

Subtotal scapulectomy in a patient with chondroma scapula: A case report

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ABSTRACT

A benign chondroma (juxtacortical) is an unusual benign cartilaginous tumor. Juxtacortical chondromas, also known as periosteal chondromas, arise from the periosteum of the bones. They are thought to account for ~2% of benign bone tumors. Management of the tumor by excision in the form of total scapulectomy results in severe impairment of the upper limb function, but if all or part of the glenohumeral joint is preserved, a good function can be maintained. There is paucity in the literature about such cases. Here, we report the case of a 24-year-old male patient with chondroma of the right scapula. The patient was treated with subtotal scapulectomy and showed excellent functional outcome in terms of the range of motion of the shoulder joint.

Key words: Chondroma, Glenohumeral joint, Juxtacortical, Scapulectomy

The shoulder is the third most common site for occurrence of tumors of the bone and soft tissues and these neoplasms can involve the scapula. Chondroma of the scapula is very rare. Juxtacortical chondromas, also known as periosteal chondromas, arise from the periosteum of the bone. They are thought to account for ~2% of benign bone tumors [1].

Chondroma scapula is a slowly growing neoplasm of comparatively small size, which develops within and beneath the periosteal connective tissue and characteristically erodes and induces appreciable sclerosis of the contiguous cortical bone. The radiograph shows a typical distinctive appearance which can be used to diagnose this benign cartilaginous tumor. The tumor may develop in children as well as in adults [2]. The symptoms are pain, gradual swelling, and local tenderness. Clinically, it is observed as a small, slightly tender tumor which, if located near a joint, may produce some limitation of motion. At surgery, one observes a rubbery, firm, lobulated cartilage tumor, adherent to the periosteum [1]. Management of a tumor is done by excision in the form of total scapulectomy to my which results in severe impairment of the upper limb function but if all or part of the glenohumeral joint is preserved; a good function can be maintained. We describe the case of a benign chondroma (juxtacortical) of the scapula which is an unusual benign cartilaginous tumor.

CASE REPORT

A 23-year-old right-handed dominant male patient presented with a chief complaint of a painless swelling over his right scapula for 4 years. He also mentioned heaviness over the right shoulder and difficulty in overhead abduction for 1 year. There were no

constitutional symptoms suggestive of fever, chills, weight loss, and no history of trauma.

On clinical examination, a swelling of globular in shape, about 20×15 cm in size, with an irregular lobulated surface and well-defined margin was appreciated over the right scapula blade. The mass was bony hard and was fixed to the underlying bone but freely gliding over the chest wall and overlying skin was not fixed. There was no sensory deficit. The patient's active movement of the right shoulder is flexion - 90°, extension - 30°, abduction - 0°, adduction - 30°, external rotation - 30°, and internal rotation 70°.

The plain radiograph showed a large sclerotic lesion over the right scapula body. Three-dimensional computed tomography scan (Fig. 1) and an axial view (Fig. 2) showed a popcorn-shaped calcification throughout the mass over the posterior surface of the right scapular blade sparing the anterior surface suggestive of chondroma of the right scapula. After all routine investigations and after taking consent for the surgery, the patient was operated with excision of the tumor mass by partial scapulectomy leaving acromion process intact (Fig. 3). Glenoid muscles were approximated.

Postoperatively, physiotherapy was initiated as soon as the pain subsided which included daily shoulder exercises such as pendulum exercises with 10 repetitions each 4 times a day. After 1-month follow-up, the radiograph was found satisfactory (Fig. 4), and the patient gained a normal range of motion that is flexion 170°, extension 45°, adduction 40°, external rotation 80°, and internal rotation 80° except abduction of the right shoulder which was 85°. At 1-year follow-up (Fig. 5), the patient was able to perform significant overhead abduction of 120° of the right shoulder without any pain. There were no signs of recurrence



Figure 1: A three-dimensional computed tomography scan of the right scapula shows popcorn-shaped calcification throughout the mass over posterior surface of the right scapular blade sparing the anterior surface



Figure 4: X-ray of the right scapula after 1-month follow-up

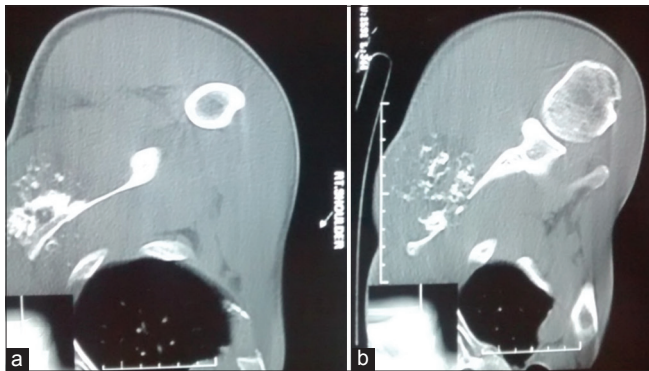


Figure 2: (a and b) An axial computed tomography scan view of the right scapula shows eroded cortex of the scapular blade with intact acromion process and glenohumeral joint



