MAR Orthopedics (2023) 5:3

Case Report

A Rare Case of Osteochondroma at An Unusual Site of The Iliac Bone In 21-Year Girl

Dr. Dinesh Kumar *[1], Dr Hrushikesh Sen [2], Dr Janam Bansal [3]

1, 2. Senior Resident, Government Medical College, Amritsar.

3. Junior Resident, Government Medical College, Amritsar.

***Correspondence to:** Dr. Dinesh Kumar, Senior Resident, Government Medical College, Amritsar.

Received: 18 August 2023

Published: 01 September 2023

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 21-year-old girl presenting to us with an osteochondroma of the iliac wing. It was a rare sessile variant. The tumor was causing her pain and mechanical block to squatting, sitting cross-legged, and walking. The tumor was surgically removed by extraperiosteal resection. The patient was followed up for 6 months. She did not suffer from a recurrence or symptoms of pain or weakness after 6 months. Pelvis forms an unusual site of presentation for an osteochondroma. These tumors, should they arise from the pelvis, are notoriously dangerous as they may cause compression of lumbar nerve roots. Complete removal of these tumors extraperiosteally gives a drastic relief to the patient's symptoms. The patient should be followed up carefully to look for recurrence of this tumor.

Keywords: *Iliac bone, osteochondroma, pelvis, tumor, En bloc excision.*

Introduction

Osteochondromas are common benign tumors seen in the metaphysis of long bones. **[**1**]** They usually occur in the second decade of life and grow during the adolescent growth spurt.**[**1**][**2**]** These tumors cease to grow after growth maturity. The most common complaints of patients with osteochondromas are pain, swelling, cosmetic deformity, and limitation of movements of adjacent joints. We report a case of a 21-year-old girl diagnosed with an osteochondroma arising from the iliac wing.

Case Report

A 21-year-old girl presented to our outpatient department with complaints of solitary swelling over the left pelvis. She was apparently normal 2 years back when she noticed a small swelling of the left pelvis 2 years back. The swelling progressed to the current size. The swelling caused his pain while walking for long distances and climbing steps. She had a significant discomfort on lying down in the left lateral position.

Clinical examination revealed a solitary bony hard swelling over the left iliac bone measuring around 4 cm × 3 cm in size. The borders were not well defined. There was no local rise in temperature or skin changes visible over the swelling **[**Figure 1**]**. He was screened for similar swellings in the body, and none were found. The swelling was fixed to the iliac bone. Radiographs of the pelvis revealed a solitary, osteochondroma arising from the outer iliac wing just below the iliac crest **[**Figure 2**]**.

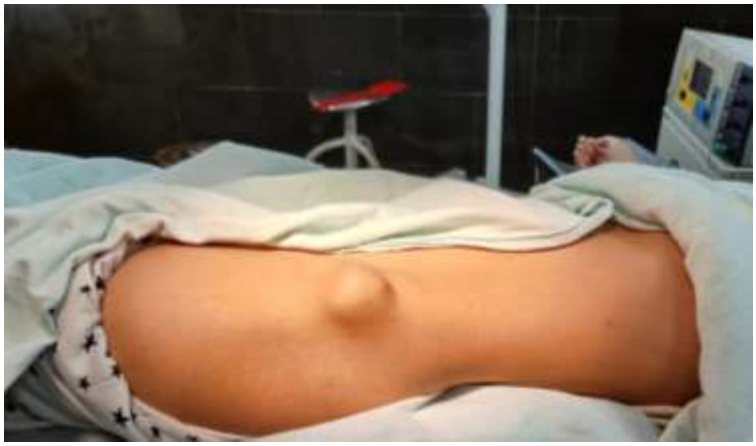

Figure 1: Clinical photograph showing the tumor mass - patient in the supine position and foot end to the left side of the photograph.

