CYSTS OF THE MEDIAL MENISCUS

ARTHROSCOPIC DIAGNOSIS AND MANAGEMENT

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We report the clinical and arthroscopic findings in 20 cases of medial meniscal cyst with a mean follow-up of 20 months. These were studied prospectively from a series of 7435 knee arthroscopies in which there were 1246 stable non-arthritic knees with medial meniscal tears.

The diagnosis on referral was incorrect in seven, and incomplete in seven. There was coexistent meniscal injury in 17 (85%), but in the other three no tear was visible at arthroscopy. Ten knees had additional intra-articular abnormalities. Treatment of the cyst was by open resection in 12 and arthroscopic evacuation at meniscectomy in seven. In one case the cyst resolved after arthroscopic partial meniscectomy alone. Meniscal tears were treated by arthroscopic partial medial meniscectomy.

Medial meniscal cysts are an important but under-diagnosed cause of knee pain and are frequently related to arthroscopically diagnosable and treatable meniscal pathology. Treatment should be directed towards both the meniscus and the cyst, which may require open surgery.

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Cysts of the medial meniscus are relatively rare and have not been reported in significant numbers in any arthroscopic series. Previous accounts have relied on operative findings, often as part of a review of lateral meniscal cysts. The diagnosis of coexistent meniscal pathology has also depended on open meniscectomy or on arthrography, and more recently on CT and MRI.

Clinically, the condition is frequently misdiagnosed (King 1936; Brantigan and Voshell 1943; Bonnin 1953; Gillies and Seligson 1979; Cross and Watson 1981) and Kerlan and Glousman (1988) have suggested that bursitis of the tibial collateral ligament is relatively frequent. In our series the ratio of medial meniscal cysts to medial meniscal tears in stable non-arthritic knees was 20 to 1246 or 1.6%.

PATIENTS AND METHODS

We made a retrospective study, clinically and arthroscopically, of 20 consecutive patients with a cyst of the medial meniscus seen by one surgeon (IJPH) in a total series of 7435 knee arthroscopies. Comprehensive records were kept of examination and arthroscopic findings and treatment. The diagnosis was made when a cystic process involving the medial meniscus extended beyond the meniscocapsular boundary. Menisci with entirely intra-meniscal changes were not recorded. Extra-articular cysts that were not intimately associated with the meniscus were also excluded. Eighteen of the 20 patients were available for medium-term follow-up; the other two had been followed for two and six months postoperatively. The average follow-up was 20 months (2 to 120).

RESULTS

The ages of the 20 patients ranged from 20 to 62 years (mean 35 SD 13). There were 6 women and 14 men, with 9 right-sided and 11 left-sided cysts. One patient developed identical symptoms and signs in the contralateral left knee, but this knee has not yet needed surgery. Details of each case are summarised in Table I.

Symptoms. Only two patients were unable to recall a

Table I. Details of 20 patients who presented with medial meniscal cysts

Case	Age/sex	Side	Duration of symptoms	Sport or cause	Cyst site	Meniscus tear		Cyst resection
						Type*	Site	
1	21 F	L	13 to 26 wk	Netball	Posterior	Radial	Posterior	Arthroscopic
2	37 M	L	1 yr	Squash	Posterior	HC	Posterior	Open
3	39 F	R	2.1 to 3 yr	None	Posterior	BH	Posterior	Arthroscopic
4	38 M	L	3 to 5 yr	Hurdling	Anterior	BH	Posterior	None
5	24 M	L	7 to 12 wk	Soccer	Posterior	Rim tear	Posterior	Open
6	20 M	R	2.1 to 3 yr	Aust football	Posterior	Intact		Open
7	58 M	L	Not known	None	Middle	HC	Middle	Open
8	33 M	L†	5 to 9 yr	Basketball	Posterior	HC	Posterior	Arthroscopic
9	35 M	L	3 to 5 yr	Snow skiing	Posterior	HC	Posterior	Open
10	26 M	R	3 yr	Aust football	Middle	HC	Middle	Open
11	47 M	R†	3 to 5 yr	RTA‡	Posterior	Degenerate	Posterior	Open
12	62 M	R	3 to 6 wk	None	Posterior	HC	Posterior	Open
13	27 F	L	13 to 26 wk	Fall on steps	Posterior	Degenerate	Posterior	Arthroscopic
14	25 F	R	3 wk	Netball	Middle	Intact		Open
15	35 M	R†	3 to 6 wk	Aust football	Posterior	HC	Posterior	Arthroscopic
16	20 M	L	3 to 6 wk	Aust football	Middle	Intact		Open
17	31 M	L	7 to 12 wk	Snow skiing	Posterior	BH	Posterior	Open
18	26 F	L†	7 to 12 wk	Step aerobics	Posterior	HC	Posterior	Arthroscopic
19	38 F	R	Not known	None	Posterior	IS	Posterior	Open
20	51 M	R	3 to 6 wk	Tennis	Posterior	HC	Posterior	Arthroscopic

