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A rare case of a solitary osteochondroma of the anterior superior iliac spine: A case report

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Abstract
Osteochondroma is a developmental anomaly of the bone that results in the formation of an exophytic outgrowth on the surface of the bone. It is the most common benign bone tumor. Distal Femur and Proximal Tibia are the most common sites for this tumor. Osteochondroma is rare in the Pelvis. Osteochondroma is also known as Exostosis. We hereby report a case of solitary osteochondroma from the Anterior Superior Iliac Spine in a 17 year old boy which was managed by en bloc resection.

Keywords: Superior Iliac Spine, Exostosis, Osteochondroma, Pelvis

1. Introduction
Osteochondroma is the commonest of all benign bone tumours [1]. The Cartilage capped subperiosteal bone projection accounts for 30-50% of all benign bone tumors [2]. Approximately 40% of osteochondromas are found around the knee and the most commonly involved site is the distal end of the femur and the proximal end of the tibia [3, 4]. Flat bones are rarely affected. Crestal border of the ilium is a rare but not unusual site for osteochondroma. It is hypothesized that these tumors represent growth plate cartilage that has displaced from the metaphysis. The authors report a case of osteochondroma of the anterior superior iliac spine in a 17 year old boy which was managed by en bloc excision.

2. Case Report
A 17 year old boy was brought to the Orthopaedic OPD by his guardian with chief complaints of a swelling in the right iliac region for the last one year. This was a solitary, painless swelling which was initially the size of a pea and had slowly increased to its present size and had started developing pain gradually over a period of four months. Patient did not complain of similar swellings in any other part of the body. There was no history of trauma. No medical treatment was sought and patient gave history of local massaging with analgesic oil. There was no history of fever, loss of appetite or loss of weight. The past medical history was insignificant; there was no history of antecedent surgery or radiation exposure. The family, occupational & personal histories were insignificant.
The general physical and systemic examinations were within normal limits.
On local examination, there was a solitary, globular swelling measuring 5x4 cm, emanating from the anterior one third of iliac crest. The Anterior Superior Iliac Spine could not be differentiated form the iliac crest on palpation. The skin overlying the swelling was normal. The local temperature was not raised. The swelling was non tender, well defined, bony hard in consistency and continuous with the iliac crest (Figures 1&2). Regional lymph nodes were not enlarged. Examination of the ipsilateral and contralateral lower limb joints and spine was within normal limits.

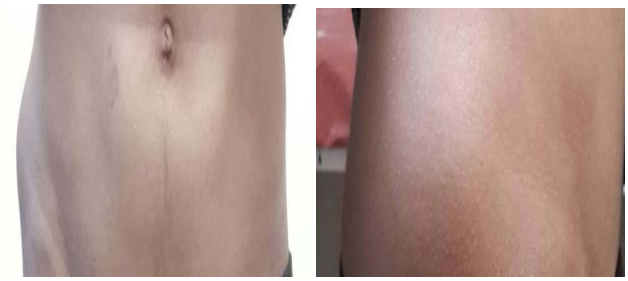

Fig 1 & 2: Clinical photographs of the patient showing a swelling emanating from the right iliac crest/anterior superior iliac spine.

Anteroposterior radiographs of pelvis revealed a sessile bony outgrowth from the right anterior superior iliac spine and anterior third of the iliac crest, without any evidence of focal radiolucencies or cortical destruction (Figure 3). The left hip was normal in plain radiography.

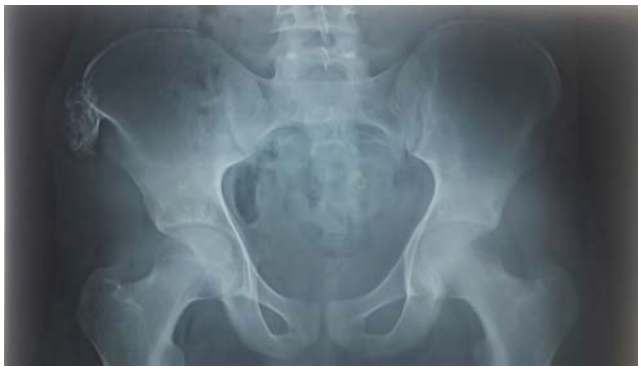

Fig 3: Anteroposterior radiographs of pelvis showing a sessile bony out growth from the right iliac crest without any evidence of focal radiolucencies or cortical destruction.

