MENISCECTOMY FOR TEARS OF THE MENISCUS COMBINED WITH RUPTURE OF THE ANTERIOR CRUCIATE LIGAMENT

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A group of 40 patients with unstable knees due to a combination of a meniscal tear with a rupture of the anterior cruciate ligament was studied to assess the effects of treatment by meniscectomy alone. The results were assessed both subjectively and objectively, but emphasis was placed on the symptoms rather than the physical signs of instability. Meniscectomy alone cured the symptoms of instability in 22 of the patients and a further eight required no further surgical treatment; bucket-handle tears were associated with a good result and posterior-horn tears with a poor result. The remaining 10 patients later underwent an additional procedure to reconstruct the ligament because of persisting symptoms. It was concluded that in patients with this combined lesion the torn meniscus should be dealt with first. In young patients with a posterior-horn tear it would be justifiable to perform a ligamentous reconstruction at the same time as the meniscectomy.

An unstable knee containing both a ruptured anterior cruciate ligament and a torn meniscus is a common clinical problem. Patients with this double lesion have been included in reports of reconstruction procedures of the anterior cruciate ligament, and the torn meniscus has been excised at the same operation (Jones 1970; Galway, Beaupré and MacIntosh 1972; Insall et al. 1981). Experience has shown, however, that in some of these patients meniscectomy itself is enough to cure the symptoms of instability even though the signs of insufficiency of the anterior cruciate ligament remain unchanged. Furthermore, it has been shown that many patients with anterolateral instability are able to participate in competitive sport without having to undergo surgical treatment (McDaniel and Dameron 1980). Thus, in patients with the double lesion it may be difficult to decide which of the two components is primarily responsible for the symptoms and the surgeon may be reluctant to perform an additional reconstruction procedure if he feels there is a chance that meniscectomy alone will be enough. Since there are no reports in the literature dealing specifically with this problem treatment must inevitably be by trial and error.

The aim of this investigation was to find ways of distinguishing between those patients who were likely to get relief of symptoms after meniscectomy alone and those who would also require reconstruction of the anterior cruciate ligament.

MATERIALS AND METHODS

Patients were considered for the investigation if the principal symptom at presentation was instability and if a ruptured anterior cruciate ligament and torn meniscus were later confirmed at arthroscopy. Those who subsequently underwent meniscectomy alone were selected. Forty patients, with a mean age of 28 years (range 14 to 51 years) at the time of operation, satisfied these criteria. There were 32 men and eight women. All were treated by one of the authors (ELT) between 1965 and 1980 at the Royal National Orthopaedic Hospital, Stanmore, following referral either from a general practitioner or from the casualty department of the hospital. The mean time from injury to presentation was 3.3 years. The mean time between meniscectomy and review was five years (range 1 to 13 years).

The commonest sporting activity associated with this combined lesion was association football (19 patients), the remaining lesions being due to other sports (16 patients) and to a variety of falls. Symptoms, apart from instability, included episodes of locking in nine patients, all of whom had a bucket-handle tear of their meniscus, and intermittent pain and swelling in a third of all cases. A previous meniscectomy had been performed on the same knee in three patients.

Examination revealed signs of insufficiency of the anterior cruciate ligament in all of the patients. In four of them, slight laxity of the medial collateral ligament was also noted. The meniscal tear was suspected clinically in two thirds and in the majority of patients was confirmed by arthrography, or arthroscopy, or a combination of the two if there was any doubt about the diagnosis (Ireland, Trickey and Stoker 1980).

At operation rupture of the anterior cruciate liga-

ment was confirmed and the type of meniscal tear was recorded. Complete meniscectomy using a scalpel and

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Smillie's knives was performed through a parapatellar incision for all the posterior-horn, transverse and anterior-horn tears, and half of the bucket-handle tears. Partial meniscectomy leaving a peripheral rim was carried out on the remaining bucket-handle tears. A second incision was required for complete removal of two difficult tears of the posterior horn. In two patients both menisci were torn in the same knee and both menisci were excised.

The routine after operation consisted of physiotherapy to maintain quadriceps function and to facilitate mobilisation. Complications of the operation were minimal and did not prejudice the final result. Outpatient follow-up continued for a minimal period of six months but was prolonged in those patients who still complained of instability so that the need for further operation could be regularly assessed. Ten of the patients required an additional procedure to reconstruct the ligament because of persisting symptoms of instability. The mean interval between operations was 11.3 months.

Assessment. Of the 40 patients reviewed, 36 were examined personally by one author (FWNP) and the remaining four were assessed from case notes. A detailed history was taken in order to grade the subjective disability that had existed before operation using the criteria described by Ireland and Trickey (1980). Patients were then asked to state how their symptoms had been affected by the meniscectomy and were regraded accordingly. Objective assessment was based on a demonstration of insufficiency of the anterior cruciate ligament using Lachman's sign (Torg, Conrad and Katzen 1976) and the jerk test (Slocum et al. 1976), applying the objective grading system of Ireland and Trickey (1980). Useful comparison with the pre-operative assessment of insufficiency of the anterior cruciate ligament was not possible in all patients, due to the relatively short time that the tests had been in general use and the fact that some patients had undergone further operations before the review. Nevertheless, it was clear that the correlation between objective physical signs and subjective symptoms of instability was poor, in that those with gross signs did not necessarily complain. Consequently in the final assessment of the effects of meniscectomy emphasis has been placed on the symptoms rather than the signs. A good result therefore indicated that the symptoms had either been resolved completely or improved to the patient's satisfaction; a fair result meant that the patient, although unsatisfied, was able to accept whatever residual symptoms remained; and a poor result included all those who had undergone an additional ligamentous reconstruction or were on the waiting list to do so.

