account for the difference, although all the surgeons performing the operations were right-handed. Two factors merit further examination: leg length discrepancy and the level of each patient's activity. The anatomical difference in leg length is easy enough to measure clinically or radiologically, but the "functional" discrepancy is less easy to measure and may well be of greater importance. The present methods of assessing

patient activity are not very sensitive and need to be improved if we are to understand the results described in this paper.

No benefits in any form have been received or will be received from a commercial party related directly or indirectly to the subject of this article.

REFERENCES

G. H. Isaac, PhD, Research Fellow
J. P. Hodgkinson, FRCS, Senior Orthopaedic Registrar
B. M. Wroblewski, FRCS, Consultant Orthopaedic Surgeon
Centre for Hip Surgery, Wrightington Hospital, Wigan, Lancashire WN6 9EP, England.

Correspondence to Dr G. H. Isaac.

© 1989 British Editorial Society of Bone and Joint Surgery
0301-620X/89/1R69 \$2.00
J Bone Joint Surg [Br] 1989;71-B:143-4.

Atkinson JR, Dowson D, Isaac JH, Wroblewski BM. Laboratory wear tests and clinical observations of the penetration of femoral heads into acetabular cups in total replacement hip joints: III. the measurement of internal volume changes in explanted Charnley sockets after 2-16 years *in vivo* and the determination of wear factors. *Wear* 1985;105:225-44.

Isaac GH, Atkinson JR, Dowson D, Kennedy PD, Smith MR. The causes of femoral head roughening in explanted Charnley hip prostheses. *Engng Med* 1987;16:167-73.

FAMILIAL SYNOVIAL CHONDROMATOSIS:

BRIEF REPORT

GERALD G. STEINBERG, SANJAY S. DESAI, RAJWANT MALHOTRA, ROGER HICKLER

In synovial chondromatosis, foci of metaplastic cartilage form in the synovial membrane of a joint. These foci may grow, become detached from the synovial membrane and enter the joint cavity as loose bodies. Calcification or ossification of the cartilage masses may occur (Jaffe 1958). As far as we know no cases of synovial chondromatosis with a familial pattern have been reported. We describe a family in which three men are affected.

Case reports. RH, a 57-year-old white man, FH, his 63-

year-old brother, and DG, their 36-year-old nephew, presented with remarkably similar histories of recurrent swelling and derangement of the right knee since young adulthood. When first seen each had a moderate effusion with multiple palpable mobile loose bodies. Both RH and DG had mild restriction of movement. Their radiographs also were similar. That of RH was typical, showing multiple radiopaque masses consistent with calcified or ossified loose bodies (Fig. 1); some degenerative changes also were seen.

Fig. 1

Fig. 2

Both RH and FH underwent arthrotomy and synovectomy. Multiple free osteochondromatous bodies were removed as well as several smaller ones attached to the synovium. The histology of the synovium in both cases was similar, showing metaplastic foci of cartilage in the synovial tissue beneath the lining layer, typical of synovial chondromatosis. Some areas were undergoing calcification or ossification (Fig. 2).

All the affected individuals in this family were tall and thin with a remarkably similar body habitus.

Discussion. Most authors point out that conditions other than synovial chondromatosis may be associated with the presence of radiopaque intra-articular loose bodies (Milgram 1977; Murphy, Dahlin and Sullivan 1962; Mussey and Henderson 1949; Wilmoth 1941). The critical criterion of synovial chondromatosis is the presence of intra-synovial and metaplastic cartilage which was present in both of our patients who had biopsies. All three showed degeneration, probably resulting from prolonged mechanical derangement.

Each of our patients first developed symptoms at an age when osteoarthritis is not seen; in fact, their

Fig. 3

presentation was typical of synovial chondromatosis, in that they were young men with involvement of the knee. Their pedigree does not represent a clear-cut genetic pattern but it is consistent with a sex-linked pattern of inheritance with variable penetrance (Fig. 3).

No benefits in any form have been received or will be received from a commercial party related directly or indirectly to the subject of this article.

REFERENCES

G. G. Steinberg, MD, Professor of Orthopaedic Surgery
S. S. Desai, MD, Resident, Department of Orthopaedics
R. Malhotra, MD, Assistant Professor of Pathology
R. Hickler, MD, Professor of Medicine
University of Massachusetts Medical Center, 55 Lake Avenue North,
Worcester, Massachusetts 01655, USA.

Correspondence to Gerald G. Steinberg, MD.

© 1989 British Editorial Society of Bone and Joint Surgery
0301-620X/89/1R89 \$2.00
J Bone Joint Surg [Br] 1989;71-B:144-5.

Jaffe HL. *Tumors and tumorous conditions of the bones and joints.* London: Henry Kimpton, 1958.

Milgram JW. Synovial osteochondromatosis: a histopathological study of thirty cases. *J Bone Joint Surg [Am]* 1977;59-A:792-801.

Murphy FP, Dahlin DC, Sullivan CR. Articular synovial chondromatosis. *J Bone Joint Surg [Am]* 1962;44-A:77-86.

Mussey RD Jr, Henderson MS. Osteochondromatosis. *J Bone Joint Surg [Am]* 1949;31-A:619-27.

Wilmoth CL. Osteochondromatosis. *J Bone Joint Surg* 1941;23:367-74.

A METHOD OF ELBOW ARTHRODESIS: BRIEF REPORT

G. B. IRVINE, P. J. GREGG

Recent literature concerning surgery of the arthritic elbow has concentrated on prosthetic replacement; however, occasional patients are encountered who require surgery but are unsuitable for arthroplasty. If arthrodesis is contemplated the surgeon will find that many of the standard techniques (Russell 1987) were described during the era of tuberculous infection and are less applicable nowadays.

We describe a method of fusion which has been used successfully in three recent patients with secondary degenerative arthritis and in whom total elbow replacement was considered inappropriate.

Operative details. With the patient in the lateral position and the arm supported on a padded rest a 15 cm longitudinal skin incision, centred over the tip of the olecranon, is made. The ulnar nerve is identified and protected throughout the operation. An inverted V-shaped incision is made into the triceps expansion so that a flap of tendon can be reflected distally. The elbow joint

is entered and access is improved by further dividing the capsule and collateral ligaments. After resecting the radial head, any remaining articular cartilage and the subchondral bone of the olecranon and articulating surfaces of the humeral condyles is removed with gouges and a dental burr (Fig. 1). Cancellous bone chips,

Fig. 1

Fig. 2