

Department of Orthopaedic Surgery, University Hospital, Umeå, Sweden.

GANGLIA OF THE SEMILUNAR CARTILAGES OF THE KNEE JOINT

A Postoperative Follow-up Examination

HELGE APPEL

Accepted 10.ix.71

Ganglia of the semilunar cartilages of the knee joint are considered to be rather uncommon. There are few reports dealing with the end-results of the condition after operative treatment, based on large series with long observation time.

In a follow-up investigation regarding the late results after meniscectomy in the knee joint (Appel 1970) the author found that 36 cases were operated upon because of a ganglion of the meniscus. Since the material available for this special condition was larger than the majority of earlier reports, the opportunity was taken to analyse these cases separately, mainly with consideration to the late results of the operative treatment. A report of the obtained results as well as of some other observations made from this follow-up examination are given below.

MATERIAL AND METHODS

Among altogether 718 patients meniscus-operated (Appel 1970) surgery was indicated in 36 cases because of a ganglion of the semilunar cartilage of the knee joint. In 34 cases a total meniscectomy was done. In 2 cases only a gangliectomy was made. In one of these later cases a new ganglion occurred and the ganglion was removed later together with the semilunar cartilage.

The age of the patients at the time of operation was under 20 years in 2 cases, between 20-29 years in 17 cases and 30 years or more also in 17 cases.

Twenty-six patients were males and 10 females. The ratio females to males was thus 1 : 2.6.

In 25 cases the ganglion in the meniscus was localized laterally and in 11 cases in the medial meniscus. This gives a ratio medial to lateral affected meniscus of 1 : 2.3.

Rupture in the meniscus together with a ganglion was verified only in 11 cases or in 30 per cent.

Twenty-four out of the 36 patients could be traced at the time of the follow-up investigation. In 23 cases total meniscectomy was performed. In one patient the operation was restricted only to gangliectomy. A personal interview and a clinical and radiological examination of the operated and the non-operated knee were performed on these patients. The techniques used for the interview and for the clinical and the radiological examination were the same as in the previous investigation described in detail elsewhere (Appel 1970). Thus the *subjective complaints* were recorded on a standardized form, where pain at rest or at weight bearing, feeling of weakness, walking disability, etc., were recorded. The total score of complaints was further classified as *excellent, good, fair* or *bad*. For the assessment of the *objective findings* existence of effusion, range of motion, tenderness on palpation, instability, the thigh girth, and other signs were recorded, and the examined knees were classified either as *normal* or *with objective findings*. Finally, for the estimation of the *roentgenological signs* the radiographies of the operated and the non-operated knee of the same patient were compared, and the operated knees were allocated into four groups, i.e. *normal knees* (O), knees with *initial osteoarthritis* (I), *pronounced osteoarthritic knees* (II) and such with *severe osteoarthritic changes* (III).

RESULTS

As seen in Table 1, only one out of the 23 patients subjected to total meniscectomy reported subjective complaints from the operated knee. Fourteen patients considered the end-results of the operation as excellent and 8 patients were satisfied.

Table 2 shows that only two patients were allocated to the group with objective clinical findings.

The results of the roentgenological evaluation are shown in Table 3. One knee had severe osteoarthritis, but in this case the same degree of changes had existed before the operation. Another knee was allocated into the group with pronounced osteoarthritis. In 21 cases there were no osteoarthritic changes or only signs of initial osteoarthritis.

Thirteen of the investigated cases had an observation period between 4–13 years. In 8 patients the observation period was 14–23 years. Two patients were operated more than 23 years ago. The shortest observation period was 6 years and the longest 31 years.

Differences in the observed results in relation to the sex of the patients, in relation to which meniscus had been operated, and in relation to the age at the time of operation were too small and therefore not worth being mentioned.

The gangliectomized patient available for examination was a male with no roentgenological changes and only slight subjective complaints of type "Good". He had no objective clinical findings.

Table 1. Total meniscectomies in cases of ganglion distributed into groups of subjective complaints correlated with the age at operation.

M = males, F = females.

Operated meniscus	Age at operation	Excellent		Good		Fair		Bad	
		M	F	M	F	M	F	M	F
Medial	Under 41 years	3	0	1	0	0	0	0	0
	Over 41 years	1	0	1	0	0	1	0	0
Lateral	Under 41 years	5	2	3	3	0	0	0	0
	Over 41 years	2	1	0	1	0	0	0	0
Total		11	3	4	4	0	1	0	0

Table 2. Objective findings at follow-up correlated with age at operation in meniscectomized ganglion-knees.

M = males, F = females.

Operated meniscus	Age at operation	Normal		With findings	
		M	F	M	F
Medial	Under 41 years	4	0	0	0
	Over 41 years	1	1	0	0
Lateral	Under 41 years	6	5	2	0
	Over 41 years	2	2	0	0
Total		13	8	2	0

Table 3. Because of ganglion meniscectomized knees distributed into different groups of roentgenologic osteoarthritis with regard to age at operation.

