Case Report

A rare case of a swollen knee due to single large synovial chondroma

Mukesh Phalak[1*], Abhijit Gholap[2], Ashutosh Mahopatra[3], Nilesh Kalwar[4], Prashant Gholap[5]

[1]Assistant Professor, [3,5]III[rd] Year Resident, [4]II[nd] Year Resident, Department of Orthopaedics, Dr. D. Y. Patil Medical College and Hospital, Pimpri, Pune, Maharashtra, INDIA.
[2]III[rd] Year Resident, Department of Orthopaedics, Bharti Vidyapeeth, Pune, Maharashtra, INDIA.
Email: mukesh.phalak@gmail.com

Abstract

Introduction: A synovial chondromatosis is a rare benign neoplasm on the synovium. Although described as a benign disease, it can be very destructive and can cause severe osteoarthritis and pain. **Case presentation:** A 58-year-old Asian Female presented with left knee pain and swelling caused by diffuse intra-articular and extra-articular synovial chondromatosis. She underwent careful preoperative imaging and planning followed by open procedure in order to completely eradicate the disease. She has regained full range of movement and pain free knee post operatively. **Conclusions:** Although synovial chondromatosis is described as a benign disease, it can be very destructive and debilitating. A challenging management dilemma arises when confronted with both synovial chondromatosis and osteoarthritis.

Keywords: synovial chondromatosis,

[*]**Address for Correspondence:**
Dr. Mukesh Phalak, Assistant Professor, Department of Orthopaedics, Dr. D. Y. Patil Medical College and Hospital, Pimpri, Pune, Maharashtra, INDIA.
Email: mukesh.phalak@gmail.com
Received Date: 18/04/2014 Accepted Date: 30/04/2014

Access this article online	
Quick Response Code:	Website: www.medpulse.in
	DOI: 01 May 2014

INTRODUCTION

A synovial chondromatosis is a rare benign neoplasm that is caused by metaplasia of the synovium into chondrocytes[1]. The aetiology of the disease is uncertain. Milligram classified the disease into three phases: early (active intrasynovial disease but no loose bodies), transitional disease (active disease and loose bodies), and late (multiple loose bodies but no intrasynovial disease)[2]. The disease is commonly mono-articular and mostly affects the knee[3].It occurs twice as frequently in men than women and usually presents with increasing joint pain and swelling during the third to fifth decade of a patient's life[4]. A patient with synovial chondromatosis experiences a decreased range of motion, palpable swelling, effusion, and crepitus. The disease is usually intracapsular, but can also be extracapsular on rare occasions[5]. In this case report,we describe a patient with intra-articular diseases.

CASE PRESENTATION

A 58-year-old Asian female presented with eighteen months history of progressively worsening left knee pain with associated swelling. The pain was present when the patient was at rest, and worsened when the leg was bearing weight, thus restricting her walking to short distances. Her knee had become increasingly swollen. She denied any symptomatic night pain, locking, or a giving way of his knee. The patient was otherwise fit and well. Her medical history was unremarkable and she was only taking ibuprofen for the pain. Upon examination, the patient was seen to have marked swelling over antero-lateral aspect of left knee. On palpation the swelling was hard, mobile, well defined, and measured 6 × 8 cm. The swelling was non-tender and there were no associated skin changes. Conversely, the patient had tenderness over the medial joint line. She could fully extend her knee, but flexion was restricted to only 110 degrees. There was no

How to site this article: Mukesh Phalak, Abhijit Gholap, Ashutosh Mahopatra, Nilesh Kalwar, Prashant Gholap. A rare case of a swollen knee due to single large synovial chondroma. *MedPulse – International Medical Journal* May 2014; 1(5): 183-185. http://www.medpulse.in (accessed 02 May 2014).

ligamentous instability and a McMurray test proved equivocal. An examination of the patient's hip revealed no abnormality. A plain radiograph of the patient's knee revealed large single calcific densityin infra-patellar region (Figure 1). These appearances were thought to be consistent with idiopathic tumoralcalcinosis.USG was suggestive of Synovial chondromatosis/Bakers Cyst. However, to further scrutinize these calcifications, amagnetic resonance imaging (MRI) scan was suggested. It showed moderate synovial knee joint effusion. Well defined lobulated mass of size approx.5.7 (SI) x3.5 (AP) x4.5 (Trans) in infrapatellarregion, inferior and posterior to patella, anterior to lower femur and upper tibia. Medial patellar retinaculum is displaced medially, patellar tendon displaced anteriorly. Baker`s cyst of size approx..1.7x0.8cm.Degenerative changes in knee. These findings were thought to be consistent with synovial chondromatosis/Heterotopic.

