



BILATERAL SYNOVIAL CHONDROMATOSIS OF SHOULDER — A CASE REPORT

*Dr. A. Saravanan, Prof.N. Deen Muhammad Ismail, Dr.M. Sathish Dr. Arun Prasanth
Institute of Orthopaedics and Traumatology,
Rajiv Gandhi Government General Hospital, Chennai.*

Abstract:

INTRODUCTION: Synovial chondromatosis is a benign disorder characterised by chondrometaplasia of synovial membrane resulting in multiple cartilaginous nodules within the synovium. It is usually monoarticular, with male predilection and involves large joints. Bilateral osteochondromatosis of knee, ankle joint has been reported in literature. Herewith we present a case of primary, bilateral synovial chondromatosis of shoulder which has not yet been reported in literature.

CASE REPORT: A 45-year male, farmer presented with pain and partial restriction of movements of left shoulder for 10 months' duration. History of surgery for similar complaints in Right shoulder 4 years back. On examination shoulder joint swelling noted with joint line tenderness with crepitus on moving the shoulder. Restriction more of abduction and external rotation, with pain in the extremes of movement. X ray right shoulder joint was inconclusive. Needle biopsy of the right shoulder on histopathological examination reported as synovial chondromatosis. Shoulder hemiarthroplasty with removal of loose bodies was done by deltopectoral approach. Post op functional outcome was excellent with constant score of 83.

CONCLUSION: Synovial chondromatosis is not so common in the shoulder joint. Bilateral synovial chondromatosis of the shoulder have not yet been reported in literature. Shoulder hemiarthroplasty gives good pain relief and functional outcome in such patients.

Key words –Synovial Chondromatosis, Shoulder Hemiarthroplasty, Bilateral Shoulder, Shoulder Synovial Chondromatosis

INTRODUCTION

Synovial chondromatosis is a monoarticular, benign synovial proliferative disease of unknown etiology in which cartilaginous metaplasia occurs within the synovial membrane of joint, bursae, tendon sheath. [1] It typically affects the large joints, with male predilection. It is common between 3rd to 5th decade of life, with knee joint being commonly affected followed by elbow, hip and ankle in decreasing order of frequency and very rarely the shoulder joint.

The disease has 3 phases: Early phase with active synovial chondrometaplasia without loose bodies; Transitional phase with active synovial disease and loose bodies; Late phase with loose bodies and no active synovial disease. [2]

If untreated can lead to pain swelling and restriction of shoulder joint movements. Secondary arthritis and rarely malignant transformation have been

reported. Clinically, early stages present with locking episodes associated with pain and limitation of joint movements and in advanced stage with rest pain, joint swelling and fixed deformities. [3]

Bilateral osteochondromatosis of knee and ankle joint are common. [4-6] Primary bilateral synovial chondromatosis of shoulder joint has not yet been reported in literature.

Case Report:

CLINICAL PICTURE:

A 45-year male, farmer by occupation presented with complaints of pain in right shoulder past 8 months progressively increasing in severity, aggravated on exertion, associated with restriction of shoulder movements, occasional clicks and rest pain for past 2 months. History of recurrent swelling and pain with no

history of constitutional symptoms. Past history of pain in left shoulder diagnosed as primary synovial chondromatosis treated with removal of loose bodies, hemiarthroplasty done in our institution.

EXAMINATION:

Right shoulder -No warmth, joint tenderness present, crepitus with joint movements. No distal neurovascular deficit. Range of movements were as noted in Table-1.

RADIOLOGICAL EVALUATION:

X-ray right shoulder shows narrowing of joint space. X-ray left shoulder shows hemiarthroplasty with implant insitu. MRI right Shoulder-Evidence of synovial proliferation with small tiny loose bodies noted along the inferior part of head. Humeral head flattened with multiple osteophytes as shown in Fig-1. Findings were consistent with: Synovial chondromatosis right shoulder with secondary arthritis. Blood parameters were found to be within normal limits.

MANAGEMENT:

Under General Anaesthesia, with patient in beach chair position, through delto-pectoral approach, shoulder

joint loose bodies removed. Synovectomy done. Head was found deformed with osteophytes. Modular shoulder cemented hemiarthroplasty done. Loose bodies and synovium sent for histopathological examination. Post op period was uneventful. Histopathology report showed sub synovial cartilaginous nodules consistent with finding of synovial chondromatosis.

