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Osteochondroma Presenting at Unusual Site Iliac Wing in 16 Year Old Boy

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Abstract: ***Osteochondromas rarely grow from flat bones such as scapula and pelvis. These tumors grow in sync with the growth of the child. They usually involve the growing ends of long bones, more commonly the distal end of the femur. We report a 16-year-old boy presenting to us with an osteochondroma of the iliac wing. It was a rare sessile variant. The tumor was causing him mechanical block to squatting and interfered activities of daily living, including clothing wear and symptomatic impaction on hard surfaces. The tumor was surgically removed by extraperiosteal resection. The patient was followed up for 6 month. He did not suffer from a recurrence or mechanical symptom after 6 month. Pelvis forms an unusual site of presentation for an osteochondroma. Complete removal of these tumors extra periosteally gives a drastic relief to the patient's symptoms. The patient should be followed up carefully to look for recurrence of this tumor.***

Keywords: ASIS, anterior superior iliac spine, cm, Centimeter mm, Milimeter, FIG, Figure, H.M.O, Hereditary multiple exostosis, EXT1&2, Exostosin 1&2

1. Introduction

Osteochondroma are the most common of benign bone tumor. It account for approximately 40% of all benign bone tumors [(1).] Osteochondroma are cartilage covered histologically normal bony projection (exostosis) on the external surface of a bone in the vicinity of growth plates. It can be solitary or multiple, pedunculated or sessile, asymptomatic or may produce mild symptom like pain, swelling, cosmetic deformity, limitation of movement of adjacent joint or cause morbidity by neurovascular compromised and malignant changes . It occur generally in metaphysis of long bones (distal metaphysis of the femur and the proximal metaphysis of the tibia and humerus), Flat bones are rarely affected, however a small percentage is found in scalp and pelvis. Males are more affected than female with a ratio of 2: 1 [(2).] Usually, these conditions are asymptomatic but may require conservative treatment if they become symptomatic. In certain cases, excision of the tumors may be performed if clinical findings include mechanical signs of increased volume, intractable pain, cosmetic problem, symptoms from compression of neurovascular structures, and/or possible malignant degeneration.

2. Case Report

An 16-year-old male presented to the outpatient orthopedic surgery clinic in Netaji Subhash Chandra Bose Medical College and Hospital, Jabalpur for evaluation of a painless right iliac mass. The mass was first identified by the patient one and half years prior and had an insidious onset that continued to increase in size. The patient denied any preceding unintentional weight loss, whole body aches, fatigue, and night sweats over that time span. There was no history of trauma to the area. The patient reported the mass as painless to direct palpation but complained he occasionally hit the mass against objects during everyday activity which results in subjective pain. He also complained that the mass catches on his clothing and makes wearing a belt difficult. He has no family history of bone tumor, Multiple Hereditary exostosis and osteochondromas.

On examination, there is a nontender hard mass and area of swelling (approximately 8 cm by 4cm measure by ruler) located posterosuperior to the right anterior superior iliac spine (ASIS) of the iliac wing. Direct palpation of the mass demonstrated that it is fixed to the underlying bone while the skin is free and mobile over the mass. No changes in the overlying skin. No regional lymphdenopathy. Power of both limb are normal. Other systemic examination is essentially normal. A provisional clinical diagnosis of a right upper thigh mass is made. Patient was requested to do x-ray of the pelvis and both hips. The patient did not note any other masses or areas of concern on the exam.

Plain radiograph shows a pundunculated bony outgrowth from the right iliac bone with well defined outline (Fig1). There was a cluster of calcification at the distal part of the lesion extending in to the soft tissue.

On the basis of radiographic findings an impression of solitary pendunculated osteochondroma was made with suspicion of malignant transformation and patient was advised to do MRI of the pelvis. M. R. I. was completed and demonstrated a mass arising from the posterior part of right iliac region, arising from right iliac bone continuing with cortex and medulla of right iliac bone measuring 7.6*3.5 cm. There is a 4 mm cartilaginous cap (Figure 2). There is a mild enhancement of the distal aspect of the exostosis as well as within the surrounding soft tissue.

