# Synovial chondromatosis presenting as a pathological fracture of the femoral neck in an 89-year-old woman—a case report

Anthony Sakellariou, David J Johnstone and Jean A S Pringle

Department of Orthopaedics, Princess Royal Hospital, Haywards Heath, West Sussex, U.K. and Institute of Orthopaedics, Royal National Orthopaedic Hospital, Stanmore, Middlesex, U.K. Correspondence: Mr A. Sakellariou, West Cottage, Walton Manor, Walton-on-the-Hill, Surrey KT20 7SA, U.K. Tel +44 1737-814 226. Fax -813 498
Submitted 97-09-01. Accepted 98-09-17

An 89-year-old woman presented with sudden onset of pain in her right hip and an inability to bear weight on that side. There had been a 2-day history of prodromal discomfort in that hip, but not of trauma. She was otherwise well.

Radiographs revealed an undisplaced femoral neck fracture (Figure 1). However, a pathological process other than osteoporosis was also evident, especially on the lateral view, which revealed marked cortical scalloping and sclerosis of the anterior aspect of the neck of femur. It was decided that a hemiarthroplasty would be appropriate.

At operation, multiple loose bodies (which had not been evident radiographically) were recovered from the hip joint. Extensive removal of these, and of bulky synovial tissue was performed, followed by a standard cemented hemiarthroplasty.

Initial histological evaluation of the specimens recovered at surgery was inconclusive. Subsequent examination by the senior author (JASP), however, revealed that, associated with the femoral neck, there was a lobulated mass of actively growing cartilage which, in some areas, was undergoing focal calcification and ossification. The diagnosis was active synovial chondromatosis (Figure 2), causing severe erosion of the femoral neck. There were no features suggestive of malignancy.

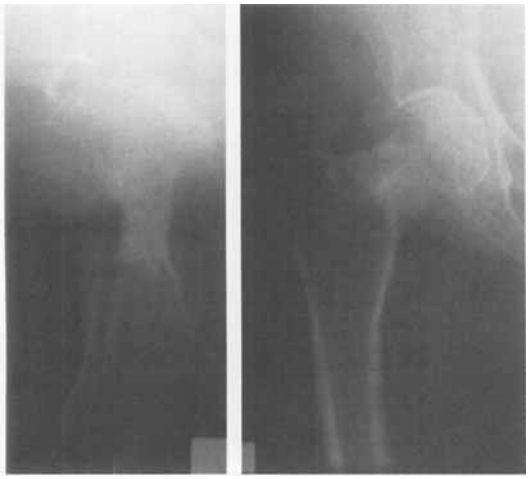


Figure 1. Undisplaced transcervical fractured right neck of femur. Marked sclerosis and pressure erosion of the metadiaphyseal region of the anterior aspect of the neck of the femur.

## Discussion

Synovial chondromatosis is an uncommon condition characterized by neoformation of cartilaginous foci in the synovial membrane of joints, bursae or tendon sheaths (Murphy et al.1962, Sim et al.1977). In its intraarticular form, it occurs most often in the knees of middle-aged men. It is rare before puberty and over the age of 50 and almost exclusively presents with the slow onset of intermittent, localized, articular pain.

In the early active stages of the disease, radiographs may be normal, if the cartilaginous nodules are not calcified or ossified and diagnosis can be made only by arthroscopy, arthrogram or, as in our case, by arthrotomy. Recently, however, the MR appearance of synovial osteochondromatosis has also been reported (Kramer et al. 1993).

Maurice et al. (1988), reviewing 53 cases of synovial chondromatosis, found that the mean age at presentation was 48 (17–79) years. Of the 42 intraarticular cases, 8 were in joints other than the knee and only 2 of these were in the hip. All the patients had presented with local pain and some with an associated diffuse swelling and/or mechanical symptoms of locking or clicking. The average duration of symptoms had been 5 years. Therefore, not only was the acute mode of presentation of this case unusual but also the finding that this was active disease in someone aged 89.

Synovial chondromatosis of the hip joint presenting as a pathological fracture secondary to pressure erosion of the femoral neck by the diseased synovium has, to our knowledge, been reported only once (Szypryt et al. 1986). In that case, however, the patient was 55 years old—within the typical age

