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Osteochondroma of lateral clavicle: A rare case report

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Abstract

Osteochondromas arising from the clavicle are extremely rare and symptomatic cases are even less common. We report a case of large solitary osteochondroma of lateral end clavicle in a 18 year old male. Range of motion of the affected shoulder was restricted with loss of overhead forward flexion, abduction and decrease internal rotation by 15-20 degrees. Radiographs indicated osteochondroma. After excision near normal range of motion of shoulder was restored. Osteochondroma although arise in bones developing through endochondral ossification, its growth on the clavicle (membranous ossification) makes it a rare occurrence. Furthermore, the growth of the tumor in spite of its benign nature after skeletal maturity differs from its usual presentation. This case report is yet another example to show that tumors can present with varied presentations and locations.

Keywords: Enchondral ossification, osteochondromas, lateral clavicle

Introduction

Osteochondroma is a benign cartilaginous neoplasm and is the most common benign bone tumor, however it is a developmental physal growth defect [1]. The defect may occur in any bone in which enchondral ossification occurs but the prime locations are the long bones like femur, tibia, humerus [2]. Osteochondromas arising from the clavicle are extremely rare and symptomatic cases are even less common [3]. Low incidence of clavicular osteochondroma has been reported from multiple tumor registries. Palpable mass is the usual presentation with infrequent secondary symptomatology [4, 5]. The purpose of this case report is to highlight the possibility of osteochondroma in clavicle, its course and management.

Case Report

We report a case of large solitary osteochondroma of lateral end clavicle in a 18 year old male student who came to the opd with complain of diffuse swelling over the left shoulder, gradually increasing to its present day size of a tennis ball from a pea size over a period of 3 years. In its early days the swelling was not painful but over time pain increased with the patient now also feeling sense of heaviness and numbness in left upper limb in dependent position. Reason for delay in seeking treatment was financial considerations and lack of skilled professional in the patients peripheral village.

On examination, swelling was firm to hard, diffuse, with ill defined edges, arising from the clavicle, non tender, non mobile (Fig.1, 2, 3). Overlying skin condition was normal with no signs of inflammation. Distal pulsations were normal with no neurological signs or symptoms. No evidence of horners syndrome or thoracic outlet syndrome. Range of motion of the affected shoulder was restricted with loss of overhead forward flexion, abduction and decrease internal rotation by 15-20 degrees. Hard stop to range of motion could be felt. Rotator cuff muscles were graded 4/5 on manual muscle power testing.

Radiographic imaging of shoulder with anteroposterior and axial views showed a bulbous mass arising from lateral end clavicle with impingement of the subacromial space seen clearly in axial view causing loss of overhead movements (Fig.4, 5). CT and MRI could not be done due to financial constraints hence evaluation of the condition of rotator cuff could not be done. Excision was done using a 5-8 cm vertical incision directed anteroposteriorly centered over the swelling (Fig.9, 10, 11). Tumor with 2cm margin was excised. Coracoclavicular ligaments

Report confirmed osteochondroma. Post op wound healing was uneventful. Post op xray as given below (Fig.13). 2 weeks of shoulder arm pouch given to rest the extremity. Physiotherapy initiated with active range of motion exercises for abduction and forward flexion. Patient attained 90 degrees of active forward flexion and abduction by the end of 1 month with assisted motion going upto 120 degrees (Fig.14, 15). By the end of 2 months active range of motion was possible upto 120 degrees from 0 degrees. Patient could lift 4-5 kgs of weight with the affected extremity by 2-3 months. Pre operative pain was resolved along with complaint of numbness. Patient resumed full activities by the end of 3 months (Fig.16, 17).



Fig 1



Fig 2



Fig 3



Fig 4



Fig 5



Fig 6



Fig 7



Fig 8



Fig 9



Fig 10



Fig 11



Fig 12



Fig 13



Fig 14

Range of motion: Abduction 0-120 degrees, Adduction 0-100 degrees, Forward flexion 0-120 degrees, extension 0-50 degrees, Rotations near normal.

Discussion

Skeletal osteochondromas constitute 10-15% of all bone tumors [6]. Osteochondromas are solitary or multiple, pedunculated or sessile exophytic outgrowths from the bone surface that are composed of cortical and medullary bone with an overlying hyaline cartilage cap. Marrow and cortical continuity with the underlying parent bone defines the lesion [7, 8].