* HC = horizontal cleavage; BH = bucket handle; IS = inferior surface split

† previous partial meniscectomy

‡ road-traffic accident

Table II. Incidence of pain and other symptoms in 20 patients with medial meniscal cysts

Pain	Number	Other symptoms	Number	Duration of symptoms	Number
None	2	None	6	0 to 3 wk	None
Dull ache	2	Locking	3	3 to 6 wk	5
Sporadic/minor	1	Giving way	2	7 to 12 wk	3
On exertion only	7	General swelling	7	13 to 26 wk	2
Continuous	8	Stiffness after exercise	3	27 to 52 wk	None
Pain on crossing legs	1			1 to 2 yr	1
Pain on squatting	4			2 to 3 yr	3
Night pain	14	Relief with NSAID*	10	3 to 5 yr	3
		Relief with local steroids	1	5 to 9 yr	1
				Not known	2

* non-steroidal anti-inflammatory drugs

definite start to their symptoms. The characteristic symptom was discomfort or aching exacerbated by exertion. Only two denied having pain; they presented with mechanical symptoms. Even when pain was continuous, exertion increased the discomfort. Night pain was frequent, being reported by 14 patients. Non-steroidal anti-inflammatory drugs had produced symptomatic relief in ten patients, partial benefit in two, and no benefit in three. One patient had not tried anti-inflammatory drugs and two could not recall their use. Mechanical and other symptoms were common (Table II).

A history of definite trauma to the knee was given by 16 patients. Four had had a prior meniscectomy. Most patients were young and enjoyed sport (see Table I), often relating their knee symptoms to a specific activity, frequently one known to stress the medial structures and medial compartment of the joint.

Table III. Types of meniscal tear associated with a cyst of the medial meniscus

Tear	Number
Horizontal cleavage, posterior horn	7
Bucket-handle, posterior horn	3
Horizontal cleavage, mid-meniscus	2
Degenerate complex, posterior horn	2
Rim posterior horn	1
Inferior surface, posterior horn	1
Radial, posterior horn	1
None	3

The presumptive diagnosis of the referring general practitioner was medial meniscal cyst in only six patients, the most common being medial meniscus tear. The notes of the four who had had prior arthroscopic partial medial meniscectomy were available.

Examination. Preoperative examination always showed medial joint line tenderness. Rotary testing and McMurray's test gave positive signs of meniscal tear in 15 patients (75%).

A definite medial swelling was present in 16 patients; this was permanent in 11 and intermittent in 5. In the former group it was slowly increasing in size and ranged from 0.5 to 4 cm in diameter. Ten were tender. All five joint lines were tender in the group with intermittent swelling.

Operation. The type of meniscal tear was recorded at the time of arthroscopy (Table III). Each meniscus was carefully probed on its superior and inferior surfaces, and the meniscosynovial junction tested. Fifteen of the torn menisci had tears in the posterior third of the meniscus. In the three patients with intact menisci the cysts were removed separately by an open procedure after the

arthroscopy. The relation between the sites of the tears and the cysts is given in Table IV.

Twelve cysts were treated by open resection and seven by arthroscopic evacuation. One was not removed. The seven cysts which were amenable to arthroscopic breakdown and evacuation after prior partial meniscectomy were analogous to the more usual lateral cyst. The 12 requiring open removal were mostly seen early in the series; at that time open removal was considered preferable. The other reasons were large cyst size, or close relationship to the medial collateral ligament which indicated that capsular or ligament repair might be required.

