



A retrospective analysis of osteochondroma of scapula following excision biopsy

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Scapula is an uncommon site for osteochondroma. There is a paucity of information regarding post-operative complications, recurrence of osteochondroma, functional improvement. A retrospective analysis of 9 patients treated for osteochondroma scapula over a period of 4 years was undertaken to assess post-operative complications, recurrence, and functional improvement following excision biopsy for osteochondroma scapula. All patients of any age group who were diagnosed with osteochondroma scapula and treated with excision biopsy in the past 6 years were included in the study. Patients were followed up for recurrence, postoperative complications and functional assessment using modified UCLA shoulder rating scale. The mean age at presentation was 13.7 years. Boys were more commonly affected than girls with a male to female ratio of 7:2. There was no incidence of recurrence of osteochondroma, postoperative wound complications or functional limitation following excision biopsy of osteochondroma scapula. We conclude that preoperative functional restriction in osteochondroma of scapula is mainly due to location of tumour especially when present over ventral or ventromedial aspect scapula. After complete excision they do not cause any functional limitations.

Keywords : osteochondroma ; scapula ; UCLA scale ; snapping scapula.

INTRODUCTION

Osteochondroma is the commonest benign bone tumour (4,6,12,19,21). Osteochondroma is a cartilage-

capped bony outgrowth arising from the metaphysis. It contains a marrow cavity that is in continuous with the underlying bone (4,12). They are commonly seen on distal femur, proximal tibia, and the proximal humerus (5). Osteochondroma are less commonly seen in flat bones like scapula and pelvis.

Patients with Osteochondroma of scapula can present as a lump over shoulder with or without pain, restricted shoulder motion or with snapping scapula. Osteochondroma of scapula is usually treated by surgical excision. Recurrence is rare and probably is caused by failure to remove the entire cartilaginous cap (5). In this study, we retrospectively evaluated the patients treated for osteochondroma of scapula and assessed postoperative complications, recurrence of tumour and functional outcome.

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MATERIALS AND METHODS

A retrospective evaluation of nine patients with osteochondroma of scapula with varied presentations was done. The patients who have undergone surgical excision of the tumour between 2005 and 2012 were included. Preoperative details regarding presentation, clinico-radiological examination, postoperative complications and functional status of the patients were obtained from the hospital records. Computed tomography was done only in patients with snapping scapula along with routine x rays of the scapula. Patients proven to be osteochondroma of scapula on histopathological examination and having minimum of one year of follow up were included in the study. The patients were intimated via letter and clinico-radiological evaluation done at final follow up. Functional scoring was done both preoperatively based on the hospital records and at the final follow up using modified UCLA score. All patients gave their informed consent prior to their inclusion in the study.

Excision biopsy of osteochondroma scapula was performed on all the patients under general anaesthesia in prone position. Surgical incision was made at the prominent site of swelling of osteochondroma scapula parallel to the medial border of the scapula. Shoulder was internally rotated to make the scapula prominent and the osteochondroma was excised in toto along with its capsule. Patients were discharged after postoperative wound inspection and followed up on outpatient basis.

The functional outcome was assessed using UCLA shoulder rating scale which was modified in our study. UCLA score is clinician completed (7). Parameters in UCLA score include pain (10 points), function (10 points), active forward flexion (5 points), strength of forward flexion (5 points) and satisfaction of the patient (5 points). Subjective criteria consist of 15 points of a total of 35 points whereas examination findings are responsible for 20 points. In our study modification of UCLA shoulder score was done to assess functional outcome following excision of the scapular osteochondroma. We have used active abduction instead of satisfaction of the patient in UCLA score as this was used preoperatively. The score allotted to different ranges of movements were same as active forward flexion in UCLA shoulder rating scale. Instead of strength of forward flexion, the strength of abduction was manually tested in our study and scores were remained the same as in UCLA score. We thought it is relevant as scapulothoracic movements occur during shoulder overhead abduction. Subjective criteria consist of 10 points of a total of 35 points whereas examination findings are responsible

for 25 points in our modified UCLA score. If the score is less than 27 it was graded as poor and if it is more than 27 it was graded as excellent.

Statistical analysis was done using software graph pad prism version 6.0. The functional scores were analysed using Wilcoxon matched pairs signed rank test.

RESULTS

All the nine patients presented with swelling over the scapula in which six were painless and three patients had pain. The same three patients had snapping scapula (Figs. 1-3). The six patients had discomfort during sleeping due to pressure over the tumour and also had cosmetic issues. Out of the nine patients, 2 patients presented with multiple Osteochondromas. The other seven patients presented with isolated osteochondroma of scapula.

The mean age at presentation was 13.7 years. The lowest age at presentation was 2.5 years. The highest age at presentation was 23 years (Table I). Boys were more commonly affected than girls with a male to female ratio of 7:2. The shortest duration of symptoms was 1 month and the longest duration of symptoms was 3 years. All the tumours were proven to be osteochondroma by histopathological examination.

There was no incidence of recurrence of osteochondroma, postoperative wound complications or functional limitation in the follow up period. The preoperative modified UCLA shoulder rating scale was more than 27 in seven patients. Only one patient had preoperative score of 27 who had pain and also snapping scapula. But during the follow up the score were 35 in all the patients. All the patient had excellent result during follow up examination (score > 27). There is no significant change in functional outcome following surgery for osteochondroma of scapula (p value > 0.9999).