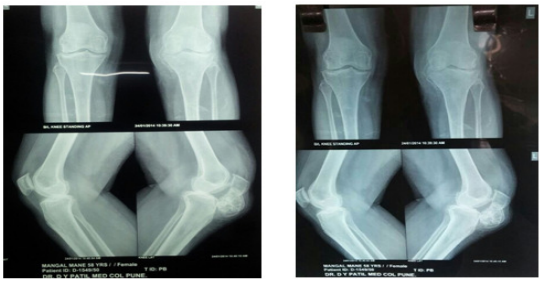

Figure 1: Plain radiograph showing large single calcific density in infra-patellar region left knee

The patient's blood tests were normal. Surgical excision was planned following the findings of the MRI scan. Synovectomy with debridement and excision of these bodies was thus performed. A large calcified mass was found, enclosed in bursal sac and lax patellar tendon. Mass was excised (Figure 2) and the sac was closed with sutures. The retinaculum was sutured and patellar tendon was repaired. A histological review at the Dr. D. Y. Patil Hospital Pathology Department confirmed our diagnosis of synovial chondromatosis. The sections showed nests of chondrocytes with focal ossification and focally attenuated synovium overlying the nodules.

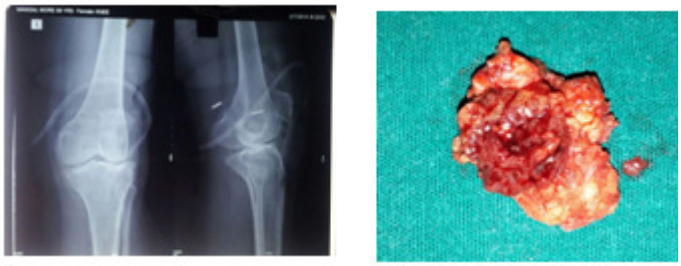

Figure 2: An intraoperative photograph and post-op xray

After the operation, the patient underwent weekly physiotherapy sessions focusing on quadriceps strengthening, with a daily exercise regime to supplement this. She recovered well and three months after the operation, has regained her right knee's full range of movement with flexion increased to 130 degrees, which is equal to that of her left knee. She has residual medial joint line tenderness, undoubtedly due to osteoarthritis.

DISCUSSION

Cartilage cells are absent inside the synovial membrane. It follows therefore that the development of synovial chondromatosis depends on metaplastic transformation of the synovial cells into chondrocytes via an unknown stimulus [1].These chondrocytes become pedunculated and encrusted inside the synovium and eventually expelled into the joint as loose bodies[6].Given the initial X-ray image of large extra-articular calcification, we felt that the patient was more likely to have bursitis/synovial chondromatosis. However, USG and MRI scan showed a single lesion with an intra-articular component. Synovial chondromatosis was thus a more likely diagnosis[7]. This was also confirmed by a histological examination.Extra-articular diseases can be classified as tenosynovialchondromatosis or bursalchondromatosis depending on the origin[8]. In this case, we propose that either intra-articular synovial chondromatosis had penetrated the patient's popliteal bursas, or bursal chondromatosis had infiltrated his knee joint. This obviously raises concerns regarding a possible transformation to synovial chondrosarcoma. However, histological investigation revealed no significant nuclear atypia, thus ruling out malignancy. The literature reports only 33 cases of malignant transformation in the setting of histologically confirmed synovial chondromatosis[6]. A key feature of all these cases is the recurrence of benign disease prior to a diagnosis of malignant disease. The extent of the disease and the presence of severe osteoarthritis also presented a challenging management problem. The combination of synovial chondromatosis and degenerative arthritis is a common finding in the advanced stage of the disease[3]. Primary synovial chondromatosis over time can lead to cartilage degeneration by mechanical wear via the loose bodies and through nutrient deprivation to the Particular cartilage[3]. However, degenerative arthritis can lead to secondary synovial chondromatosis[3]. As radiotherapy and chemotherapy have no effect on synovial chondromatosis, surgical excision is the preferred treatment[4]. In cases that involve localized intra-articular disease, complete excision of the abnormal synovium seems to provide a cure. Generalized intra-articular disease with pain and swelling requires total synovectomy and a removal of the