POST OP PROTOCOL:

0-1 week: Pendulum and passive shoulder movements. Sling during rest.

1-3 weeks: Passive and assisted active range of movements.

4 weeks: Active range of movements followed by strengthening exercise.

Patient was comfortable in the follow up period and range of movements available at final follow up after two years were as in Table-1. Constant score was used preoperatively and postoperatively to grade the functional outcome of the management. Both shoulders attained scores as mentioned in Table 1 which falls under excellent category of functional outcome as illustrated in Fig-2.

Table:1 Comparison of the pre-op and post op range of movements at 2 yrs follow-up

Movements	ROM at Presentation		ROM at Final Follow up	
	Right Shoulder (Pre Op status)	Left Shoulder (4 yrs post op)	Right Shoulder (2 yrs post op)	Left Shoulder (6 yrs post op)
Flexion	0-100	0-120	0-120	0-120
Extension	0-20	0-30	0-40	0-30
Abduction	0-80	0-110	0-100	0-110
Internal Rotation	0-20	0-40	0-30	0-30
External Rotation	0-10	0-20	0-30	0-20
Constant Score	38	76	83	74

DISCUSSION

Primary synovial chondromatosis of shoulder joint is rare and only few case reports are present in literature. Bloom and colleagues [1] reported only 10 cases involving shoulder joint in 191 cases of Primary Synovial Chondromatosis in a meta-analysis. Milgram et al [2] reported only 6 cases involving the shoulder joint out of 30 cases of Primary Synovial Chondromatosis. Maurice et al [3] reviewed 53 cases of Primary Synovial Chondromatosis and no cases involving the shoulder joint were reported.

Milgram, in 1977, categorised the disease process into 3 distinct phases [7]. Phase 1 - metaplasia of the synovial intima occurs. Active synovitis and nodule formation is present, but no calcification is identified. Phase 2 – nodular synovitis and loose bodies are present in the joint. The loose bodies are still cartilaginous. In phase 3 – the loose bodies remain but the synovitis has resolved. The loose bodies also have a tendency to unite and calcify.

Synovial chondromatosis can be differentiated into

a primary and secondary form. The primary form occurs in normal joint^[8]. Primary is characterised by undifferentiated stem cell proliferation in the stratum synoviale^[9]. Primary Synovial chondromatosis is generally thought to be progressive, more likely to recur, and lead to severe degenerative arthritis with long-term presence.^[10,11] Secondary synovial chondromatosis is thought to be caused by irritation of the synovial tissue of the affected joint^[8,12]. This is not likely to recur following synovectomy.^[13] Prognosis in secondary is less following surgery, since recurrence rate is less.

Differential diagnosis includes osteochondritis dissecans, synovial vascular malformation, pigmented villonodular synovitis, chondrosarcoma, injury-related soft tissue calcification.^[8] In phase 2 resection of loose bodies with synovectomy is indicated to prevent recurrence. In phase 3 removal of loose bodies is sufficient.^[14]

Arthroscopy has been considered nowadays as a standard of care for patients with synovial chondromatosis in early stages without articular degeneration.^[15,16] In patients with articular damage joint replacement gives better results. Recurrence rate for synovial chondromatosis after surgical treatment have been reported varying from 7%-23%.^[17]

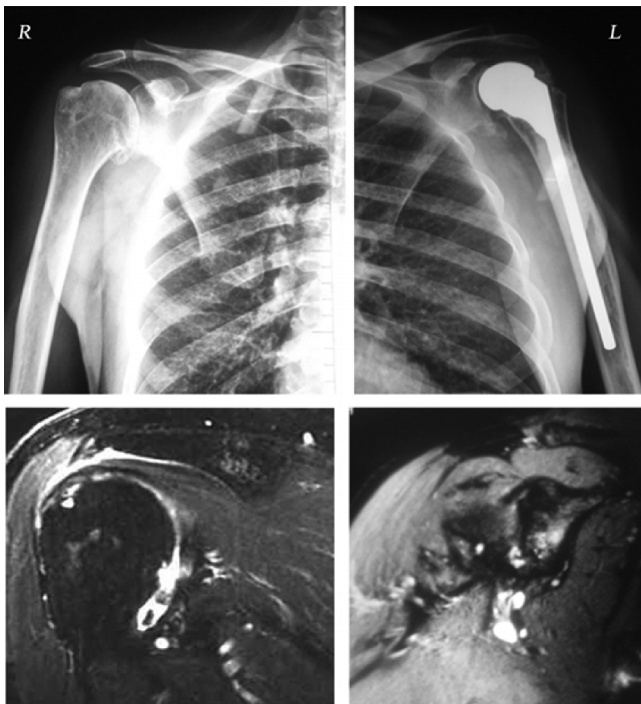


Figure 1 shows preop radiological evaluation with X rays and MRI. It shows X-ray right shoulder with narrowing of joint space. X-ray left shoulder shows hemiarthroplasty with implant insitu. MRI right shoulder showing evidence of synovial proliferation with small tiny loose bodies noted along the inferior part of head. Humeral head flattened with multiple osteophytes.