DISCUSSION

Of all the benign tumours of the scapula, osteochondroma accounts for an incidence of 4.6% (14). Osteochondromas are usually symptom free, diagnosed incidentally on radiologic examination and the second most common presentation as a lump

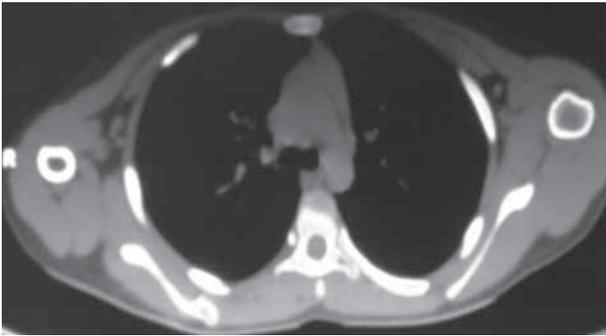


Fig. 1. — Preoperative CT of a 15 year old boy (patient 5) who presented with painful lump and snapping scapula. The arrow points to the osteochondroma arising from the medial border of right scapula.



Fig. 2. — Preoperative radiograph of the (patient 6) showing osteochondroma arising from ventromedial aspect of the right scapula.

with or without pain (15). Occasionally Osteochondroma of scapula can present with pain due to bursitis or due to malignant change. Irritation of the surrounding tendons, muscles and nerves by osteochondroma can also result in pain. It can also present with snapping scapula. Rarely osteochondroma of scapula presents with winging. Most often patients presents with pseudo winging which indicates sub scapular mass with normal serratus anterior (8,16).

Malignant transformation may occur in 1-2% of patients with solitary osteochondroma where as it is between 1-25% in hereditary multiple osteochondromas (10,18). Metastasis is unlikely as osteochondromas are benign tumours. But when they transform into Osteosarcoma especially after recurrence



Fig. 3. — Pre operative CT evaluation in a 23 year old male (patient 9). The arrows point to the osteochondroma arising from painless lump with snapping scapula on the dorsomedial surface of right scapula.

they can metastasise to lungs. Malignant transformation to Osteosarcoma or Chondrosarcoma can occur. Pain, increase in the size of the swelling and irregularity of the margins points towards malignant transformation (17).

Surgical excision is the treatment of choice for symptomatic osteochondroma of the scapula and it is usually curative (12). Excision can be done by open surgery or by scapulothoracic arthroscopy (1,20). The advantages described for arthroscopic surgery includes minimal dissection, early postoperative recovery, better cosmesis and shorter hospital stay. In our case series all the cases were treated by open surgical excision.

Recurrence of osteochondroma of the scapula after excision has not been reported so far. In our cases also we have not come across any recurrences even though long term follow up is needed to find out recurrences. Humbert *et al* has reported that recurrence of osteochondroma is rare after complete excision of the cartilage cap (11). Recurrence after complete excision should raise the suspicion of malignancy. If not treated patients can develop increase in the size of the swelling and associated complications till the age of skeletal maturity.

Table I. — Clinical data of patients

SI No	Age (Years)	Sex	Side	Swelling	Pain	Snapping Scapula	Duration of follow up (Years)	Preoperative modified UCLA score	Modified UCLA score at final follow up
1	2.5	Female	Right	+	-	-	1	Not done	Not done
2	7	Male	Left	+	-	-	2.5	35	35
3	7	Female	Right	+	-	-	1.5	35	35
4	13	Male	Left	+	-	-	2	35	35
5	15	Male	Right	+	+	+	2.5	35	35
6	16	Male	Right	+	+	+	3.5	27	35
7	19	Male	Left	+	-	-	4	33	35
8	21	Male	Right	+	-	-	7	31	35
9	23	Male	Right	+	+	+	1	31	35

Snapping scapula syndrome, also known as scapulothoracic crepitus or bursitis, was first described in 1867 by Boinet (3). This is typically associated with history of pain with overhead activities. It is a disorder caused by abnormal scapulothoracic motion of variable etiology. Snapping of the scapula can occur when the osteochondroma is present on the ventral or ventro medial surface of scapula interfering with the smooth articulation between scapula and the rib cage. Osteochondroma is the most common bony anomaly causing snapping scapula and is usually diagnosed in adolescence or early adulthood (13). When snapping scapula manifests due to anatomical cause surgical intervention leads to resolution of symptoms.

In 1974, Wouters *et al* reported six cases of osteochondroma scapula (22). Carlson *et al* in 1997 reported 14 cases of osteochondroma scapula presenting as snapping scapula syndrome (7). Mehmet Nurullah Ermiş *et al* in 2012 reported 15 cases of osteochondroma scapula presenting as snapping scapula syndrome (15). In our case series of 9 patients three had snapping scapula. There is no case series studying the functional outcome of patients with osteochondroma of scapula following surgical excision.

The UCLA shoulder rating scale was described initially as a method to assess the outcome of shoulder arthroplasty (2). Although UCLA score is relatively easy to assess, the objective measurements may result in inter observer variation. To avoid this

in our study only one author assessed the UCLA score postoperatively though preoperative score was obtained after interpreting the hospital records. Adjusted UCLA score in our study needs validation but we feel that the sample size is low.

CONCLUSION

From this case series we conclude that osteochondroma commonly presents as a painless lump over the shoulder and complete surgical excision prevents recurrence of this benign bone tumour. Preoperative functional restriction is mainly due to location of tumour especially seen if present over ventral or ventromedial aspect. After complete surgical excision osteochondroma of scapula does not cause any functional limitation to the patient in our study. The symptoms of the patient should be assessed in doing surgery though cosmetic reasons need to be considered in decision making.

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