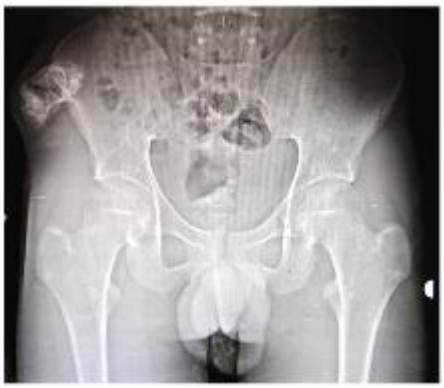

Figure 1: Preoperative AP pelvis both hip plain radiograph. Radiograph demonstrates an exophytic mass growing laterally from the right iliac wing.

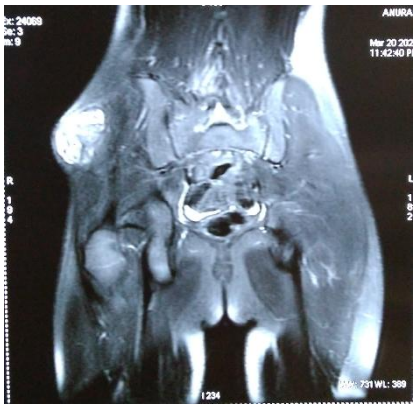

Figure 2: Preoperative coronal T1 M. R. I. demonstrates osseous exostosis with a 4 mm cartilaginous cap growing laterally from the right iliac wing. The exostosis shows medullary continuity with underlying bone consistent with osteochondroma.

3. Surgical Technique

A 10 cm incision was made directly over the mass of the right iliac bone. Sharp dissection was performed through the subcutaneous tissue. Electrocautery was used for hemostasis. Blunt dissection was used to establish fascial planes. The encapsulated mass was then encountered. The capsule was opened, which demonstrated the cartilaginous cap (Figure 3). The muscular tissue was then elevated off the stalk with electrocautery attempting to preserve as much native tissue as possible. The periosteum was elevated around the base of the mass to fully appreciate the size and dimensions. Meticulous hemostasis was maintained throughout the case. When adequate visualization of the mass was achieved, a curved osteotome used to sharply transect the mass at the base of the pedunculated stalk in line and flush with the contour of the iliac wing. The specimen was sent immediately to pathology for permanent sections. The site was then inspected for any remaining mass and to ensure it was completely removed en bloc. Bone wax was then placed over the cancellous bone to help prevent hematoma formation and provide adequate hemostasis. Layered closure was subsequently completed.

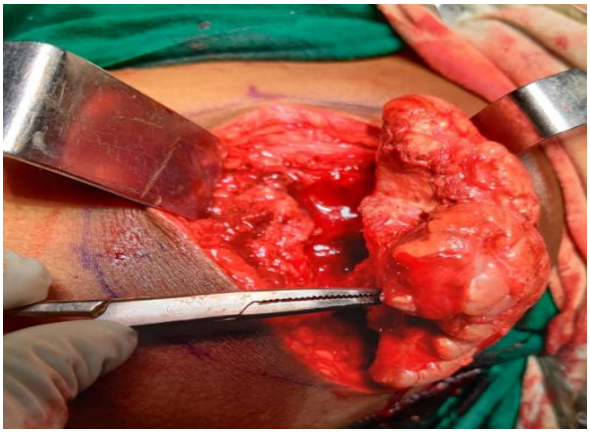

Figure 3: Intraoperative photograph of anterior right pelvis. The photograph demonstrates a pedunculated exophytic mass growing from the right iliac wing. The mass is superficially covered by a cartilaginous cap which can be appreciated surrounding the cortical bone.

4. Pathology

The lobulated firm mass removed was measured to be 7.6* 3.5 cm. The resection margin was smooth. The specimen is sectioned to reveal a tan-white smooth firm cut surface. Histopathology confirmed the mass as osteochondroma without any undifferentiated cells. No malignancy was identified.

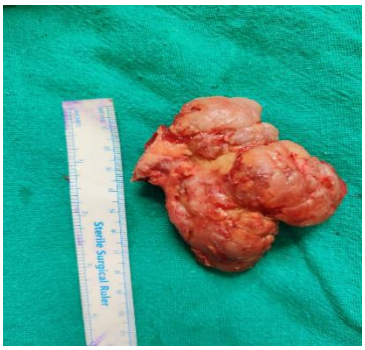

Figure 4: Intraoperative osteochondroma gross specimen. solitary lesion after it was fully excised from the pelvis.

