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CASE REPORT

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Ventral Osteochondroma of the Scapula Causing Snapping and Static Winging- A Case Report

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ABSTRACT

Osteochondromas are a relatively common entity when we talki about benign bone tumours and they can occur in almost any bone although they have a predilection for certain sites. Flat bones like scapula are a rare location for occurrence of such a lesion. Ventral osteochondromas of scapula are rarer than dorsal ones and can cause a host of symptoms ranging from just scapular pain to pseudo winging of scapula and snapping syndromes. The treatment of such lesions is by excision of the tumour and here we present a case report of a young male with a ventral scapular osteochondroma with static wingingg of scapula and snapping. The patient was adequately managed by en bloc excision and has been relievd of all complaints without any signs of recurrence at one year of followup.

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Introduction

One of the most common benign bone tumours from the metaphyseal region of the long bone is the osteochondroma. However osteochondroma of flat bones are comparitively rare and of these an osteochonroma of the scapula are rarer still. Scapular osteochondromas have a increased incidence of occurring on the dorsal surface where it causes cosmetic problems but are less symptomatic. Here we are reporting the case of a 33 year old male presenting with a right ventral scapular osteochondroma causing snapping and static winging due to mass effect. The patient was managed by excisional biopsy by Parascapular trapezius sparing approach. No recurrence of the tumour has been reported after one year of followup and the patient is comfortably doing his routine activities.

Case Report

The patient a 33 year old male presented to us in the OPD complaining of pain around the right upper back and shoulder region during movements. He also complained of a swelling over the right upper back that was gradually increasing in size since the past 3 months. The patient initially noticed the swelling while wearing his shirt 3 months ago as a generalised fullness over the right scapular region and over the course of three months he realised that the fullness increased and a swelling roughly about the size of a lemon had developed. The patient complained that initially 3 months ago while doing heavy physical work he used to develop pain in his right shoulder and back region but now he was having pain even while lying on his back or doing normal work and the pain had started radiating to his right arm. He also complained of snapping like sounds when he abducted his shoulder to overhead position. The patient gave past history of consultation with pulmonary medicine department where a MRI of the chest was done and pulmonary tuberculosis was suspected after which the patient was started on ATT and after one month of taking ATT the patient was referred to our side for evaluation.

On local examination of the right upper back region and the shoulder a fullness was seen over the inferomedial portion of scapula and static winging of the scapula was seen. A boggy swelling roughly about 7 x 5 cm was palpated at the inferomedial surface of scapula. Deep tenderness was present over the inferior scapular region and paraspinal muscle spasm was seen. On performing passive overhead abduction of the right arm snapping was heard and felt. A painless corrugated clunking was observed over the ribs on active shoulder motion along with scapular dyskinesia. Integrity of the rotator cuff muscles was found to be intact on examination. No axillary lymphadenopathy was present and distal neuromuscular status of right upper limb was intact.

A CT-scan and a MRI of the chest was done to evaluate the swelling.

The CT scan revealed a bony outgrowth of 3.6 x 2.5 x 2 cm at anterior surface of inferomedial part of right scapula. MRI confirmed a bony outgrowth arising from infer-medial part of the scapula at level of D6 vertebra and its end reaching upto

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the 4th rib. Some edema and fluid collection was seen along right posterolateral chest wall and though the cartilaginous cap was visualised a clear contiguous margin was not appreciated.

The patient was managed by excisional biopsy of the growth under general anaesthesia with the patient lying in prone position. Patient's arm was kept in chicken wing position to obtain a better access to the ventral scapular surface. The approach made use of the internervous plane between trapezius and latissimus dorsi muscle. A parascapular incision parallel to the medial border of scapula was given and subcutaneous tissues were dissected. The lateral edge of inferior fibres of trapezius were identified and retracted medially. Similarly the horizontal fibres of latissimus were retracted inferiorly and thereby the exposure of the auscultatory triangle was enlarged and its base was visualised containing the rhomboid major muscle. The attachment of the rhomboid major from the scapular tip till about 8 cm along the medial scapular border was incised to gain the view of the ventral scapular surface.

A bone hook applied at the scapular tip was used to elevate the scapula and the fibres of rhomboid major were retracted by the assistant and a adequate view of the ventral surface of scapula was obtained. The osteochondroma was visualised and its pedicle was freed of soft tissue structures. Finally the osteochondroma was excised with its stalk extraperiosteally with the help of a gigli saw. The excised mass was inspected for any gross abnormal features and sent for histopathological examination. It was hard and irregularly shaped with a catilaginous cap that was eroded to some extent and a bit flattened out. The tumour was about 3.5 x 3 x 2.2 cm in size and on visualisation of the rib cage it was seen to have caused slight erosion of the 6th and 5th rib. A bursa was also seen on the ventral surface filled with some straw coloured fluid and was excised.

