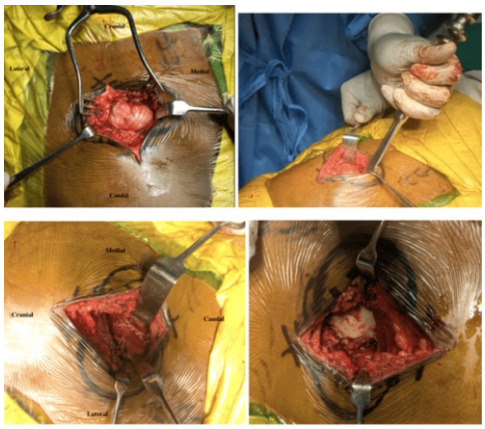

Figure 5: Intraoperative steps of surgical excision. Upper left: Exposed tumour with intact cartilage cap. Upper right: Osteotome used to detach the lesion from its base. Lower left: Cancellous bone surface after tumour removal. Lower right: Bone wax applied over the exposed bone for hemostasis.

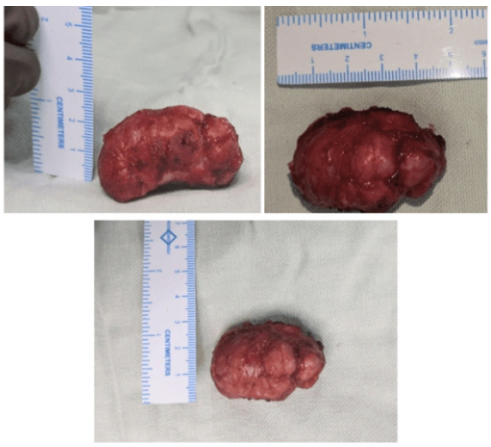

Figure 6: Gross specimen of the excised osteochondroma displayed with a scale for size reference.

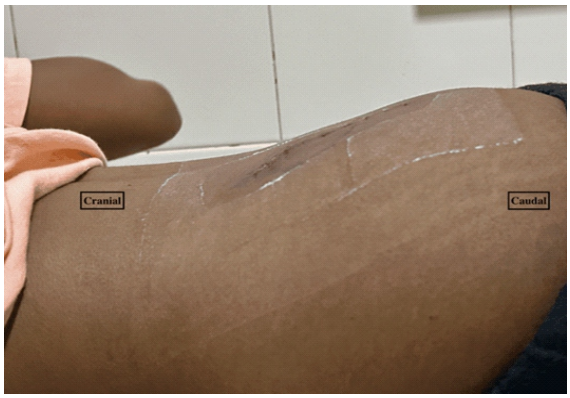

Figure 7: Clinical photograph demonstrating restored contour following excision.

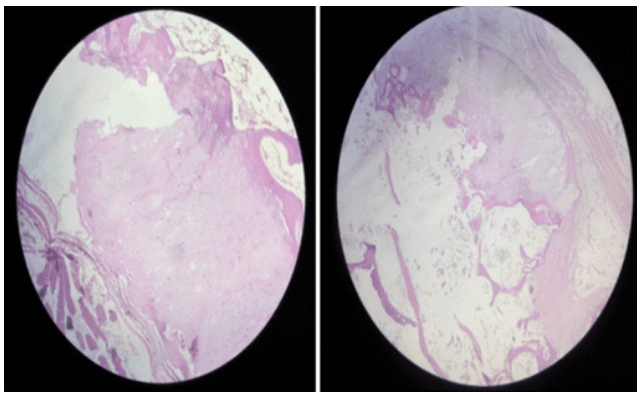

Figure 8: Histopathological sections showing mature bone with an overlying hyaline cartilage cap, consistent with osteochondroma; no atypical features noted.

Declaration of patient consent: The authors certify that they have obtained all appropriate patient consent forms. In the form, the patient has given his consent for his images and other clinical information to be reported in the Journal. The patient understands that his name and initials will not be published, and due efforts will be made to conceal his identity, but anonymity cannot be guaranteed.

Conflict of Interest: NIL; **Source of Support:** NIL

References

1. Khodnapur G, Kulkarni S, Patil V, Venkat M, Basavaraj MK. Case series - osteochondromas at rare locations. J Orthop Case Rep 2023;13:74-80.
2. Jain MJ, Kapadiya SS, Mutha YM, Mehta VJ, Shah KK, Agrawal AK. Unusually giant solitary osteochondroma of the ilium: A case report with review of literature. J Orthop Case Rep 2023;13:42-8.
3. Saraf S, Reddy SS. A study on osteochondromas from the right and left iliac wing in a tertiary care hospital. MedPulse Int J Orthop 2020;13:57-61.
4. Kim WJ, Kim KJ, Lee SK, Choy WS. Solitary pelvic osteochondroma causing L5 nerve root compression. Orthopedics 2009;32:922.
5. Sun J, Wang ZP, Zhang Q, Zhou ZY, Liu F, Yao C, et al. Giant osteochondroma of ilium: A case report and literature review. Int J Clin Exp Pathol 2021;14:538-44.

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