Figure 2 shows post hemiarthroplasty status of the right shoulder with the functional outcome at 2 years follow up.

CONCLUSION

Synovial chondromatosis is not so common in the shoulder joint. Bilateral synovial chondromatosis of the shoulder have not yet been reported in literature. We conclude that a high index of suspicion is required in evaluating such patients and screening of the contralateral joint is advised simultaneously. Synovectomy with removal of loose bodies and Shoulder hemiarthroplasty gives excellent pain relief and good functional outcome in these patients.

REFERENCES

1. Bloom R, Pattison Jn (1951) Osteochondromatosis of the hip joint. *JBJS* 33B:80-84.
2. Milgram JW (1977) Synovial Osteochondromatosis. *JBJS Am* 59:792-801.
3. Maurice H, Crone M, Watt I (1988) Synovial Chondromatosis. *JBJS Br* 70:807-811
4. A Case Report Of Bilateral Synovial Chondromatosis Of The Ankle Heather Shearer*1, Paula Stern1, Andrew Brubacher2 And Tania Pringle3. *Chiropractic & Osteopathy* 2007, 15:18
5. Bilateral synovial chondromatosis in the knee joint with both intra and extra-articular diseases. Rida-Allah Bassir1, & Farid Ismael1, Ahmed Elbardouni1, Mustapha Mahfoud1, Mohamed Saleh Berrada1, Moradh Elyaacoubi1. *Pan African Medical Journal*. 2014; 19:57 doi:10.11604/pamj.2014.19.57.4054
6. Bilateral Knee Synovial Osteochondromatosis: A Case Report. Nazia Naz S. KHAN, Rajaie NAMAS, Sally Jo SPERBECK, Harpreet SAGAR. *Arch Rheumatol* 2014; 29(3):215-218
7. Milgram JW: Synovial osteochondromatosis: A histopathological study of thirty cases. *JBJS* 1977, 59A:792-801.
8. Yu GV, Zema RL, Johnson RWS: Synovial Osteochondromatosis. A case report and review of literature. *J Am Podiatr Med Assoc Journal* 2002, 92:247-54

9. Leu JZ, Matsubara T, Hirohata K: Ultrastructural morphology of early cellular changes in the synovium of primary synovial chondromatosis. *Clin Orthop* 1992, 276:299-306.
10. Valmassy R, Ferguson H: Synovial Osteochondromatosis. A brief review. *J Am Podiatr Med Assoc* 1992, 82:427-3
11. Walling AK, Gasser SI: Soft-tissue and bone tumours about the foot and ankle. *Clin Sports Med* 1994, 13:909-38.
12. Peh WCG, Shek TWH, Davies AM, Wong JWK, Chien EP: Osteochondroma and secondary synovial osteochondromatosis. *Skeletal Radiol* 1999, 28:169-74
13. Valmassy R, Ferguson H: Synovial Osteochondromatosis. A brief review. *J Am Podiatr Med Assoc* 1992, 82:427-31.
14. Young-in Lee F, Hornicek FJ, Dick HM, Mankin HJ: Synovial chondromatosis of the foot. *Clin Orthop Relat Res* 2004, 423:186-90.
15. Ranalletta M, Bongiovanni S., Calvo J.M., Gallucci G, Maignon G: Arthroscopic treatment of synovial chondromatosis of the shoulder: report of three patients. *J. Shoulder Elb. Surg.* 2009;18(3):e4-8.
16. Urbach D., McGuigan F.X., John M., Neumann W., Ender S.A. Long-term results after arthroscopic treatment of synovial chondromatosis of the shoulder. *Arthroscopy.* 2008;24(3):318-323.
17. Krebbs VE: The role of hip arthroscopy in the treatment of synovial disorders and loose bodies. *Clin Orthop Rel Rsch* 2003, 406:48-59.