loose bodies. Extra-articular disease treatment aims for complete excision[10]. Three surgical options were considered, namely high tibial osteotomy (HTO), excision of the synovial and bursal chondromatosis alone, or excision combined with a total knee replacement. The ideal treatment for severe arthritis limited to the medial compartment in someone within the same age range as our patient is a unicompartmental knee replacement. However, without complete synovectomy, our patient's synovial chondromatosis could recur and thus compromise his joint replacement. HTO with realignment of the joint forces may lengthen the lifespan of the joint and delay the need for joint replacement. Total knee arthroplasty (TKA) has been proven to be an effective treatment for synovial chondromatosis. However, even with complete synovectomy alongside a TKA, recurrence of the disease has been reported[3]. This is probably due to incomplete synovectomy at the time of operation, which leaves remnants of pathological synovium[3]. Excision of the chondromatosis formed the initial surgical treatment plan, leaving us thus with the scope to perform an arthroplasty in should the need arise the future. To achieve full excision of the disease our patient required an open antero-lateral approach to excise the mass. The residual pain experienced by the patient causes a further management dilemma. Although the pain is currently being controlled by analgesia, the possibility of HTO or TKA is being discussed with the patient.

CONCLUSION

A synovial chondromatosis is a rare condition but one which can be highly aggressive and destructive. This case highlights the importance of careful clinical assessment, lateral thinking, appropriate use of investigation, and careful pre-operative planning.

ABBREVIATION

CRP: C-reactive protein; HTO: high tibial osteotomy; MRI: magnetic resonance imaging; TKA: total knee arthroplasty.

REFERENCES

1. Jeffreys TE: Synovial chondromatosis. J Bone Joint Surg 1967, 3:530-534.
2. Miligram JW: Synovial osteochondromatosis. J Bone Joint Surg 1977, 59-A: 792.
3. Ackerman D, Lett P, Galat DD Jr, Parvizi J, Stuart MJ: Results of total hip and total knee arthroplasties in patients with synovial chondromatosis. J Arthroplasty 2008, 23(3):395-400.
4. Temple HT, Gibbons CL: Tumors and tumor-related conditions about the knee. InOxford Textbook of Orthopaedics and Trauma. Volume 2. 1st edition. Edited by Bulstrode C, Buckwalter J, Carr A, Marsh L, Fairbank J, Wilson-Macdonald J, Bowden G. Oxford: Oxford University Press; 2002::1153-1154.
5. Sim FH, Dahlin DC, Ivins JC: Extra-articular synovial chondromatosis. J Bone Joint Surg 1977, 4:492-495.
6. Sah AP, Geller DS, Mankin HJ, Rosenberg AE, Delaney TF, Wright CD, HornicekFJ:Malignant transformation of synovial chondromatosis of the shoulder to chondrosarcoma: a case report. J Bone Joint Surg Am 2007, 89(6):1321-1328.
7. Bullough P: Benign Soft-Tissue Tumours. In Orthopaedic Pathology. 4th edition. Edited by Bullough P. New York: Mosby; 2004:290-293.
8. Symeonides PJ: Bursalchondromatosis. Bone Joint Surg Br 1966, 48(2):371-373.
9. Dunn AW, Whisler JH: Synovial chondromatosis of the knee with associated extracapsularchondromas. J Bone Joint Surg Am 1973, 55(8):1747-1748.
10. Maurice H, Crone M, Watt I: Synovial chondromatosis. J Bone Joint Surg (Br) 1988, 70-B: 807-811.

Source of Support: None Declared
Conflict of Interest: None Declared