One patient had an anterior cyst, less than 2 cm in diameter, apparently fixed to the joint line. On arthroscopy this patient had a bucket-handle tear of the posterior half of the medial meniscus, and a cyst that was not decompressible arthroscopically. The meniscal tear

Table IV. Relation between sites of meniscal tears and cysts

Meniscal tear	Cyst site		
	Anterior	Middle	Posterior
Posterior	1	2	12
Mid-part	0	2	0
Intact	0	1	2

Table V. Other lesions in 20 knees with cyst of medial meniscus

	Number
Lateral meniscal tear	3
Medial synovial shelf	2
Medial femoral condylar degeneration stage 2	1
Lateral femoral condylar degeneration stage 2	1
Fat-pad impingement	1
Anterior cruciate tear	2
Posterior cruciate tear	1

was treated by arthroscopic partial meniscectomy and the cyst left alone. The cyst had reduced in size by two weeks and had resolved completely by six weeks. Eight patients had a repair of a capsular defect at the time of open excision and two also required repair of the medial collateral ligament.

Of the 16 patients with a palpable swelling preoperatively, 15 had a cyst which was in direct communication with the meniscus. The other patient is described above. All four patients without preoperative swelling were found at arthroscopy to have cysts extending from the meniscus beyond the meniscal border that could be

decompressed arthroscopically. The three intact menisci were all left in situ and none has required further surgery.

Two patients, one with a bucket-handle tear and one with a horizontal cleavage tear, both of the posterior horn, have required further arthroscopic meniscectomy for mechanical symptoms.

Other lesions. In ten of the 20 knees other lesions were diagnosed at arthroscopy (Table V). One patient had a chronic effusion associated with a reactive synovitis, and one patient had varus knee deformity. The patients with lateral meniscal tears were treated by partial arthroscopic lateral meniscectomy. The pathological medial synovial shelves were treated by arthroscopic resection and the femoral condylar changes by arthroscopic chondroplasty. The fat-pad impingement was resected arthroscopically.

a compensation case, finds that running ability is limited. Six patients reported some aching, but only after maximal athletic activity.

DISCUSSION

The term 'meniscal cyst' has been used for several different pathological and clinical entities, making comparison and evaluation of reports difficult, but an attempt has been made in Table VI.

Barrie (1979) studied surgically removed menisci and found that 7.1% of 1571 menisci contained cysts, either macroscopic or microscopic. In all, 124 of the 215 cysts were less than 1 mm in diameter and 159 were entirely within the body of the meniscus. Burk et al

Table VI. Summary of reported series which include medial meniscal cysts

Author	Type of study	Number of medial cysts	Meniscal tear (%)	Lat:med ratio	M:F ratio	Recommended treatment†		Comment
						Meniscus	Cyst	
Wroblewski (1973)	Clinical and open	129*	50*	2:8	2:2*	—	—	—
Barrie (1979)	Pathological	13	100	1:3	—	—	—	Plus 19 small cysts <10 mm
Schuldt and Wolfe (1980)	Radiological	8	100	2:6	1:6*	—	—	—
Cross and Watson (1981)	Open surgery	8	—	2:8	3*	TOM	OC‡	—
Spence and Robertson (1986)	Arthroscopic	2	—	—	—	APM	ADC‡	—
Burk et al (1988)	Radiological	9	100	—	0:2	—	—	Excluding five ganglion cysts
Parisien (1990)	Arthroscopic	3	100	7:3	1:4*	APM	ADC‡	—
Pettrons, Allaer and Jeanmart (1990)	Radiological	1	—	5	—	—	—	—
Keating et al (1991)	Arthroscopic	1	14	—	—	APM	ADC‡	—
Current series (1992)	Arthroscopic	20	85	5:5	2:3	APM	ADC/OC	—

* including lateral cysts

† TOM = total open meniscectomy; APM = arthroscopic partial meniscectomy; ADC = arthroscopic decompression of cyst; OC = open cystectomy

‡ for lateral cysts

Instability of the knee was determined both at the preoperative visit and at examination under anaesthesia. Sixteen knees were without instability. One had a grade 2 medial laxity, two others had grade 2 medial laxity in combination, in one with grade 2 ACL deficiency and in the other in combination with grade 2 PCL laxity, and one knee had grade 3 ACL deficiency.