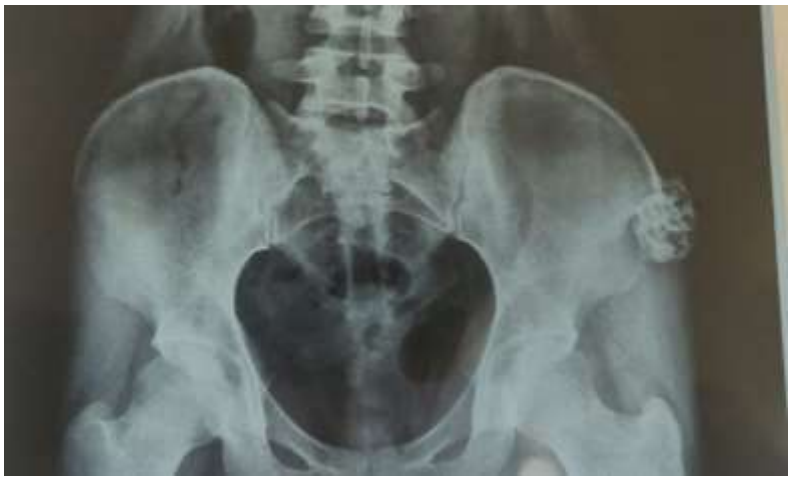

Figure 2: Radiograph demonstrating the osteochondroma of the iliac wing.

The tumor was excised entirely by extraperiosteal resection. Precautions were taken not to damage the outer table of the iliac bone **[**Figure 3**]**. The excised tumor was sent for histopathology studies, which confirmed the diagnosis of osteochondroma. Macroscopy showed bony fragment with soft-tissue and cartilaginous cap attachments of size 4 cm × 3 cm × 2 cm **[**Figure 4**]**. After complete excision site was checked for any remaining part of tumor **[**Figure 5**]**.

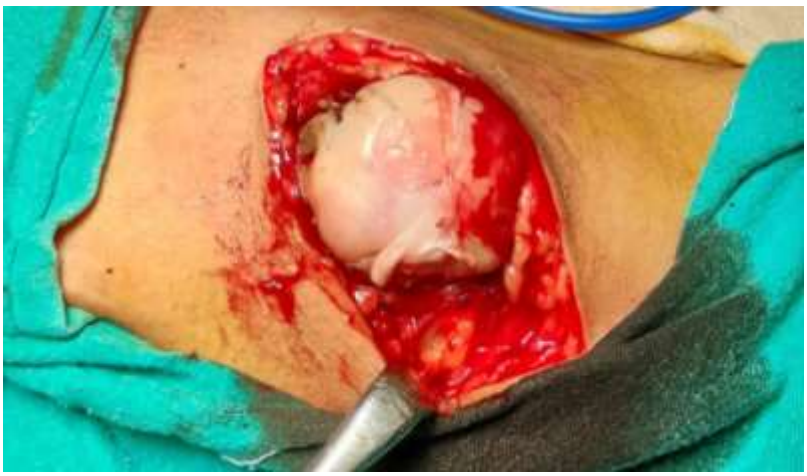

Figure 3: Photograph of Intraoperative Exposed Tumor

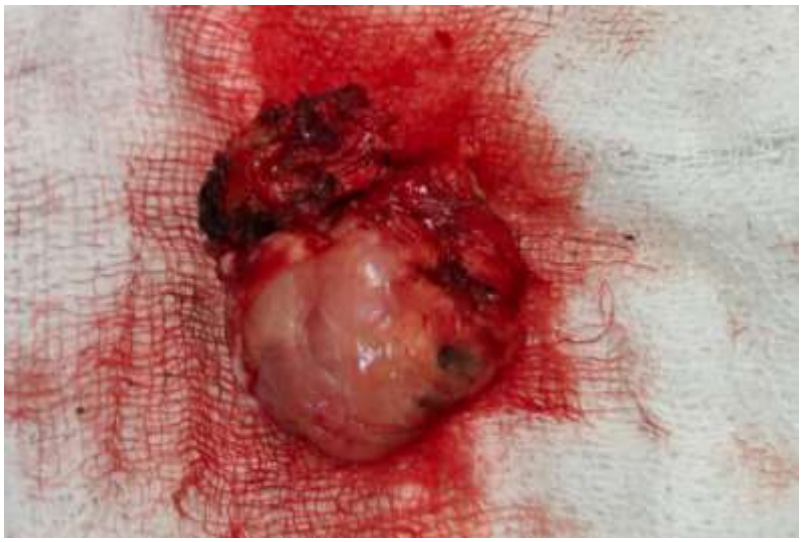

Figure 4: Photograph of specimen of Excised tumor.

