

Meniscus repair in knee ligament injuries

One hundred and fifteen primarily operated patients with medial collateral ligament tears of the knee have been reviewed. Two-thirds of the patients had associated cruciate ligament injuries.

In 59 knees, injuries of the medial meniscus were found. Suture of the medial meniscus was performed in 53 patients, while medial meniscectomy was done in only six cases.

Knee function was evaluated by follow-up after 4 (2–8) years. Excellent or good results as evaluated by the Lysholm knee score were obtained in 86 per cent of the patients, with equally good results in those with meniscus suture as compared to those without meniscus injury. No secondary meniscectomies were performed.

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Several long-term studies indicate that degenerative joint changes occur following meniscectomy (Fairbanks 1948, Jackson 1968, Tapper & Hoover 1969). Since the mid-seventies our policy has therefore been to preserve the menisci whenever possible during operative repair of acute knee ligament injuries. Peripherally detached menisci were sutured, as recommended by Hughston & Eilers (1973) and by Hughston et al. (1976).

We have compared knee function in patients with sutured medial menisci to those with similarly repaired ligament injuries without injury to the medial meniscus.

Patients and methods

During 1976–1980, a total of 130 patients was treated in our hospital by primary repair of acute knee ligament injuries including medial collateral tears. One hundred and fifteen of these were available for follow-up, and are included in our study.

The series consisted of 67 males and 48 females, aged 35 (13–69) years at injury. Nearly half of the injuries occurred in skiing accidents and one fourth in contact sports, notably soccer.

The preoperative instability in anaesthesia was tested and graded as described by Hughston et al. (1976). Valgus instability in the 20 degrees flexed knee was graded as severe (3+) in 47, moderate (2+) in 53, and slight (1+) in 15 patients.

The location of the tears within the medial collateral/capsular ligament structures was recorded (Table 1). The meniscus injury was classified as peripheral detachment if there was a capsular tear

along its periphery for at least 1 cm or a rupture in the meniscus body within 2–3 mm from the capsule. In 50 patients the medial meniscus was detached, but not dislocated. In eight it was detached and dislocated, and one patient had a major substance rupture. Fifty-six patients had no medial meniscus injury.

Two-thirds of the patients had associated total tears or avulsions of one or both cruciate ligaments. The cruciate tears were equally distributed among patients with or without meniscus injury.

All ruptured ligaments were sutured. The cruciate ligaments were repaired by the Palmer technique (Strand et al. 1984), while cruciate avulsions with bone fragments from the tibia were repaired with screws or cerclage. When repairing the medial capsular tears, the detached menisci were sutured by the same set of U-sutures to bone. Great care was taken to avoid abnormal buckling of the menisci. Non-resorbable suture materials were used. Re-attachment of the medial meniscus was performed in 53 patients, while medial meniscectomy was performed in six patients. Four additional lateral menisci were sutured, and four removed.

The knee was immobilized in a plaster cast for 6 weeks, after which mobilization and gradually increasing weight-bearing were instituted.

Table 1. Location of ligament tears within the medial compartment in 115 knees

Ligaments torn	Per cent
Menisco-femoral	78
Menisco-tibial	36
Posteromedial capsula	62
Superficial collateral	79

Follow-up

The patients were reviewed 4 (2–8) years after the operation. The physical examination included evaluation of static stability by manual testing. Varus-valgus and antero-posterior stability in 90 degrees flexion was tested and graded as described by Hughston et al. (1976).

Antero-posterior stability in extension was evaluated by the Lachman test (Torg et al. 1976), while antero-lateral rotatory instability (ALRI) was assessed by the Slocum test (Slocum et al. 1976).

Specific symptoms related to the grade of activity in which they occurred were noted. The functional results were assessed by the Lysholm knee scoring scale (Lysholm & Gillquist 1982). Other symptoms not included in the score system, notably catching or locking, were analyzed separately.

The results were analyzed statistically, using Student's tests, and the Mann-Whitney and the Fisher exact probability tests.

Results

The mean knee score value was 91 ± 12 with 99/115 knees excellent-good (Table 2). No difference was revealed between score values in the group with no meniscus injury (90 ± 13) and the group with meniscus suture (92 ± 11). The score in the six patients with medial meniscectomy was 83 ± 19 as compared to 91 ± 12 in the 109 patients with preserved medial menisci (n.s.).

No secondary meniscectomies or ligament reconstructions had been performed during the follow-up period. Only one patient reported intermittent locking of the knee. Another six patients, equally distributed in the groups with no meniscal injury and with sutured meniscus, reported catching sensations indicating patellofemoral dysfunction.

By manual testing of static stability to valgus stress in 20 degrees flexion, 59 knees were found to be stable, 47 had slight instability (1+), and nine moderate (2+) instability. The nine patients with a 2+ valgus instability had lower knee score values (74 ± 21) compared with stable knees (92 ± 10) ($p < 0.001$).

Eighteen knees with antero-lateral rotatory instability, three of which also had moderate anteromedial instability, obtained lower values (79 ± 16) than 97 patients without this instability (93 ± 10) ($p < 0.001$).

Table 2. Functional results related to status of medial meniscus. Group A: No injury. Group B: Meniscus suture. Group C: Medial meniscectomy

Grading (Lysholm knee score)	Number of patients		
	Group A	Group B	Group C
Excellent (92–100)	36	38	3
Good (77–91)	12	9	1
Fair (62–76)	5	5	1
Poor (<62)	3	1	1
Total	56	53	6

Discussion

Our study indicates that preservation of the medial meniscus is possible in the majority of knees with medial collateral tears, even when associated with cruciate tears. This is in accordance with the findings of Price & Allan (1978), and represents a considerably higher frequency of preserved menisci than that reported by Hughston & Barrett (1983).

Inferior functional results after medial meniscectomy during repair of acute ligament injuries have been reported by other authors (Lysholm et al. 1982, Balkfors 1982, Hughston & Barrett 1983, Odensten et al. 1984). Although the mean score in our six patients with medial meniscectomy was lower than in those with preserved menisci, this was not significant, probably due to the small number of meniscectomies in our series.

The exact status of the sutured menisci at follow-up was not evaluated; arthroscopy was not performed. The good functional results obtained, however, indicate healing and normal function of the sutured menisci in the majority of our patients.

The frequency of diagnosed lateral meniscus injuries in our series was considerably lower than that reported by Lysholm et al. (1981). However, some such injuries may have escaped diagnosis in the anteromedial operative approach used in this series.

The value of operative treatment of even major isolated tears of the medial collateral ligaments has been questioned; good results have been reported after conservative treatment (Indelicato 1983). A substantial number of peripherally detached menisci may heal

without suture. We thus cannot claim to have preserved the menisci by our policy of primary operative treatment of knee ligament injuries. Our study shows, however, that if a primary operative approach is chosen, preservation of the menisci is usually possible.

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