After all this was done the rhomboid major muscle was repaired with absorbable suture and the wound was closed in layers.

The histopathological examination revealed a benign neoplasm having normal bony trabeculae with bone marrow and fatty tissue in between and chondrocytes in lacunae at the tip of the stalk.

Postoperatively early physiotherapy with passive full range of motion exercises were allowed after 72 hours. At two weeks active full range of motion exercises were started. At three months followup postoperatively the patient was completely asymptomatic and had resumed his normal routine activities. At one year followup the patient did not redevelop any symptoms and there were no clinical or radiological signs of any recurrence.

Discussion

Osteochondromas that are solitary are uncommonly encountered in flat bones such as scapula. Scapular osteochondromas less frequently occur on the ventral surface.

Chondrosarcomatous transformation in solitary osteochondromas is very rare and is seen in only about one percent of all cases. It is higher in patients with hereditary multiple exostosis and out of all flat bones scapular osteochondromas are known to have the highest incidence of malignant transformation [1-3].

Young patients less than 30 years of age have reported scapular osteochondromas more commonly and they can present with a variety of symptoms like snapping syndromes, crepitations that are tender, static winging of scapula and swelling due to bursitis [4].

Boinet reported first case of a snapping scapula due to a ventral osteochondroma in 1867 in a young male. Few more cases have been reported with the same presentation. Scapula can develop the 'Luschka tubercle' which is a prominence at the superomedial angle or the 'Exostosis bursata' which are large bursa formed due to repeated mechanical irritation of soft tissues over the tumour on movements. The patient that presented to us did not have the luschka tubercle but did have the exostosis bursata on the under surface [5,6].

Patients with scapular osteochondromas have a variety of symptoms mostly related to the size and location of the tumour like swelling over back region, pain on shoulder movements, static winging of scapula and snapping syndrome [7]. Our patient had all of these symptoms. Pain on deep palpation or on movements can be attributed to soft tissue irritation by the bony mass or bursitis over the tumour and the static winging or elevation of the medial border of scapula is due to the direct space occupying effect of the tumour on the ventral surface. A patient presenting with snapping scapula in the form of a painless or painful, audible, palpable abnormal scapulothoracic movement can have various aetiologies. Majority of these causes are skeletal abnormalities out of which Carlson et al reported 43% to be osteochondromas [8]. The cause of snapping is due to the anatomical peculiarities related to the location of tumour. The central portion of the scapular body is well cushioned from the ribs by bellies of serratus anterior and the subscapularis muscles but the inferior angle and the medial border is quite devoid of any fleshy muscular belly [9]. These areas being the most common regions from where the osteochondromas arise are one of the main reasons why ventral scapular osteochondromas can frequently cause snapping.

Intraoperatively we found traces of direct contact between the osteochondral cap and the rib cage and a small bursa was formed between the tumour and the serratus anterior muscle which was excised.

Pseudowinging or static winging of scapula is a condition in which there is abnormal prominence of scapula due to some cause other than the paralysis of serratus anterior. There are many causes of pseudo winging of which a space occupying bony lesion like a ventral osteochondroma is one of the most common [10].

A ventral osteochondroma is often difficult to diagnose and specific investigations like CT scan or MRI only can give a definite diagnosis. A symptomatic ventral scapular tumour can often mimic various chest conditions and lead to an erroneous diagnosis as in our patient who was mistakenly diagnosed as pulmonary tuberculosis and started on anti tubercular therapy. CT scan is quite sensitive in delineating the size and extent of the bony neoplasm. A MRI scan is indicated when there is a suspicion of chondrosarcomatous change or soft tissue swelling due to surrounding bursitis is to be visualised. Both CT and MRI scan are helpful in preoperative planning regarding the approach to be used and extent of soft tissue and bony structures to be excised.