Histology. Histological examination of removed cysts showed mild non-specific inflammation around a multi-locular cavity lined with a synovial type of epithelium, with haemorrhage in several instances. There was no suggestion of infection, neoplasia or specific chronic inflammatory changes in any of the cysts.

Follow-up. Two patients had a delay in recovery of quadriceps wasting, and one had a persistent effusion for six weeks. No recurrences were seen at an average follow-up of 20 months (2 to 120). Nineteen patients have returned to their activity level before injury. One patient,

(1988) studied the MR scans of meniscal cysts and showed that those from 0.5 to 2 cm in diameter were rarely diagnosed preoperatively. Cysts larger than 2 cm were all palpable. Ferrer-Roca and Vilalta (1980a,b) considered that intrameniscal myxoid degeneration was common and was probably a non-specific reaction to injury.

Few previous studies have stated whether the diagnosis was based on clinical findings, operative findings or a combination, or whether it was made pathologically or clinically.

Studies which rely on clinical diagnosis underestimate the percentage of menisci with such changes (Breck 1954; Wroblewski 1973; Cross and Watson 1981). Diagnosis at open operation will include cysts smaller than those palpable clinically (Burk et al 1988).

Various inflamed bursae around the knee can simulate a medial meniscal cyst. Pes anserinus bursitis,

semi-membranosus bursitis (Lantz and Singer 1990), bursitis of the tibial collateral ligament (Brantigan and Voshell 1943; Kerlan and Glousman 1988), and popliteal cysts (McGehee and Cameron 1955) are all differential diagnoses. Kerlan and Glousman (1988) found that bursitis of the tibial collateral ligament accounted for 1% of all cases of medial knee pain presenting to their clinic. We found a 1.6% incidence of medial meniscus cyst in patients with a stable non-degenerate knee who presented with a medial meniscus tear. Of the cases of bursitis of the tibial collateral ligament, 62% improved after conservative management for one month, and 24 of the 26 who failed to improve had medial meniscal tears. We suspect that the diagnosis of bursitis of the tibial collateral ligament in association with meniscal tear is a diagnosis of medial meniscal cyst. The role of local steroid injection in medial meniscal cyst is unknown, but one of our patients gained only short-term relief for several weeks.

Ganglia are difficult to differentiate clinically from medial meniscal cyst. Some authors consider that ganglia are not associated with a meniscal tear, and hence can be separated (Burk et al 1988; Lantz and Singer 1990); we have, however, seen meniscal cysts in association with arthroscopically intact medial menisci. It is uncertain whether these menisci have internal tears or the lesions should be called ganglia.

Osteophytes present as bony, firm 'swellings' and can be seen on plain radiographs. Rarely, a meniscal flap tear may prolapse and simulate a meniscal cyst. Other less common lesions such as osteochondroma, loose body, medial collateral ligament calcification, synovitis or benign and malignant tumours may produce medial pain in association with a swelling. Synovial haemangioma (Tudisco, Conteduca and Puddu 1988) and epidermal inclusion cysts of the meniscus have been reported (Strauchen and Streffing 1982).

Clinical presentation. In our series the referring diagnosis was incorrect in six cases (30%) and incomplete when it was of medial meniscal tear in eight (40%). This suggests that clinical assessment may be difficult.

The clinical features that we recorded are similar to those published for cysts of the lateral meniscus (Bonnin 1953; Flynn and Kelly 1976; Schuldt and Wolfe 1980; Cross and Watson 1981; Seger and Woods 1986; Spence and Robertson 1986; Tudisco et al 1988; Reagan et al 1989; Parisien 1990; Lantz and Singer 1990; Keating et al 1991). Most of the patients are male (14 of 20), are young (average age 35 years), and play sport (15 of 20). Only one of our patients had bilateral cysts, and there was no significant left-right difference. None of the menisci was discoid.

A history of trauma was common, but the duration of symptoms was less than six months in only ten; the relationship between trauma and the prolonged symptoms in the others is less clear. Patients with cysts of the medial meniscus usually have a permanent tender swelling.

