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**Case Report**

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# Iliac wing osteochondroma in a 16-year-old boy: a case report

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## ABSTRACT

Osteochondroma is the most common benign bone tumour. Commonly seen in the long bones of the lower extremity. Ilium is a rare site. We present a 16-year-old boy with swelling in the right groin for 8 months. After clinical and radiological evaluation, it was diagnosed as osteochondroma of right iliac wing. Patient underwent en-bloc excision of the lesion and histopathology confirmed the diagnosis. Pelvic osteochondroma is a rare entity but not unusual. Extra periosteal en-bloc excision is the management of choice in patients with cosmetic deformity, neurovascular compression and malignant transformation with very low recurrence rate.

**Keywords:** Benign bone tumour, En-bloc excision, Cosmetic deformity, Malignant transformation

## INTRODUCTION

Osteochondroma aka exostosis (cartilage capped sub-periosteal bone projection) is the most common benign bone tumour accounting for about 30-50% of all benign bone tumours. They can be either pedunculated or sessile.[1] They are considered as the developmental malformations originating within the periosteum.[2] About 40% of these are seen around the knee joint, distal femur being the commonest site. Flat bones are rarely affected. Incidence of pelvic osteochondroma is about 5% and ilium is the rare site.[3,4]

Most of the times they are asymptomatic and are diagnosed incidentally on radiographs. Thus, extra periosteal en-bloc excision is not routinely recommended. Indications for the surgery are cosmetic deformity, intractable pain, compression of the surrounding neuro-vascular bundle, and malignant transformation which is about 1-2% in solitary osteochondroma and 5-25% in multiple osteochondromas.[2,5,6]

We report a case of 16-year-old boy with right iliac wing osteochondroma managed with extra periosteal excision with no recurrence in 10 months follow-up. Till now, to the best of our knowledge, less than 20 cases of pelvic osteochondroma have been reported. Therefore, making our case a rare presentation.[7]

## CASE REPORT

A 16-year-old boy presented with solitary swelling in the right groin for 8 months. It was of small size initially when he had first noticed and gradually progressed to the present size which was affecting the normal posture. The swelling was painless, was not associated with fever, loss of weight or loss of appetite. There was no history of trauma and patient was not exposed to any kind of radiation. The swelling did not impair his routine activities (Figure 1).

On examination there was a solitary, hard, globular swelling of about 6×5 cm just below the iliac crest about 4 cm posterior to the anterior superior iliac spine. It was non-tender, non-mobile and there were no signs of inflammation over or around the swelling. Examination of spine and lower limbs was normal.

Radiographs revealed a well-defined, pedunculated lesion arising from the lateral aspect of the right iliac wing without any evidence of cortical destruction (Figure 2). CT scan showed a well-defined, expansile, pedunculated,

polypoidal lesion of about 4×3×3 cm arising from the lateral aspect of the right iliac wing. The cortex and medulla of the lesion was in continuation with the bone. Specks of calcification (ring and arch type) were noted along the inferior aspect of the lesion (representing cartilaginous cap). The lesion was seen to be compressing the overlying muscles. There was no evidence of any adjacent soft tissue component or bony destruction. All features suggestive of benign aetiology (osteochondroma) (Figure 3).