Clavicle is a rare site for bone tumor formation⁹ and primary tumors of clavicle are usually malignant not benign¹⁰. Schajowicz in his study of 1001 osteochondromas demonstrated only 2 cases arising from clavicle. This is the first case that we have seen in our institute, which is a medical college. Osteochondroma arise in any bone that develops from endochondral ossification [7, 8]. However, clavicle develops through membranous ossification [11] and an osteochondroma arising from clavicle as in our case is a rare occurrence.

The vast majority of solitary osteochondromas are asymptomatic and diagnosed incidentally [12, 13].

Clinical symptoms may be related to mechanical effects, cosmetic deformity, neurovascular impingement, pseudoaneurysm formation, fracture, overlying bursa formation, or malignant transformation. Painless swelling and cosmetic deformities related to the slowly enlarging mass are the most common complaints [14, 15]. In our case also the main reason for presentation of the patient was cosmetic concern and to some extent pain. Cases of lateral clavicle osteochondroma causing rotator cuff tendinopathy have been reported in literature¹⁶. Very few cases of medial end clavicle osteochondromas that have been reported are known to cause Horner's syndrome or brachial plexus complaints [17, 18]. The lateral end of clavicle is surrounded by many structures including trapezius, deltoid, supraspinatus, acromion, glenoid, coracoid, ac joint, acromioclavicular, coracoclavicular, coracoacromial ligaments. As a result of this complex anatomy, osteochondroma at this location may cause a wide array of symptoms.

In adults, growth or imaging alterations of an Osteochondroma suggest the rare diagnosis of malignant transformation; however, extensive growth of Osteochondromas without histological evidence of malignancy has been reported [19]. Clinical features suspicious for malignant transformation comprise new onset of pain in a previously stable lesion, rapid or new growth, growth after skeletal maturity, and/or large lesions [19].

There were no signs of malignant transformation of the tumor in our patient, and the duration of 3 years that the tumor took to reach the size presented was also indicative of its benign nature that was further confirmed on histopathological findings.

Radiography is often diagnostic alone, other imaging modalities may be necessary for surgical planning and to exclude sarcomatous degeneration. The areas of osseous continuity between parent bone and Osteochondroma may be broad (sessile Osteochondroma) or narrow (pedunculated Osteochondroma). Pedunculated lesions usually point away from the nearest joint owing to the forces of the overlying tendons and ligaments forming the stalactites and stalagmites [20]. CT scanning using three-dimensional imaging reformation allows optimal depiction of the pathognomonic cortical and

marrow continuity of the lesion and parent bone, especially for Osteochondroma in complex areas of the anatomy [21, 22]. MRI is the best imaging modality for evaluating cortical and medullary continuity between Osteochondroma and parent bone. MRI may be the optimal method for evaluating the cartilaginous cap and identify lesions suspicious for malignant transformation [23]. Ct scan or MRI could have greatly aided in surgical procedure esp. in deciding approach and soft tissue involvement but was not present in our case. Surgery to resect the tumor is not essential in all cases. Its main indications are when the exostosis is interfering with the growth of the extremity, which leads to functional and mechanical alterations; in the presence of malignant transformation, which is characterized by a thick coating of more than 2 cm in adults; and in the presence of bone erosion, vascular compression and/or nerve compression with symptoms and joint locking promoted by the Osteochondroma. The relative indications are esthetic complications, which often give rise to post-operative skin scarring that is worse than the esthetic deformity itself; and pain, which may occur because of bursitis or after fracturing, depending on the patient's symptoms [19]. In our patient, since patient only had an esthetic problem and tumor being of benign nature, we only resected the tumor, with no complications and recurrence at 2 years of follow-up.

Conclusion

Osteochondroma although arise in bones developing through endochondral ossification, its growth on the clavicle (membranous ossification) makes it a rare occurrence. Furthermore, the growth of the tumor in spite of its benign nature after skeletal maturity differs from its usual presentation.

Clinical message

This case report is yet another example to show that tumors can present with varied presentations and locations. Clavicular tumors, though rare should warrant a detailed clinical and radiological examination followed by biopsy to rule out malignant pathology which is more common in this scenario.

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