Associated pain is frequent, but mechanical symptoms were less common than expected and this is one reason for diagnostic difficulties. Ten patients had considerable short-term relief from non-steroidal anti-inflammatory drugs and another from a local steroid injection. No particular type of sporting activity was associated with cysts.

Type of tear. The type of tear in the medial meniscus parallels the preponderance of horizontal and radial tears in lateral meniscal cysts. Horizontal cleavage tears accounted for eight of 17, and included complex tears and inferior surface splits, both of which have a horizontal element. There was a horizontal element in 12 of the 17 meniscal tears. This is a higher proportion than in series of non-cystic tears (Aglietti, Buzzi and Bassi 1988; Cerabona et al 1988). The relationship between the sites of the meniscal tear and the cyst was usually direct, but in one case a posterior tear gave rise to an anteriorly situated cyst. The cysts in the 'intact' meniscal group were either in the mid-region (1) or the posterior region (2).

Associated lesions. Other intra-articular abnormalities were found in the medial compartment (3), the lateral compartment (4), the cruciate ligaments (3), and the fat pad (1). Instability was diagnosed in only three knees. These other abnormalities added to the diagnostic difficulties.

Treatment. A variety of treatments has been suggested for cysts and tears of the lateral meniscus. Earlier reports recommended total open meniscectomy and excision of the cyst (Cross and Watson 1981; Lantz and Singer 1990). Flynn and Kelly (1976) advised local open excision of the cyst alone when there was no associated meniscal tear. Recent reports suggest that cysts of the lateral meniscus are best treated arthroscopically (Gillies and Seligson 1979; Goodfellow 1980; Ghosh and Taylor 1987; Reagan et al 1989); the associated cyst can usually be evacuated satisfactorily.

Our results for medial cysts support a similar therapeutic approach. The high incidence of associated meniscal tears (Barrie 1979; Schuldt and Wolfe 1980; Burk et al 1988) makes arthroscopic assessment essential and, when indicated, partial meniscectomy. In seven patients with a meniscal tear and a cyst which could be probed, evacuation by arthroscope, with breakdown of the multiple loculi, has not led to recurrence. In some cases the cyst cannot be probed adequately; in our early cases it was removed by a separate open procedure.

It is uncertain whether removal of the cyst is always required after a meniscal tear has been found and treated at arthroscopy. In one of our patients in whom the meniscal pathology was posterior and the cyst anterior, the cyst was left intact and resolved over the ensuing six weeks. This suggests that the meniscal tear provides the mechanism by which the cyst is maintained; once it is removed the cyst may resolve.

By contrast, the meniscus was left intact in the group

with no arthroscopically diagnosable meniscal pathology that came to open removal of the meniscal cyst. In this group MR scanning may lead to the earlier diagnosis of intrameniscal pathology that at present is only suspected.

At present none of this group has had either recurrence of the cyst or symptomatic tearing of the meniscus. We recommend therefore that arthroscopy should still determine treatment of the meniscus.

Conclusions. Medial meniscal cysts should be considered in any patient presenting with persistent medial knee discomfort. If mechanical symptoms are absent, conservative treatment may be offered, including local steroid injection in cases with swelling, but this is likely to fail as most cysts are associated with an underlying meniscal tear.

In patients with mechanical symptoms, in those in whom conservative treatment has failed, and in those electing primary surgical management, preoperative MRI gives the best information regarding the site and size of the cyst, meniscal pathology and other coexistent knee pathology.

The primary surgical procedure should be arthroscopic partial meniscectomy along established lines for any meniscal tear and arthroscopic decompression of the cyst should be attempted with breakdown of multiple loculi.

In selected cases with small non-decompressible cysts with treated arthroscopic meniscal pathology the cyst may be treated expectantly. In large cysts that are not decompressed arthroscopically and in those with involvement of the medial collateral ligament, open cystectomy is advised.