The haematological and biochemical tests were within normal limits.

The differential diagnoses included osteochondroma and myositis ossificans in the Sartorius (history of massage) was made on the basis of clinical and radiological findings. Patient was advised MRI of pelvis, which confirmed the diagnosis of Osteochondroma. (Figure 4)

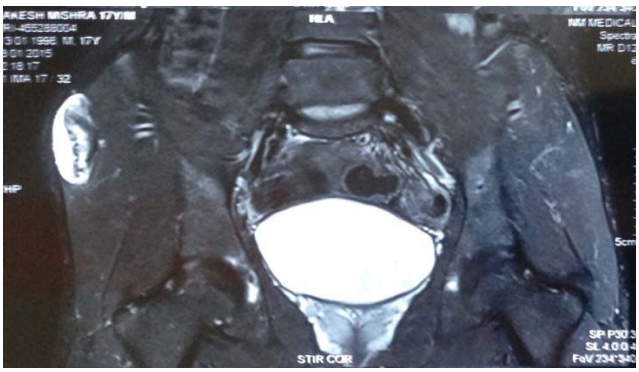

Fig 4: The MRI cuts clinched the diagnosis of Sessile Exostosis from the Anterior Superior Iliac Spine

The condition, its prognosis and treatment were discussed at length with the patient and relatives. The decision to perform en bloc resection of the tumour was taken after fitness for surgery was obtained. En bloc resection of the osteochondroma was done under spinal anesthesia. The tumour mass consisted of a bony tissue capped with bluish cartilaginous mass thus confirming the diagnosis. Some normal bone was also removed just to be sure no recurrence is encountered (Figure 5). The ends of the raw bones were filed and closure was done. The intraoperative as well as post operative course was uneventful.

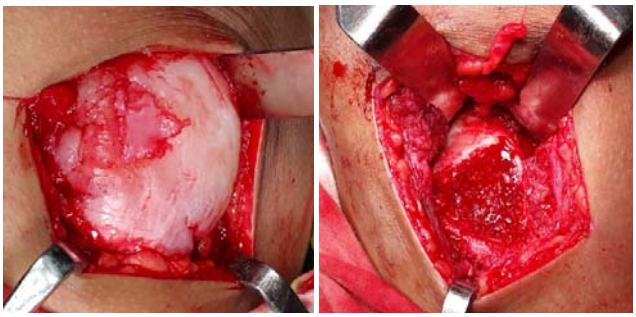

Fig 5: Intra-Operative Pictures

The excised specimen demonstrated a cartilaginous cap overlying the bony swelling (Figure 6).

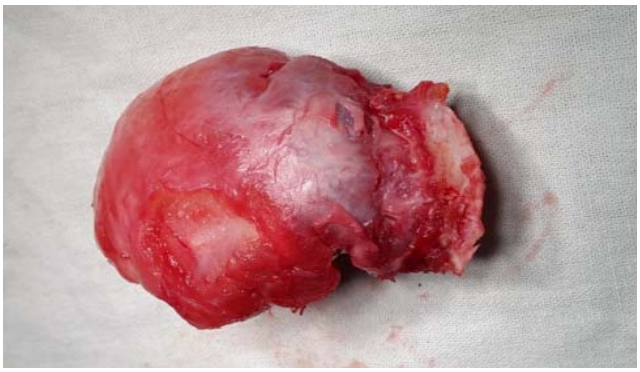

Fig 6: The resected specimen, showing cartilaginous cap.

Histopathological examination confirmed the swelling to be an osteochondroma. The patient was asymptomatic after the surgery and the scar healed well with primary intention.

At three months follow up, there was no recurrence of growth at the operative site and patient was pain free.