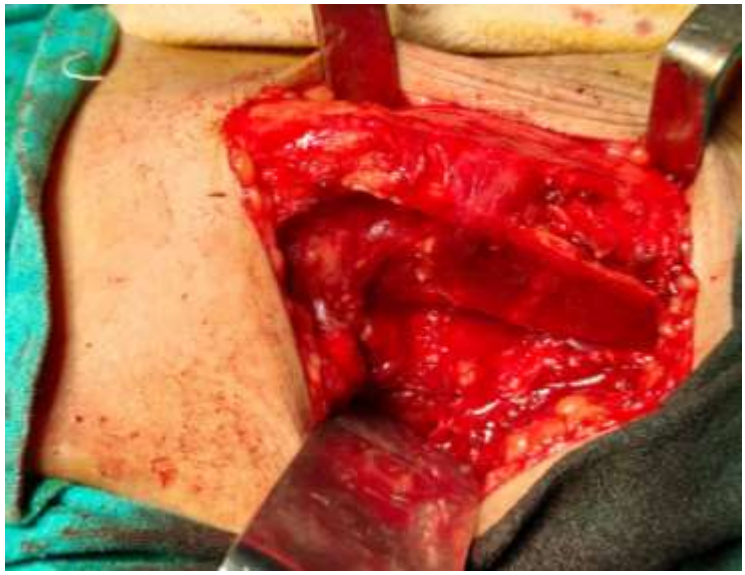

Figure 6: photographs of the iliac wing after tumor excision

Discussion

Osteochondroma accounts for 43.7% of all bone neoplasms.**[**1**]** The male-female ratio for these tumors is 1.6-3.4:1**[**1**]**,**[**3**]**. The most prevalent location for osteochondroma is the distal femur.**[**4**]** Osteochondromas of the iliac bone are relatively uncommon. They account for around 5% of all osteochondromas found in the human body.**[**5**]**

When multiple lesions are present, osteochondromas exist as part of a syndrome known as H.M.O., which is linked to mutations in the EXT1 and EXT2 genes. However, solitary lesions are the most prevalent appearance, accounting for 85% of all osteochondromas. **[**1**]**

They are developing bone lesions rather than primary bone neoplasms. The inactivation of the tumor suppressor genes EXT-1 is necessary for the formation of an osteochondroma.**[**6**]**,**[**7**]**

The most frequently accepted cause of an osteochondroma is an iatrogenic injury to the growth plate, usually as a result of surgery or irradiation.**[**8**]**,**[**9**]** Virchow, Muller, and Keith's hypotheses have also described the formation of osteochondromas.**[**10**]**

Pelvic osteochondromas are uncommon and usually asymptomatic. Pelvic osteochondromas can compress the lumbar nerve roots, which must then be surgically removed.**[**11**]**,**[**12**]**,**[**13**]** Our patient did not have lumbar nerve root compression symptoms, but she did have pain while squatting and sitting cross-legged. When compared to sessile forms, pedunculated osteochondroma (88.2%) is more prevalent.**[**2**]**

These tumors are rarely malignant. About 1% of all osteochondromas progress to malignant tumors, called chondrosarcoma.[1] Approximately 5% of several inherited exostoses develop into malignancy [1]. Sessile, multiple osteochondromas are typically at high risk of malignant transformation. The height of the cartilaginous cap is also a sensitive sign of cancer. Cartilage caps thicker than 2 cm are at high risk of cancer and should be handled with caution.

In most cases, radiological examinations are sufficient to diagnose osteochondromas. A pedunculated or sessile bony protrusion that spreads to the medullary cavity is the most common occurrence. The most prevalent type of exostosis is pedunculated exostosis. The extent and size of the tumor are typically shown by computed topography. Magnetic resonance imaging can help show how thick the cartilaginous cap is. A tumor with a cap thickness greater than 2 cm is more likely to become malignant.[2],[10],[11],[12]

Definitive diagnosis is usually by histopathological examination. Cortical and cancellous bone is seen continuous with the corresponding components of the parent bone covered by a hyaline cap which is usually diagnostic.