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REFERENCES

- Aglietti P, Buzzzi R, Bassi PB.** Arthroscopic partial meniscectomy in the anterior cruciate deficient knee. *Am J Sports Med* 1988; 16: 597-602.
- Barrie HJ.** The pathogenesis and significance of meniscal cysts. *J Bone Joint Surg [Br]* 1979; 61-B:184-9.
- Bonnin JG.** Cysts of the semilunar cartilages of the knee joint. *Br J Surg* 1953; 40:558-65.
- Brantigan OC, Voshell AF.** The tibial collateral ligament: its function, its bursae and its relation to the medial meniscus. *J Bone Joint Surg* 1943; 25:121-31.
- Breck LW.** Cysts of the semilunar cartilages of the knee. *Clin Orthop* 1954; 3:29-38.
- Burk DL Jr, Dalinka MK, Kanak E, et al.** Meniscal and ganglion cysts of the knee: MR evaluation. *AJR* 1988; 150:331-6.
- Cerabona F, Sherman MF, Bonamo JR, Sklar J.** Patterns of meniscal injury with acute anterior cruciate ligament tears. *Am J Sports Med* 1988; 16:603-9.
- Cross MJ, Watson AS.** Cysts and 'pseudocysts' of the menisci of the knee joint. *Aust NZ J Surg* 1981; 51:59-65.
- Ferrer-Roca O, Vilalta C.** Lesions of the meniscus. Part I. Macroscopic and histologic findings. *Clin Orthop* 1980a; 146:289-300.
- Ferrer-Roca O, Vilalta C.** Lesions of the meniscus. Part II. Horizontal cleavages and lateral cysts. *Clin Orthop* 1980b; 146:301-7.
- Flynn M, Kelly JP.** Local excision of cyst of lateral meniscus of the knee without recurrence. *J Bone Joint Surg [Br]* 1976; 58-B:88-9.
- Ghosh P, Taylor TKF.** The knee joint meniscus: a fibrocartilage of some distinction. *Clin Orthop* 1987; 224:52-63.
- Gillies H, Seligson D.** Precision in the diagnosis of meniscal lesions: a comparison of clinical evaluation, arthrography, and arthroscopy. *J Bone Joint Surg [Am]* 1979; 61-A:343-6.
- Goodfellow J.** Editorial. He who hesitates is saved. *J Bone Joint Surg [Br]* 1980; 62-B:1-2.
- Keating JF, Muirhead A, MacMillan J, Scott PDR.** Arthroscopic decompression of meniscal cysts: report of 14 cases. *JR Coll Surg Edinb* 1991; 36:137-8.
- Kerlan RK, Glousman RE.** Tibial collateral ligament bursitis. *Am J Sports Med* 1988; 16:344-6.
- King D.** The healing of semilunar cartilages. *J Bone Joint Surg* 1936; 18:333-42.
- Lantz B, Singer KM.** Meniscal cysts. *Clin Sports Med* 1990; 9:707-25.
- McGehee FO, Cameron BM.** Large cyst of the medial meniscus of the knee joint: report of a case. *J Bone Joint Surg [Am]* 1955; 37-A:1281-3.
- Parisien JS.** Arthroscopic treatment of cysts of the menisci: a preliminary report. *Clin Orthop* 1990; 257:154-8.
- Pettrons P, Allaer D, Jeanmart L.** Cysts of the semilunar cartilages of the knee: a new approach by ultrasound imaging. *J Ultrasound Med* 1990; 9:333-7.
- Reagan WD, McConkey JP, Loomer RL, Davidson RG.** Cysts of the lateral meniscus: arthroscopy versus arthroscopy plus open cystectomy. *Arthroscopy* 1989; 5:274-81.
- Schuldt DR, Wolfe RD.** Clinical and arthrographic findings in meniscal cysts. *Radiology* 1980; 134:49-52.
- Seger BM, Woods GW.** Arthroscopic management of lateral meniscal cysts. *Am J Sports Med* 1986; 14:105-8.
- Spence KF Jr, Robertson RJ.** Medial meniscal cysts: case report and review of the literature. *Orthopedics* 1986; 9:1093-6.
- Strauchen A, Streffling AM.** Epidermal inclusion cyst of the meniscus: case report. *J Bone Joint Surg [Am]* 1982; 64-A:290.
- Tudisco C, Conteduca F, Puddu G.** Synovial hemangioma of the meniscal wall simulating a meniscal cyst: a case report. *Am J Sports Med* 1988; 16:191-2.
- Wroblewski BM.** Trauma and the cystic meniscus: review of 500 cases. *Injury* 1973; 4:319-21.