Indications for arthroscopy in mon- and polyarticular arthritis *

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SUMMARY In many cases clinical and laboratory data and x-rays are insufficient to diagnose the aetiology of synovitis in gonarthrititis and to plan adequate treatment. The efficacy of arthroscopy in the management of the knee lesion was studied in mon- and polyarthrititis. A classification of 'very useful', 'useful' and 'not useful' was used. On the basis of results reported here we outline the indications for arthroscopy in mon- and polyarthrititis.

Little has been reported on the indications for and value of arthroscopy in rheumatological and orthopaedic patients with mon- or polyarthrititis. In 1918 Takagi of Tokyo started arthroscopy of the knee joint. In Japan arthroscopy was from the beginning of particular interest in the study and early diagnosis of tuberculous gonarthrititis.

Casscells (1971), Jackson and Abe (1972), and Eikelaar (1975), stressed the accuracy of arthroscopy versus clinical and radiological examination and arthrography, especially in diagnosing internal derangement. Robles Gil and Katona (1969), Jayson and Dixon (1968), Dorfman and de Sèze (1972), Jayson and Henderson (1973), Fletcher and Scott (1975), and Yates (1978) described arthroscopic appearances of synovial abnormalities. Synovial histological appearances are known to vary considerably within a single joint (Cruickshank, 1952). The study of the synovium by arthroscopy—as macroscopic examination—and light-microscopic findings showed a significant correlation between the total histological activity and the total arthroscopic index (Yates and Scott, 1975). Henderson *et al.* (1975) did not know a significant correlation between synovial histology, joint damage, and clinical activity. In the discussion they stressed that in the hands of experienced examiners arthroscopy has advantages in that it affords additional information and the possibility of biopsy under direct

vision. The importance of arthroscopy in operative treatment of diseased knee joints has been stressed (Jackson 1974; Dandy and Jackson, 1975).

In this study we investigated the value of arthroscopy in the diagnosis and management of mon- or polyarticular arthritis.

Patients and methods

During 1974-7 more than 300 arthroscopies were performed in the University Hospital of Nijmegen. We included in this study 24 patients (14 males, 10 females) with monarthrititis, mean age 34 years (3-56 years), and 30 patients (12 males, 18 females) with polyarticular arthritis, mean age 43 years (13-72 years) (Fig. 1). The majority were examined clinically and arthroscopically by both the rheumatologist and the orthopaedic surgeon. The cause of the arthritis was unknown. In some cases there was a doubtful history of trauma. The knee joint was painful, warm, and swollen, with a slight to moderate effusion. The ESR was usually increased. The rheumatoid factor was negative in all cases of monarthrititis. The x-rays provided little information.

Fig. 1 Duration of complaints

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In conclusion, there was gonarthrititis of unknown aetiology. When the aetiology of the gonarthrititis was known, arthroscopy was performed to establish an additional diagnosis and to evaluate the degeneration of the joint with a view to therapy. Arthroscopy was always performed under general anaesthesia and with full sterile precautions in an operating theatre. The knee was scanned in a routine way, and in many cases a synovial biopsy specimen was obtained under direct vision. Under anaesthesia the stability of the knee joint was tested. If indicated, operative treatment was carried out under the same general anaesthesia.

Trying to establish indications for arthroscopy in gonarthrititis, we have classified the examinations as 'very useful', 'useful', and 'not useful' on the basis of the criteria of Jackson and Abe (1972). 'Very useful' applied when a totally different and unexpected diagnosis was made which indicated the need for operation or averted it, or when treatment was possible through the arthroscope. 'Useful' applied when unnecessary surgery was avoided, a biopsy was performed, or surgical treatment was better planned. 'Not useful' applied when there was no additional information or an error of interpretation.

The cases of polyarthrititis were divided into groups. In the first group the diagnosis was rheumatoid arthritis or juvenile rheumatoid arthritis. In the second group there was known knee disease, which possibly caused the synovitis. The cause of the arthritis was unknown in the third group. The cases of monarthrititis were also divided into 3 groups. In the first group the cause of the gonarthrititis was unknown. If there was a suspicion of internal derangement as well, even without a history of trauma, the case was placed in the second group. In the third group (the miscellaneous), the cause of the monarthrititis was known or the gonarthrititis was doubtful.

Results

POLYARTHRITIS

In group 1 arthroscopy was 'very useful' in 4 cases (Table 1). In 1 case a thickened fibrous plica synovialis medial to the patella was seen. Complaints

of giving way suggested internal derangement. After excision of this fibrous plica the symptoms disappeared. In another case there was local exuberant proliferation of synovium at arthroscopy; it seemed to be impacted between femur and tibia. The patient had episodes of pseudolocking, which disappeared after local synovectomy. In the other 2 patients an edge of pannus tissue was found in one knee, and numerous loose bodies (rice bodies) were observed in the other. After they were removed both patients became free of symptoms.

Arthroscopy was 'useful' in 4 cases. In 2 a proposed synovectomy was not performed. In 2 an indication for arthroplasty was established because there was extensive degeneration of cartilage, which had not been expected before arthroscopy. In 1 patient suffering from juvenile rheumatoid arthritis and clinical patellar chondromalacia arthroscopy was not useful because no additional information was found.