Figure 5: Follow-up at 1 year with overhead abduction

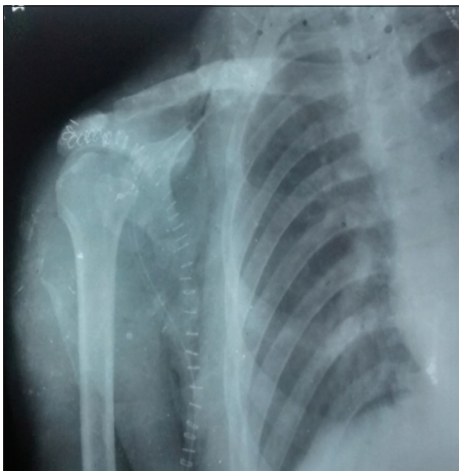


Figure 3: Post-operative X-ray after partial scapulectomy of the right scapula with acromion process and glenohumeral joint

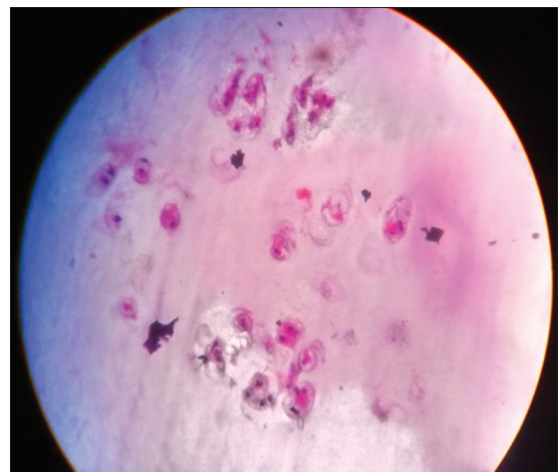


Figure 6: Histopathology of the excised mass showed numerous small fragments glassy-appearing tissue in group

of a tumor on the subsequent X-ray taken at the follow-up. Histopathology of the excised mass was done and it showed numerous small fragments of glassy-appearing tissue in the group (Fig. 6). Microscopically, the tumor was well delineated from the uninvolved cortical bone and consisted of hypocellular to a moderately cellular chondroid matrix with a vaguely lobular appearance. The chondroid cells revealed small nuclei.

DISCUSSION

The Musculoskeletal Tumor Society has developed a classification system for shoulder girdle tumors that divide the scapula into two zones [2]: The acromial-glenoid complex comprises the S2 region and the blade-spine portion comprises the S1 region. The system helps provide a functional classification for resections and reconstructions and a logical division of

the abnormalities that develop in the scapula. Neoplasms of the S1 region include those that commonly develop in the flat bones (i.e., Ewing's sarcoma, multiple myeloma, chondroma, and lymphoma). Neoplasms of the S2 region include those that commonly develop at the ends of the bone (i.e., giant cell tumors and aneurysmal bone cysts) [3].

Differential diagnosis of chondroma includes chondroblastoma, clear cell chondrosarcoma, enchondroma, eosinophilic granuloma, and Brodie's abscess but was subsequently ruled out on the basis of radiographic and histopathological findings in the present case. Since there was not much of a periosteal reaction, eosinophilic granuloma and Brodie's abscess were ruled out. Chondroblastoma is an eccentric, expansile, lytic lesion more common in the epiphysis of the proximal humerus [4] and a bit aggressive and hence was ruled out. Chondrosarcoma does not have a long indolent course as this patient's history presented. Furthermore, the histology, in this case, showed a benign-appearing chondroid tumor with relative hypocellularity and without substantial cellular atypia [4].

Intracortical chondroma is one of several benign bone tumors of chondroid origin. Also, within this class of tumors are enchondromas, juxtacortical chondroma, and enchondroma protuberans. These tumors are characterized histologically by proliferating nests of hyaline cartilage without obvious atypia. They are indistinguishable from one another based on histologic analysis of the tumor matrix alone. As such, their location in relation to surrounding bone is important in the classification of these tumors [4].

In this 24-year-old man with painless swelling over the right scapula, imaging revealed a periosteal lesion over the scapula blade and body. The intraoperative appearance and the gross and histologic analyses of the lesion were consistent with a juxtacortical chondroma. The lesion was treated with curettage and partial scapulectomy leaving acromion process intact. Follow-up was done at 2 weeks, 1 month, 3 months, and 1 year postoperatively. A clinical examination and radiographic studies were performed at each visit. At 1-year post-operative visit, the patient was symptomless and radiographs were within normal

limits and overhead abduction was possible with no evidence of tumor recurrence.

After total scapulectomy, the function of the upper limb is severely impaired, but good use can be maintained when all or part of the glenohumeral joint is preserved. Kurer *et al.* [5] also described good to excellent function after scapulectomy with preservation of the joint. After total scapulectomy, there is considerable limitation of movement. Subtotal scapulectomy gives an excellent functional result if all or part of the glenohumeral joint can be preserved.

CONCLUSION

Subtotal scapulectomy is preferable to ablation of the joint if it can be achieved with good surgical margins. The scapula can be considered as a sophisticated sesamoid bone, and good shoulder function is possible when the soft tissue envelope can be reconstructed.

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