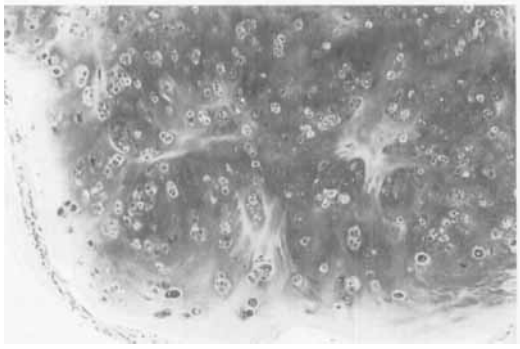
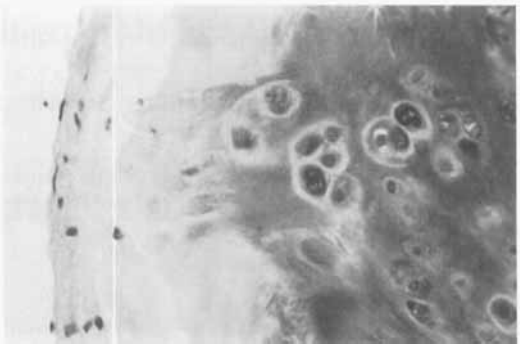


Figure 2. HE stained section (×100), taken from a non-mineralized area of the sectioned specimen showing well-differentiated lobulated hyaline cartilage, covered by attenuated synovium.



At higher magnification (HE ×400), the 'clonal' pattern of chondrocyte proliferation typical of synovial chondromatosis is clearly seen, as also is the delicate synovium covering the nodule.

range—and had a 5-year history of mild pain in that hip. A radiograph taken about 3 years earlier had, at the time, been misinterpreted as showing changes of arthrosis although, in retrospect, changes associated with synovial chondromatosis were evident. Maurice et al. (1988) reported that radio-opacities were seen in all those with intraarticular disease; none were evident in our case. However, as in our case, pressure erosion of the metadiaphyseal region (Bloom and Pattinson 1951, Szypryt et al. 1986, Bertoni et al. 1990) can be a radiographic feature of the condition. Occasionally, synovial chondromatosis can present as a large soft tissue mass (Sviland and Malcolm 1995). In these cases, the para-articular tumoral masses may be observed with the same radio-opacity as the soft tissues, but often sprinkled with minute, thin, faint calcifications (Sim et al. 1977). Radiologically therefore, the main differential diagnosis of this type of synovial chondromatosis is that of a well differentiated chondrosarcoma which can rarely arise from benign synovial chondromatosis (Kenan et al. 1993) or rarely occur as a primary intrasynovial tumor (Bertoni et al. 1990). Synovial sarcoma should also be included in the differential, as this malignancy can present intrasynovially too (Ishida et al. 1996). These diagnoses should be considered, particularly when the plain radiographs fail to demonstrate the typical small calcified opacities and/or well defined cortical sclerosis-lined areas of bone erosion.

In retrospect, therefore, preoperative arthrography, CT or MRI would have been appropriate, to help rule out the above possibilities, which would otherwise necessitate a full oncological work-up and formal biopsy prior to any operative procedure. Although not possible in our case due to the short history and acute mode of presentation, if the disease had been recognized earlier, partial synovectomy and removal of the loose bodies in a case such as this might have prevented the more serious complication of femoral neck fracture (Jeffreys 1967).

Bertoni F, Pignatti G, Bacchini P, Campanacci M. Miscellaneous synovial lesions. Current Opin Rheum 1990; 2: 120-37.

Bloom R, Pattinson J N. Osteochondromatosis of the hip joint. J Bone Joint Surg (Br) 1951; 33: 82-4.

Ishida T, Iijima T, Moriyama S, Nakamura C, Kitagawa T, Machinami R. Intra-articular calcifying synovial sarcoma mimicking synovial chondromatosis. Skeletal Radiol 1996; 25: 766-9.

Jeffreys T E. Synovial chondromatosis. J Bone Joint Surg (Br) 1967; 49: 530-4.

Kenan S, Abdelwahab I F, Klein M J, Lewis M M. Synovial chondrosarcoma secondary to synovial chondromatosis. Skeletal Radiol 1993; 22: 623-6.

Kramer J, Recht M, Deely D M, Schweitzer M, Pathria M N, Gentili A, Greenway G, Resnick D. MR appearance of idiopathic synovial osteochondromatosis. J Comput Assist Tomogr 1993; 17: 772-6.

Maurice H, Crone M, Watt I. Synovial chondromatosis. J Bone Joint Surg (Br) 1988; 70: 807-11.

Murphy F P, Dahlin D C, Sullivan C R. Articular synovial chondromatosis. J Bone Joint Surg (Am) 1962; 44: 77-86.

Sim F H, Dahlin D C, Ivins J C. Extra-articular synovial chondromatosis. J Bone Joint Surg (Am) 1977; 59: 492-5.

Sviland L, Malcolm A J. Synovial chondromatosis presenting as painless soft tissue mass; a report of 19 cases. Histopathology 1995; 27: 275-9.

Szypryt P, Twining P, Preston B J, Howell C J. Synovial chondromatosis of the hip joint presenting as a pathological fracture. Br J Radiol 1986; 59: 399-401.