Most tumours are asymptomatic and can be addressed by observing the patient and informing them about the warning signals of cancer. However, if there is a clear impediment to completing everyday tasks, such as difficulties walking, sitting, crouching, or movement of his joint, as in our case, an en bloc excision technique may be the therapy of choice. Lumbar nerve root compression has been documented in cases of pelvic osteochondromas involving iliac bone.[2],[13]

Osteochondromas of the pubic symphysis are known to cause bladder outlet obstruction.[2],[14] The existence of a tumor-induced neurovascular deficit, a pathological fracture, and a sudden spurt in tumor growth are all unequivocal grounds for surgery. To prevent recurrence of the tumor, the cartilage cap must be completely removed. Our patient has pain while walking, squatting, and lying down. As a result, the tumor was excised as en-bloc. Our patient was observed for six months. There is no evidence of tumor recurrence, and our patient is pain-free and able to conduct all of her everyday activities.

Conclusion

Osteochondroma, also known as osteocartilaginous exostosis, is a developmental abnormality that occurs when a subperiosteal physeal cartilage germ develops and matures by enchondral ossification. It is a benign tumor that rarely progresses to osteosarcoma. Radiographic results and histological investigations are

frequently used to detect it. Surgical excision the best option when there is discomfort, cosmetic reasons, neurovascular compromise, aberrant growth, skeletal deformity, decreased motion of the neighbouring joint, or signs of malignant change. Recurrences following complete surgical excision are uncommon and are most likely the result of failure to remove the entire cartilaginous cap.

Reference

1. Sharma S, Kalsotra SN, Gupta P, Wani I, Singh M, Singh D. Solitary osteochondroma of the ilium: A case report. Int J Orthop Surg 2009;16:1-4.

2. Herode P, Shroff A, Patel P, Aggarwal P, Mandlewala V. A rare case of pubic ramus osteochondroma. J Orthop Case Rep 2015;5:51-3.

3. Wodajo FM. Cartilage lesions. In: Iii PT, Einhorn TA, Damron TA, editors. Oncology and Basic Science. 7th ed. Philadelphia: Lippincott Williams & Wilkins; 2008. p. 132-5.

4. RobertK, HeckJ. Benign Bone Tumors and Nonneoplastic Conditions Simulating Bone Tumor 20. In: Terry Canale S, James H. Beaty, editors. Campbell's Operative Orthopaedics. 11th ed., Vol. 2. Philadelphia: Mosby Elsevier; 2007. p. 860-2.

5. Murphey MD, Choi JJ, Kransdorf MJ, Flemming DJ, Gannon FH. Imaging of osteochondroma: Variants and complications with radiologic-pathologic correlation. Radiographics 2000;20:1407-34.

6. D'Ambrosia R, Ferguson AB Jr. The formation of osteochondroma by epiphyseal cartilage transplantation. Clin Orthop Relat Res 1968;61:103-15.

7. Xiao CY, Wang J, Zhang SZ, Van Hul W, Wuyts W, Qiu WM, et al. A novel deletion mutation of the EXT2 gene in a large Chinese pedigree with hereditary multiple exostosis. Br J Cancer 2001;85:176-81.

8. Folpe AI, Inwardsa KY. Bone and Soft Tissue Pathology: Volume in the Series Foundations in Diagnostic Pathology. Philadelphia: Saunders, Elsevier, Inc.; 2010. p. 331-5

9. Canella P, Gardini F, Boriani S. Exostosis: Development, evolution and relationship to malignant degeneration. Ital J Orthop Traumatol 1981;7:293-8.

10. Richardson RR. Variants of exostosis of the bone in children. Semin Roentgenol 2005;40:380-90

11. Malghem J, Vande Berg B, Noël H, Maldague B. Benign osteochondromas and exostotic chondrosarcomas: Evaluation of cartilage cap thickness by ultrasound. Skeletal Radiol 1992;21:33-7.

12. Krieg JC, Buckwalter JA, Peterson KK, el-Khoury GY, Robinson RA. Extensive growth of an osteochondroma in a skeletally mature patient. A case report. J Bone Joint Surg Am 1995;77:269-73.

13. Kim WJ, Kim KJ, Lee SK, Choy WS. Solitary pelvic osteochondroma causing L5 nerve root compression. Orthopedics 2009;32:922.

14. Wang WY, Du LD, Lv WC, Tian Y, Shao Q, Zhang YH, et al. Osteochondroma of the symphysis pubis: A rare cause of bladder outlet obstruction. Am Surg 2010;76:916-8.