M = males, F = females.

Operated meniscus	Age at operation	Group 0		Group I		Group II		Group III	
		M	F	M	F	M	F	M	F
Medial	Under 41 years	4	0	0	0	0	0	0	0
	Over 41 years	1	0	0	0	0	0	0	1
Lateral	Under 41 years	5	5	2	0	1	0	0	0
	Over 41 years	2	0	0	2	0	0	0	0
Total		12	5	2	2	1	0	0	1

DISCUSSION

The importance of trauma as an aetiologic factor for the development of a ganglion in the semilunar cartilage of the knee joint has been stressed by earlier authors and by Horisberger as late as 1959. The predominant opinion at the present time is, however, that the ganglion of the semilunar cartilage develops on a degenerative basis of the meniscus (Travaglini & Thurner 1957, Ruszkowski 1958, Mussnug & Sandforth 1959, Jonasch 1964, Ricklin et al. 1971). The opinion has also been held that the ganglion must be considered as a tumor of the semilunar cartilages (Albert & Keller 1953, Bechtoldt & Staerk 1960).

In the present material the development of the ganglion was suspected to be connected to trauma in only 9 or 25 per cent of the cases, whereas in the remaining cases it was probably due to degenerative changes of the semilunar cartilage of the knee joint.

In this material, as in several other reports, the majority of cases concerned patients in the age group 20–30 years or with a mean age of about 30 years (Bussebaum 1950, Bonnin 1953, Horisberger 1959). Contrary to this, Becton (1965) reported that most of his cases belonged to the age group 41–50 years. The ratio females to males found in this series corresponds with the ratios given by other authors, as for example Horisberger (1959) 1 : 3.1 and Mohing (1966) 1 : 1.1.

In some reports ganglia were localized only to the lateral meniscus (Platt 1930, Bussebaum 1950, Ritchie 1966). In Ruszkowski's (1958) series the ratio medial to lateral meniscus was 1 : 15.3. Sjövall (1942) and Becton (1956) reported ratios corresponding to that found in this investigation, namely 1 : 1.4.

Böhler (1956) reported that ganglion was always combined with rupture of the meniscus. Platt (1930) also reported combined rupture and ganglion in all his cases, where a bucket-handle rupture was always found. Contrary to these reports, Bussebaum (1950) had no rupture in 27 cases with meniscus-ganglion. Jakoby (1954) reported that a rupture was found in 9.5 per cent of his cases. The frequencies of combined ganglion and rupture of the meniscus reported by Sjövall (1942)—17 per cent—and by Horisberger (1959)—38 per cent—are in closer agreement with the frequency observed in this material.

Regarding the treatment of the ganglion of the semilunar cartilage of the knee joint, total meniscectomy is generally agreed to be the method of choice. Even authors who recommend a partial meniscec-

tomy for the treatment of a ruptured meniscus (Böhler 1956, Jonasch 1964), consider total meniscectomy as the most adequate treatment for meniscus-ganglion. Among the reasons for this attitude, the most important is the high frequency of recurrence of the ganglion after only gangliectomy. A frequency of recurrence as high as 30 per cent has been reported by Sonnenschein (1952). Another reason supporting total meniscectomy is that a ganglion of the meniscus can often be combined with the presence of a rupture. However, the opposite attitude regarding the operative treatment of the meniscus-ganglion, i. e. gangliectomy alone, has also been advocated, as for instance by Ott (1936) and Idelberger (1960). Mohing (1966) observed different degrees of osteoarthritis in all cases after total meniscectomy, whereas the frequency of recurrence of the ganglion after gangliectomy alone was in his material only 15 per cent.

Reports regarding the late results after operative treatment of ganglion of the semilunar cartilages of the knee joint are very few. According to Bonnin (1953) the prognosis after removal of the cartilage is "uniformly excellent". Jakoby (1954) found in 90 per cent "excellent" results after meniscectomy.

The results of the present follow-up study are as good as the above-mentioned results. They give no support to the view that total meniscectomy in cases of meniscus-ganglion of the knee joint should deteriorate the end-results (Mohing 1966).

After meniscectomy because of ganglion the frequency of roentgenologic osteoarthritis is 8.5 per cent compared with 10.5 per cent osteoarthritis after removal of ruptured semilunar cartilages (Appel 1970).

S U M M A R Y

Among 718 patients operated upon by partial or total meniscectomy, surgery was performed in 36 cases because of a ganglion of the semilunar cartilages. Twenty-four of these could be traced for a follow-up investigation. In 23 cases a meniscectomy was performed, in one case only a gangliectomy. The late results in these cases were as good as in other reports, and the frequency of roentgenologic osteoarthritis about the same as after meniscectomy because of rupture of the semilunar cartilage of the knee joint.

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Correspondence to:

Dr. Helge Appel
Orthopaedic Clinic
Umeå Hospital
S-901 85
Umeå
Sweden