5. Follow Op

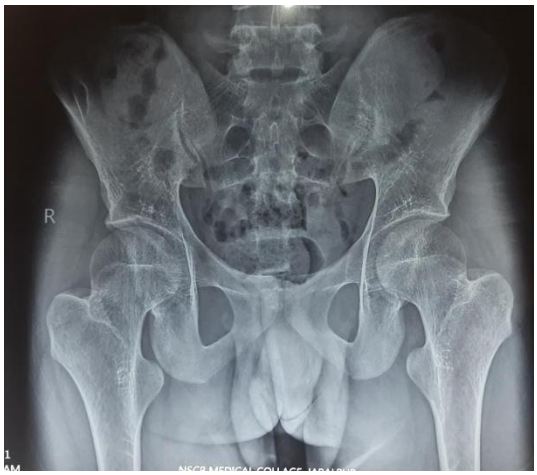

Figure 5: 6-month postoperative AP X-ray of the pelvis. This radiograph demonstrates complete excision of the

exophytic mass from the patient's RIGHT iliac wing without any sign of recurrence.

6. Discussion

Osteochondromas represent one of the most common benign bone lesions occurring in about 3% of the population and causing complications such as vascular compromise, neurologic defects, and compartment syndrome in up to 4% of cases [3]. When multiple lesions are present, osteochondromas exist as part of a syndrome known as H. M. O. which is related to mutations in EXT1 and EXT2 genes [4]. However, solitary lesions are the most common presentations accounting for 85% of (all osteochondromas [5]. The majority of osteochondromas arise from the metaphysis of long bones, but case reports have shown that osteochondromas presenting in atypical locations do occur [6, 7, 8].

Radiology is typically diagnostic of osteochondromas, with characteristic features that can be seen on multiple imaging modalities. Osteochondromas typically show continuity with underlying bone marrow and cortices ([3]. This was the case with our patient, as evidenced on M. R. I. (Figure 2). These lesions are covered by a cartilaginous cap, which is usually thin compared to the osseous component. When the cartilaginous cap is thickened to greater than 20 mm, malignant transformation is suspected [3]. Our patient presented with a symmetric cartilaginous cap of 4 mm on M. R. I. (Figure 2). Pathology reports confirmed there was no malignant transformation after the mass was completely excised, consistent with what is expected from cartilage cap size.

Surgical excision of these lesions is typically curative, and recurrence of osteochondromas can indicate either incomplete removal or malignant transformation [3]. In the case of solitary lesions, approximately 1% of all osteochondromas undergo malignant transformation [3]. While surgery is typically curative, nonsurgical options have also shown to be effective. In a report of 17 patients in Japan that presented with osteochondromas, 8 of the cases underwent spontaneous shrinkage [9]. Osteochondromas with sessile morphology were more likely to undergo shrinkage as compared to pedunculated morphology [9]. As all surgeries have well-described risks, this raises the question of what is the best treatment for these masses. In the case of our patient, the pedunculated morphology of the mass meant it was less likely to undergo spontaneous shrinkage. In our case study, the tumor size was increasing, which began causing significant impairment with daily living. We felt that surgical excision was the appropriate management of our young healthy patient's enlarging osteochondroma.

Our 16-year-old male presented with a painless lesion on his right iliac wing, which was growing in size for the past one and half years. This asymptomatic presentation is the typical way in which osteochondromas present ([3]. The lack of symptoms allows for osteochondromas to grow until they become noticed from their mass effect. When these secondary effects become noticed, they can present in a multitude of ways. In the case of our patient, his initially asymptomatic iliac tumor grew to the extent that it was causing interference with activities of daily living.

7. Conclusion

The majority of osteochondromas arise from the metaphysis of long bones, but case reports have shown that osteochondromas presenting in atypical locations such as the iliac do occur [6, 7, 8]. In the case of our patient, this asymptomatic iliac tumor grew to the extent that it was causing interference with activities of daily living. Surgical excision of his tumor proved to be curative, and there was no recurrence at 6 months after excision. Clinical suspicion must be high to properly diagnose osteochondromas in atypical locations. All providers, particularly those in primary care, should be aware of these locations as patients with symptomatic mass lesions will likely initially present here.

8. Consent

Informed consent was obtained from the patient for this case report and accompanying images to be published.

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