RESULTS

The different types of meniscal tear found at operation are shown in Table I. The overall results of meniscectomy using the above criteria are set out in Table II. Among those with a good result were eight patients who were able to return to playing competitive association or rugby football, although only three reached their original standard. The other athletes in this group were all able to play their chosen sport to their satisfaction. It was of interest to note that the two patients who had undergone excision of both menisci were included in the good results. Out of the whole series only one patient noticed an increase of instability following meniscectomy. He later underwent a reconstruction procedure.

In an attempt to identify features in common that could permit prediction of the likely response to meniscectomy alone, a further analysis of each group was made with regard to the types of meniscal tear (Table III), age and sporting inclination of the patients.

Table I. Description of the types of meniscal tear

<table>
<thead>
<tr>
<th>Meniscal tear</th>
<th>Number of patients</th>
<th>Meniscus involved</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Medial</td>
</tr>
<tr>
<td>Bucket-handle</td>
<td>22</td>
<td>20</td>
</tr>
<tr>
<td>Posterior-horn</td>
<td>16</td>
<td>13</td>
</tr>
<tr>
<td>Anterior-horn</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Transverse</td>
<td>1</td>
<td>1</td>
</tr>
</tbody>
</table>

Table II. Overall results of treatment by meniscectomy alone on the symptoms of instability

<table>
<thead>
<tr>
<th>Result</th>
<th>Number of patients</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Good</td>
<td>22</td>
<td>55</td>
</tr>
<tr>
<td>Fair</td>
<td>8</td>
<td>20</td>
</tr>
<tr>
<td>Poor</td>
<td>10</td>
<td>25</td>
</tr>
</tbody>
</table>

Table III. Correlation between the predominant types of meniscal tear and the results of meniscectomy

<table>
<thead>
<tr>
<th>Result</th>
<th>Bucket-handle tear</th>
<th>Posterior-horn tear</th>
</tr>
</thead>
<tbody>
<tr>
<td>Good</td>
<td>18</td>
<td>3</td>
</tr>
<tr>
<td>Fair</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Poor</td>
<td>2</td>
<td>8</td>
</tr>
</tbody>
</table>

Good result. Bucket-handle tears accounted for the majority (82 per cent) of the meniscal lesions of this group. Of the three patients with posterior-horn tears, two had given up sport due to advancing age and pressure of work respectively; the third, a 26-year-old man, had excellent quadriceps development and was able to play association football at county level. The anterior-horn tear was included in this group. The mean age at operation was 30 years.

Fair result. This group comprised three bucket-handle tears, four posterior-horn tears, and included the transverse tear. All had noticed some improvement which was
commonly described as a "feeling of more confidence" in the knee. By regular quadriceps exercises, changing to a less physical sport, and learning to guard the unstable knee at moments of risk, they were able to get by without further treatment. The mean age at operation was 28 years.

**Poor result.** Posterior-horn tears were present in eight (80 per cent) of these patients. The other two patients with a poor result had bucket-handle tears; one in a 27-year-old man with poorly developed quadriceps, despite intensive physiotherapy, who had a grossly positive jerk test, and the second in a man of similar age in whom no explanation could be found. The mean age of this group at operation was 24 years.

**DISCUSSION**

Trickey (1978) drew attention to the fact that the commonest cause of knee instability is a meniscal tear, and recommended that such frank tears should be treated before the more complicated procedures are tackled. The results of this investigation support this view and emphasise the difficulties involved in assessing the results of reconstruction procedures of the anterior cruciate ligament if meniscectomy has been performed at the same time.

From our results it is possible to predict with reasonable accuracy that a patient aged 30 years or over with an unstable knee with signs of insufficiency of the anterior cruciate ligament and a bucket-handle tear of the meniscus will get a good result from operation on the meniscus only. Patients nearing the end of their sporting careers may be able to compensate for any residual symptoms that follow meniscectomy for other types of tear by maintaining the tone of their quadriceps and settling for less rigorous sports, so that a "wait-and-see" policy would be reasonable. Smillie (1978) has pointed out that it is rarely helpful continually to remind the keen sportsman recovering from meniscectomy that his anterior cruciate ligament is still ruptured.

A poor result from meniscectomy alone may be expected from the athlete who is under 25 years of age and has a posterior-horn tear of the meniscus. An early reconstruction procedure would seem to be fully justified in this type of patient and it would be convenient to combine both operations under one anaesthetic.

In contrast to the view expressed by Ellison (1980) but in agreement with Kennedy, Weinberg and Wilson (1974) removal of the meniscus did not lead to increased instability in the majority of the patients in this study. The one exception was a 26-year-old footballer with detachment of the posterior horn of the medial meniscus and the reason for deterioration was not explained.

Discrepancy between the degree of symptoms and the physical signs observed in patients with insufficiency of the anterior cruciate ligament has been reported previously (Ireland and Trickey 1980). The explanation is not clear and probably involves a number of factors, quadriceps function being the most important. We agree with Galway et al. (1972) that additional laxity of the medial structures is uncommon in patients with anterolateral instability. Our patients with mild symptoms in the presence of gross physical signs all had well-developed quadriceps muscles on the affected side. Quadriceps hypertrophy was frequently observed in those who had made a successful return to top-class sport after meniscectomy.

**REFERENCES**