3. Discussion

Osteochondromas, also known as exostoses or osteocartilaginous exostoses, account for 30-50% of all the bony neoplasms [1]. However, these are actually developmental lesions of the bone that result in tumorous outgrowth [5]. Majority of the patients present within the first two decades. The male: female ratio is 1.7:1 [2].

EXT 1 tumor suppressor gene is the factor responsible for this lesion. The inactivation of both the copies of this gene is required for the development of the exostoses [4, 7]. This could be a congenital defect or can be result of trauma to the perichondrium, which in turn results in the migration of the epiphyseal growth plate through the periosteal bone cuff. This leads to misdirected growth of that portion of bone. An osteochondroma usually begins as a small overgrowth of the cartilage at the edge of the physeal plate in which endochondral calcification occurs and it ultimately develops into a bony protuberance covered by a cartilaginous cap [5]. Osteochondromas can also arise as a result of iatrogenic injury to the growth plate in the form of prior surgery or irradiation [7, 8]. This is the most common bone tumor to be associated with radiation exposure. The resting layer of the cartilage in the

epiphyseal plate is damaged by radiation and the damaged cartilage cells can migrate into the medullary cavity leading to formation of osteochondroma. They have also been reported to develop after hematopoietic stem cell transplantation [10, 11].

Osteochondromas may involve any bone that develops in the cartilage in the metaphyseal or diametaphyseal regions. Most frequently, these occur in the long bones of lower extremity with a maximum predilection for distal femur [5]. Less commonly, they may also be seen in short tubular and flat bones. But it is not seen in carpal and tarsal bones as these develop like the epiphysis of the tubular bone, from a centrifugally expanding center of ossification. But is seen in calcaneum which has a secondary nucleus of ossification.

Pelvic osteochondromas are rare, however the crestal border of ilium, vertebral border of the scapula and ends of clavicle are not unusual sites [2]. Most of the patients present with a painless bony swelling. However, they may also present with signs and symptoms of lumbar nerve root compression [12, 13, 14].

Plain radiographs are often diagnostic. They show a 'trumpet shaped deformity' due to the metaphyseal widening. The most characteristic feature of an osteochondroma is the extension of the medullary canal into the osteochondroma [2]. Radiologically, two distinct forms can be recognised i.e. sessile and pedunculated, the sessile form being more common and accounting for 88.2% of the cases [3].

Ultrasound helps to determine the thickness of the cartilaginous cap. If it continues to grow after skeletal maturity, malignant transformation should be considered [2].

CT scan serves as a very good modality for demonstrating the cortical and medullary continuity, measurement of thickness of the cartilaginous cap and to evaluate for signs of malignancy.

MRI is the imaging modality of choice for evaluating the thickness of the cartilaginous cap. Normally, the cap is only a few millimetres thick in adults and any thickness more than 2 cms should be viewed suspiciously [2, 5].

Definitive diagnosis is usually established on histopathological examination. The presence of hyaline cartilaginous cap covering over the bone is diagnostic.

Malignant transformation into secondary chondrosarcoma can be seen in about 1% of cases with solitary osteochondromas and 5% of cases with multiple hereditary exostoses. Sudden and rapid enlargement, continued growth after skeletal maturity and development of pain in an otherwise painless swelling are important clinical signs indicative of malignant transformation. Radiological signs of malignant transformation include focal radiolucencies and destruction of the adjacent bone [5, 6].

Most of the osteochondromas can be managed by observation alone. Surgical treatment in the form of en bloc resection is usually indicated for pain, cosmetic reasons, neurovascular compromise, abnormal growth, skeletal deformity, decreased motion of the adjacent joint or in cases with evidence of malignant transformation.

In our patient, there was occasional pain and a tendency for a scoliotic deformity of the spine, as the patient was trying to compensate by making postural changes. It has been reported that untreated or neglected osteochondromas of spine have developed scoliotic deformities of spine or neurological complications in the form of nerve root compression signs [13]. Hence we have considered surgical resection of the lesion in our patient. The base of the tumor was reached and en bloc resection was performed with saucerization of the base of the tumour to ensure that no cartilage remnants are left behind.

Recurrences after complete surgical resection are rare and are probably caused by failure to remove the entire cartilaginous cap [5].

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