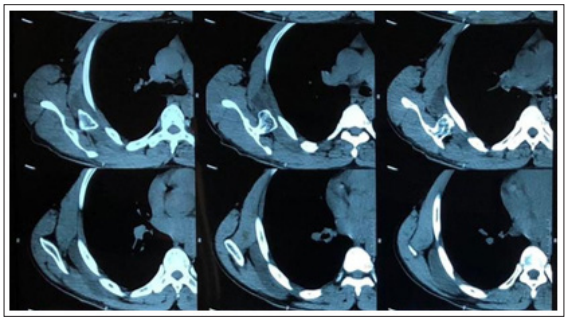
Both CT and MRI were done for our patient which did not show any extension into soft tissues suggestive of a malignant transformation. A well demarcated bony outgrowth was seen

that was perfectly amenable for a exicisional biopsy.

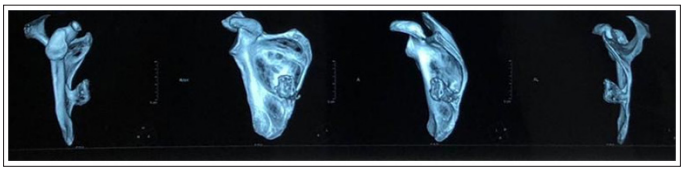
The treatment of a symptomatic scapular osteochondroma is by en bloc exicision. Once any malignant transformation is ruled out the patient can be planned for excision of the tumour by a proper approach that is relevant according to the location of the tumour. For ventral osteochondromas various approaches have been advocated for excision. A minimally invasive technique by the use of a thoracoscope has been described by Perez et al with minimal complications [11]. The technique involved creation of ports in the substance of serrates anterior, trapezius and rhomboid muscles. Kwon and Kelly excised ventral tumours with the help of a parascapular incision along medial scapular border [12]. Fageir et al described a similar parascapular incision and Esenkaya also approached the tumour by a parascapular incision by sectioning the rhomboideus and trapezius muscles in the centre [13,14].

All the above techniques using the parascapular incision incised the substance of the trapezius either in the mid or lower part near the angle of scapula to reach the floor of triangle of auscultation formed by the rhomboid major muscle. Another technique used by Frost et al that spares the trapezius is the one in which we give a incision perpendicular to the medial border of scapula and then retract the fibres or trapezius superiorly and latisimmus doors inferiorly. In our patient we gave a generous parascapular incision and in the deep dissection we followed the muscle sparing approach and retracted the fibres of trapezius and latisimmus dorsi as described above. All of the above mentioned approaches have given satisfactory results in the late post operative rehabilitative period but the muscle sparing parascapular approach is recommended in case of ventral osteochondromas as this approach preserves the muscle attachments and the scapulothoracic movements are least affected in the post operative period. Also since the absolute status of the neoplasm regarding a malignant transformation is unknown at the time of surgery so it is prudent to preserve the integrity of the muscles as much as possible and thus prevent seeding of tumour cells [15,16].

Pre operative clinical photograph of the patient showing pseudowinging of right scapula



CT scan section showing the bony out growth on ventral surface



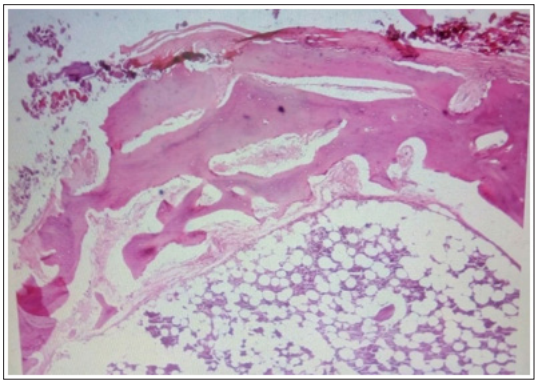
3-d reconstruction images of the tumour

Intraoperative picture showing parascapular incision

Deep dissection showing the rhomboid major forming the floor of triangle of auscultation after retraction of trapezius and latisimmus doors

Image showing the visualisation of the osteochondroma on the ventral scapular surface after the medial border is elevated by a hook

Histopathological picture of the tumour showing bony trabecular with overlying chondrocytes



Gross appearance of the tumour after excision showing the smooth cartilaginous cap

Conclusion

Ventral osteochondromas of the scapula are a rare entity that can cause a variety of signs and symptoms in the patient. It is one of the most important differential diagnosis in a patient presenting with pseudowinging of scapula. Since the incidence of malignant transformation is the highest in ventral scapular osteochondromas they should be adequately investigated preoperatively by CT and MRI scans and post operatively by histopathological examination. The treatment of these begin bony neoplasms is by en bloc excision and the parascapular trapezius sparing approach is a safe an effective approach to achieve that goal. It gives a smooth and early postoperative rehabilitation complying with the tumour surgery principles simultaneously.

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