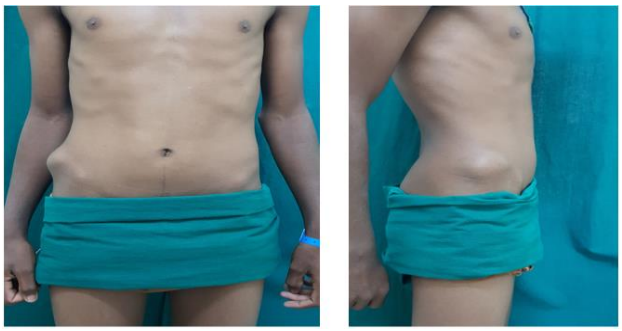

**Figure 1: Clinical pictures of the swelling in the right groin.**

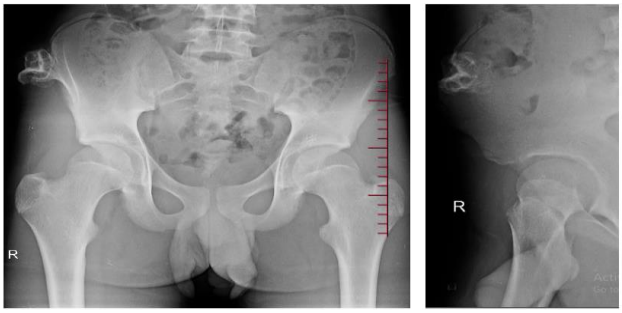


**Figure 2: Radiographs - a solitary, pedunculated lesion arising from the right iliac wing.**

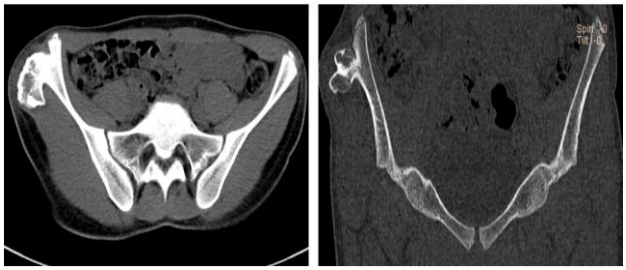

**Figure 3: CT scan of the pelvis: a well-defined, expansile, pedunculated, polypoidal lesion arising from the lateral aspect of the right iliac wing.**

The diagnosis, treatment options, and prognosis were discussed with attenders, and they opted for surgical management. After blood investigations and consent, patient was taken up for proposed surgery.

Patient was given spinal anaesthesia and was positioned in left lateral position. About 8 cm incision was taken parallel to the iliac crest centring over the lesion. Intra-operatively it was a pedunculated lesion of about 4×4 cm with overlying soft surface. Extra-periosteal excision of the lesion was done and lesion was sent for histopathological examination (Figure 4). Incision was closed in layers after achieving haemostasis. Post-operative period was uneventful. Patient was mobilised on the next day and was discharged on third post-operative day. Sutures were removed on tenth day. Histopathology report confirmed the diagnosis of osteochondroma without any evidence of malignancy (Figure 5).

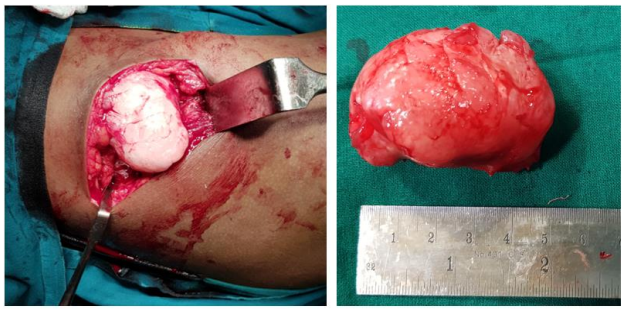

**Figure 4: Intra-operative pictures: the exposure to approach the lesion and post excision picture.**

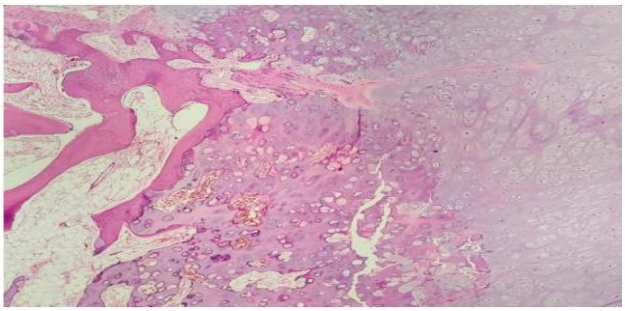

**Figure 5: Histopathology H&E stain low power: transition between bone and cartilaginous cap.**

Patient was followed up regularly, there were no signs of recurrence till 10 months of follow-up (Figure 6).

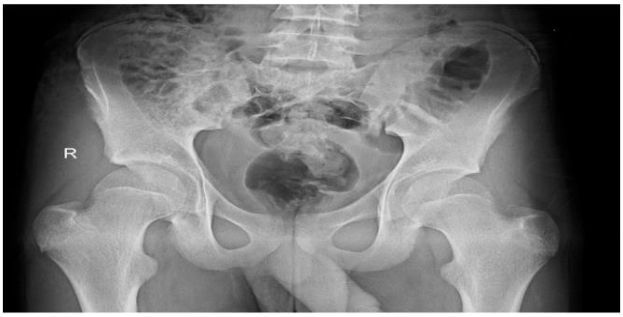


**Figure 6: Post-operative radiograph.**

## DISCUSSION

Osteochondroma, also known as exostosis is the most common benign tumour of the bone. They are nothing but

the cartilage capped sub-periosteal bone projections accounting for about 30-50% of all benign bone tumours. They are not true neoplasms; they are considered as developmental malformations arising within the periosteum. Majority of the patients present in the second decade and male to female ratio is about 1.7:1.[1,8]

