CLINICAL CASE

COMBINED TREATMENT OF SYNOVIAL CHONDROMATOSIS OF THE SHOULDER

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Abstract

Synovial chondromatosis is rare condition, a benign proliferation of the synovial membrane, with the possibility of forming large masses that produce cartilaginous bodies, that can either remain attached to the synovium or can detach and float in the joint, producing mechanical damage to the joint surfaces. The cartilaginous bodies can, in time, transform, ossifying and later developing bone marrow or, in very rare cases, it may suffer malignant transformation to chondrosarcoma. We present a case of a 28 years old male, with synovial chondromatosis of the left shoulder, comprising of two large synovial masses, one extended into the axillary recess and long head of biceps tendon sheath and another large mass expanded towards the anterior thoracic wall and subclavian space. We treated the case in two stages, first by open surgical procedure with resection of the synovial mass, and secondary through the arthroscopic approach, with excision of the loose bodies and synovectomy by cauterization.

Keywords: *synovial chondromatosis, shoulder, loose bodies, arthroscopy, tumor***Introduction**

Synovial chondromatosis can be either primary or secondary. Primary synovial chondromatosis is defined as a benign tumor with uncertain origins and is usually characterized by a synovial metaplasia and multinodular proliferation. This proliferation can be described in the literature as Reichel syndrome [1]. Secondary synovial chondromatosis is a result of changes in the joint, usually a degenerative one.

Primary synovial chondromatosis is a rare condition. Its exact origin is yet unclear. There are researches that consider trauma as a possible trigger for this condition, but results are still uncertain. Some studies suggest that infection is a contributing factor in developing synovial chondromatosis [2]. But everyone agrees that it

is not inherited. All the multinodular proliferation of the synovial lining may extend in the surrounding soft tissue or they can calcify and detach from the synovial tissue giving birth to loose bodies in the joint. All this loose bodies may lead to lesions of the articular surfaces or mechanical impairment of the joint. Most of the time, only one joint is involved and usually a large one. Patients present with chronic joint pain, limited range of motion and maybe with local deformity. It is more common in the 4th or 5th decades of life [3] and men seem to be double to 4 times more affected than women [4].

Case presentation

A 28 years old male presented to our clinic with a 2-year history of intermittent pain in the left shoulder, with increasing limit of the function, ranging from pain-limited abduction in the first stages to the decrease in range of motion towards the presentation moment. Also, the patient noticed a palpable mass in the shoulder increasing in size. No traumatic history of the shoulder was present, in an otherwise right-hand dominant patient.

At the time of presentation, clinical examination revealed a 10 cm non-tender oval mass in the antero-lateral surface of the left shoulder. No signs of local inflammation were present, nor of neuro-vascular involvement, but clinical tests revealed limited ROM, on both active and passive movements – extension 10 degrees, forward flexion of 90 degrees, adduction 50 degrees and abduction of 40 degrees.

Initial radiographs showed a tumor-like mass in the soft tissues of the left shoulder, overlaying the left lung (Figure 1), extending along the humeral head, joint space and subacromial head, as well as thoracic wall and subclavian space.

It revealed a large mass located in the axillary recess (Figure 3), extending upwards and inwards toward the subclavian space and thoracic wall (Figure 4), also affecting the biceps tendon sheath and scapula-humeral joint space (Figure 5).

Further, the mass was confirmed by the MRI investigation of the afflicted area (Figure 2).

Figure 1 – Chest and shoulder radiograph showing the massive mass overlaying the left lung. Initial blood work showed no changes, except for small degree leukocytosis which had maintained all through the course of the case

Figure 2 – MRI of left shoulder

Figure 3 – Mass in the axillary recess

Figure 4 – Extension of mass in the antero-medial wall of thorax and subclavian space

Figure 5 – Synovial chondromatosis affecting the biceps tendon sheath and scapulo-humeral joint space, associating humeral head erosions

A biopsy was then performed, confirming the histological diagnosis of synovial chondromatosis. After a further arteriography to exclude blood flow inside the extensive mass, a surgical excision of the mass was decided.

A surgical team that included a plastic surgeon was put together, and the surgical excision was tented (Figure 6, 7 and 8).

Figure 6 – Deltopectoral approach and free bodies present in the joint

Figure 7 – Metaplastic synovium

Figure 8 – Excised mass and loose bodies of different sizes

Unfortunately, full surgical excision was not possible due to the massive extension into the latero-cervical structures. Histological examination confirmed the diagnosis of primary synovial chondromatosis.

Postoperatively the evolution was favorable, with some limited gain on the ROM and with remission of pain.

One year later, the patient returns with increasing pain in the left shoulder and enlargement of a mass in the anterior of the shoulder. A MRI evaluation was performed, that showed the anterolateral mass (Figure 9), with multiple bodies inside, that communicated with the scapulo-humeral joint through a narrow pediculus (Figure 10).

Figure 9 – Large anterior mass in the left shoulder

Figure 10 – Communicating pediculus with the scapulo-humeral joint space

It was decided at this point to use shoulder arthroscopy for loose bodies removal, using the pediculus as evacuation into the joint (Figure 11). Also, cauterization of the synovial membrane was performed during the arthroscopic intervention (Figure 12).

Figure 11 – Extraction of loose bodies using the arthroscopic technique

Figure 12 – Cauterization of the synovial membrane through the arthroscopic technique

Post-op evolution was favorable, and we noticed the remission of pain and regain of ROM. No recurrence was present at the 3 year follow up.

Discussions

Due to the mechanical impact of the loose bodies inside the joint, the treatment should always strive for complete removal of synovial mass and of loose bodies. In large masses, as in this case, the open removal should be the gold standard of treatment. Arthroscopic techniques allow for a more rapid post-op mobilization and recovery, sparing the soft tissue damage and potential neuro-vascular damage, but with the limit of removing the loose bodies with limited resection of the synovial proliferating mass.

Also, it allows for concomitant repair of instabilities or other mechanical damage inside the joint.

Although rare, malignant transformation is possible [5], and should always be considered if rendered upon bone invasion or an alteration in the general state of the patient.

Conclusion

Open surgical excision of the multinodular proliferation in large chondromatosis should always be preferred, but the arthroscopic technique allows for efficient loose body removal and synovectomy, thus slowing the development and progression of the synovial chondromatosis.

References

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