In group 2 the cause of the arthritis was known: secondary gout, chondrocalcinosis, and haemophilia. In the last case arthroscopy was useful. Because no serious joint damage was found, it was decided that synovectomy might be useful and injection of intra-articular ^{198}Au was carried out. In the other 2 cases there was no additional information and the examinations were 'not useful'.

In group 3 the gonarthrititis was of unknown aetiology. Only one examination was 'very useful'. There was diffuse chondrolysis with a number of small fragments of cartilage, which could be removed with biopsy forceps. In 16 cases arthroscopy was 'useful'. In 14 there was an indication for biopsy of the synovium, which could be performed under direct vision with the arthroscope. The histological diagnosis was chronic nonspecific synovitis in a variable degree. Only 1 patient showed many histological synovial changes of the type found in rheumatoid arthritis. In 2 cases the examination was 'useful'. A doubtful indication for meniscectomy and for nettoyage of the patella was confirmed. In 1 patient there was no additional information; the arthroscopy was therefore evaluated as 'not useful'.

MONARTHRITIS

In the first group the diagnosis of the gonarthrititis was unknown (Table 1). Arthroscopy was 'very

Table 1 *Results of qualitative assessment in general management*

	Polyarthrititis n=30				Monarthrititis n=24			
	(J)RA	Known	Unknown	Total	Unknown	Unknown derang. int.?	Miscell.	Total
Very useful	4		1	5 (17%)	3	6		9 (37.5%)
Useful	4	1	16	21 (70%)	9	2	1	12 (50%)
Not useful	1	2	1	4 (13%)	1	1	1	3 (12.5%)

useful' in 3 cases. In 2 cases an unsuspected meniscal lesion was found. The synovium showed reactive synovitis. In the third case the synovium showed active inflammation with dense, bright red, pedunculated villi with clubbed ends, described as characteristic of rheumatoid arthritis (Palmer, 1967). A biopsy was performed after 6 of the 9 'useful' arthroscopies. Four patients showed histological evidence of chronic nonspecific synovitis, suggesting rheumatoid arthritis in 2 cases. In 1 case there was pigmented villonodular synovitis. The last case showed synovitis, possibly reactive to chronic irritation caused by degenerative products of cartilage lesions. The decision could be made that surgical synovectomy was still useful in 2 cases and that an arthroplasty was indicated in the near future in 1 case.

One arthroscopy was 'not useful' because it gave no further information. In the second group the aetiology of the synovitis was unknown and there was a suspicion of internal derangement as well. These patients had only a doubtful history of trauma. Six arthroscopies were 'very useful'. In 1 case there was a lateral instead of a possible medial meniscal lesion. In 2 cases an operation was avoided. Symptoms suggestive of internal derangement were caused by chondromalacia in the femoral tibial compartment; there was also reactive local synovitis. In 3 cases synovial fronds were seen to be pinched between femur and tibia. These repeated entrapments caused pseudolocking which disappeared after local synovectomy. Arthroscopy was 'useful' in 2 cases. One patient had no meniscal lesion, although the arthrogram was positive. In the other case a loose body was suspected, which was not found. The biopsy specimen from the synovial membrane showed signs of inflammation, suggesting rheumatoid arthritis. An error of interpretation of the arthroscopy, followed by an unnecessary arthroto-my made 1 arthroscopy 'not useful'.

In the miscellaneous group arthroscopy was 'useful' in 1 patient with Von Willebrand's disease. The cartilage was not extensively damaged, and synovectomy was performed, which was still useful. In the other patient arthroscopy was 'not useful' because no additional information was found.

Discussion and Conclusions

This study discusses a qualitative assessment of arthroscopy in the general management of mon- and polyarticular arthritis. In monarthritis arthroscopy yields the best results. It was 'very useful' in 37.5% of our patients with monarthritis. Unexpected diagnoses are established. In some patients certain operations have to be changed,

for example, because of protuberance of hyperplastic villi with intermittent impingements, which causes (pseudo)locking or loose bodies instead of meniscal lesions. Arthroscopy and multiple biopsies under direct vision give an extensive macro- and microscopic picture of the joint. Especially in monarthritis, the procedure can help establish the diagnosis. Microscopy of a problem knee in patients with polyarthritis is of little diagnostic value.

In patients with polyarthritis arthroscopy is especially important in order to exclude and look for other disease as an additional diagnosis. An additional area of application is probably to be found in clinical research. The number of 'not useful' cases indicates the correctness of the arthroscopic indication. In our material we found 13% 'not useful'. Clinical, radiological, and laboratory findings are very important, and these data are in most cases sufficient for management of the disease.

The indications for arthroscopy with and without biopsy in arthritis are, in sequence of usefulness, as follows:

Monarthritis. (1) Diagnosis of the aetiology of the synovitis (macro- and microscopy). (2) Exploration of suspected internal derangement. (3) Search for additional pathology, especially when routine treatment fails. (4) Planning of management, especially operative treatment. (5) Special cases (inspection for research, follow-up, and prognosis, for example, in compensation board cases).

Polyarthritis. (1) Search for additional pathology, given a known main diagnosis. (2) Planning of management. (3) Diagnosis of the aetiology of the synovitis. (4) Special cases.

In the departments of rheumatology and orthopaedics we have so far performed very successful arthroscopies, on the basis of these indications in patients with mon- and polyarticular arthritis.

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