Pathogenesis of this condition is explained by the inactivation of both the copies of the EXT1 tumour suppressor gene, which could be a congenital defect or as a result of trauma to the perichondrium. Trauma to the perichondrium result in the misdirected growth of a portion of the bone, secondary to the migration of the epiphyseal growth plate through the periosteal bone cuff.[3,9] The lesion usually begins as a small overgrowth of the cartilage at the edge of the physeal plate, endochondral calcification leads to the development of the bony protuberance with a cartilage cap.[2] Injury to the growth plate (traumatic or iatrogenic), exposure to irradiation, haematopoietic stem cell transplantation are the important risk factors for the development of osteochondroma. Radiation damages the resting layer of the cartilage in the epiphyseal plate leading to the migration of the cartilage cells into the medullary cavity which in turn leads to osteochondroma.[10,11]

Osteochondroma commonly involves the metaphyseal or metaphyseodiaphyseal regions of the long bones of the lower extremity. About 40% of these are seen around the knee joint, distal femur being the most common site. Short tubular bones and flat bones are very rarely involved. Incidence of pelvic osteochondroma is about 5%. Involvement of the ilium is rare but not unusual. To the best of our knowledge, less than 20 cases of pelvic osteochondroma have been reported in the past four decades. Other rare sites include, vertebral border of scapula and the ends of clavicle.[1,2,7] Most of the lesions are asymptomatic and are diagnosed accidentally on radiographs. Others present as painless bony swelling. Very rarely they may cause lumbar nerve root compression. The cause of pain in osteochondroma may be due to the neurovascular compression, fracture at the neck of the pedunculated lesion or due to the malignant transformation.[12]

Plain radiographs are diagnostic most of the times. 'Trumpet shaped deformity' is noted on x-ray due to metaphyseal widening, extension of the medullary canal into the osteochondroma is the most characteristic feature. Radiographically lesions can be of two types: sessile and pedunculated. Pedunculated verity is more common, accounting for about 88.2% of cases. Ultrasound scan helps to determine the thickness of the cartilage cap. Continuation in the growth of the lesion even after skeletal maturity indicate malignant transformation. Computed tomography (CT) scan shows the exact extent of the lesion and also demonstrates the corticomedullary continuity of the lesion. Magnetic resonance imaging (MRI) is the investigation of choice to evaluate the thickness of the cartilage cap. Normally it is of few millimetres, a thickness of more than 2 cm indicate malignant transformation. Histopathological examination of the lesion is the gold standard for diagnosis of the osteochondroma, presence of cartilaginous cap covering over the bone is diagnostic.[1,2,13]

Malignant transformation is a rare complication. Incidence of secondary chondrosarcoma is about 1-2% in solitary osteochondroma and about 5-25% in multiple osteochondromas. Thus, sessile, and multiple lesions are at a high risk for malignant transformation. Rapid enlargement of the size, severe pain in otherwise painless lesion, and continued growth even after the skeletal maturity are the important signs of the malignant transformation. Focal radiolucency, destruction of adjacent bone and cartilage cap of more than 2 cm are the radiological indicators of malignant transformation.[5,14]

As most of the lesions are asymptomatic, they can be managed conservatively. In certain cases, extra periosteal en-bloc excision is the treatment of choice. Important indications for surgery are cosmetic deformity, intractable pain, compression of the surrounding neuro-vascular bundle, abnormal growth, decreased range of movements in the adjacent joint, and malignant transformation.[2]

In our patient excision of tumour was done due to the cosmetic deformity due to its location and the size which was gradually affecting the posture of the patient. The tumour was excised in total without leaving any remnants of cartilage behind, which, is the most important cause for the recurrence of the lesion.

## CONCLUSION

In conclusion, pelvic osteochondroma is a rare entity which has to be kept in mind as a differential diagnosis in patients with pelvic mass. Patients present mainly with cosmetic deformity and rarely with compressive symptoms. En-bloc excision gives good result with low recurrences.

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