AN ANALYSIS OF THE LATE EFFECTS OF TRAUMATIC POSTERIOR DISLOCATION OF THE HIP WITHOUT FRACTURES

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The long-term results of 74 cases of simple traumatic dislocation of the hip are reported and the effects of the cause of dislocation and of the occupation and age of the patient on the prognosis are assessed. The average follow-up was 14.65 years. Contrary to the widely held view that there are no long-term complications of this injury, we found that, overall, 24 per cent of the dislocated hips went on to develop osteoarthritis. The incidence was highest in manual workers with 37.5 per cent of miners injured in car accidents developing osteoarthritis compared with only 20 per cent of the sedentary workers. The incidence of osteoarthritis in miners injured in pit accidents was 45 per cent compared with only 17 per cent for those involved in motor cycle accidents. These differences could be due to continued heavy work after the accident rather than to any difference in the violence of the initial injury. The incidence of osteoarthritis was highest in patients aged between 31 and 40 years and, as expected, was found to increase with length of follow-up.

Traumatic posterior dislocation of the hip without fracture has been considered an injury which once treated successfully has no short-term or long-term complications (Wainwright 1966; Nicoll 1967). This view has not been contradicted in the literature until 1981 when we reported the findings of a review of the long-term results of traumatic posterior dislocation of the hip (Upadhyay and Moulton 1981); in this series, which considered the whole range of posterior dislocations of the hip from simple dislocations to the severe grades of fracture-dislocation (excluding “central dislocation”), there were 53 cases of simple dislocations and these surprisingly showed long-term complications. These cases form the basis of the present paper in which we analyse the long-term results of simple dislocations in greater detail as we felt that the unexpectedly high rate of complication should be substantiated. In this study particular attention was given to the cause of dislocation and its effect on the prognosis. Mr E. A. Nicoll has encouraged us throughout and the earlier cases in this series were under his care and formed the basis of his paper published in 1967.

MATERIAL AND METHOD

We studied 74 patients with simple dislocation of the hip who presented between 1936 and 1978. The average follow-up was 14.65 years (range 4 to 30 years). There were 58 males and 16 females, with an average age at dislocation of 29 years (range 12 to 61 years). Fifty-one of the 53 cases who had been reported in our previous paper were included, two having been excluded because of insufficient follow-up. Two further cases from the Mansfield group of hospitals and 21 cases from a Chesterfield hospital were also included in the review. All patients had unilateral dislocation and had received similar treatment. The 74 hips studied had all been classified previously as Grade 1 using the system devised by Thompson and Epstein in 1951; Grade 1 is defined as dislocation without fracture or dislocation with a minimal chip fracture of the posterior acetabular rim.

All the patients were reviewed clinically and radiographically and their hips classified as excellent, good, fair or poor, based on the system described by Stewart and Milford (1954) and expanded by Epstein (1974). The four groups were as follows:

Excellent. The hip returned to normal with a full free range of movement; there was no complaint of pain, weakness or fatigue; and the radiograph revealed no narrowing of the joint space, vascular changes or arthritis.

Good. The patient had no appreciable pain or limp except after a long day of hard work and weight-bearing, and no more than 25 per cent restriction of movement. The radiographs might show minimal arthritic changes, but no evidence of avascular necrosis or narrowing of the joint space.

Fair. The patient had mild to moderate pain, a moderate limp, 25 to 50 degrees restriction of movement, and no adduction deformity. The capacity to work although curtailed was still adequate for maintaining a light job. Moderate arthritic changes and the formation of osteophytes with mild to moderate narrowing of the joint spaces were demonstrated radiographically.

Poor. The patient had pain, a limp, and moderate to extreme limitation of movement with or without an adduction deformity. An occupation which required walking or standing was not possible. Radiographs revealed one or more of the following: advanced arthritis, avascular necrosis of the femur, marked or pronounced narrowing of the joint space, cyst formation, or sclerosis of the acetabulum.

In addition to classifying the results into the four groups we asked specific questions regarding work and social activity before and after injury.

RESULTS

The overall results of review could be broadly classified into satisfactory (excellent and good) and unsatisfactory (fair and poor). Fifty-six hips were satisfactory (43 excellent, 13 good) and 18 unsatisfactory (8 fair, 10 poor).
Table I. The long-term results in 74 patients related to the cause of dislocation of the hip

<table>
<thead>
<tr>
<th>Aetiology</th>
<th>Results</th>
<th>Avascular necrosis (number of patients)</th>
<th>Incidence of osteoarthritis (per cent)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Total</td>
<td>Excellent</td>
<td>Good</td>
</tr>
<tr>
<td>Car accidents</td>
<td>33</td>
<td>20</td>
<td>5</td>
</tr>
<tr>
<td>Motorcycle accidents</td>
<td>18</td>
<td>10</td>
<td>5</td>
</tr>
<tr>
<td>Pit accidents</td>
<td>11</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Falls or falling objects</td>
<td>10</td>
<td>8</td>
<td>0</td>
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<tr>
<td>(excluding pit accidents)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sport</td>
<td>2</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>TOTAL</td>
<td>74</td>
<td>43</td>
<td>13</td>
</tr>
</tbody>
</table>

All the hips classified as unsatisfactory developed osteoarthritis giving an overall incidence of 24 per cent. Six hips developed avascular necrosis within three years of injury and if these were excluded the incidence of osteoarthritis was 16 per cent.

We analysed the results with regard to the cause of injury and found that the late complication of osteoarthritis was not evenly distributed amongst the aetiological groups (Table I). The highest incidence of osteoarthritis was amongst the miners, not only those who had been involved in mining accidents (45 per cent incidence) but also amongst those miners who had dislocated their hip in a car accident (37.5 per cent incidence). The overall incidence of osteoarthritis in patients who had had a car accident was 24 per cent, and the incidence for nonmanual workers was 20 per cent. The number of cases of avascular necrosis was highest in hips dislocated in car accidents.

The results were divided into five-year intervals of follow-up and the incidence of osteoarthritis was found to increase with time (Table II).

The majority of dislocations (31 out of 74) occurred in patients aged between 16 and 30 years (Table III). The maximal incidence of osteoarthritis (38 per cent) was found in patients aged between 31 and 40 years, with lesser incidences in patients aged between 16 and 30 years (26 per cent) and between 41 and 60 years (25 per cent). Patients aged under 15 years had a low incidence of osteoarthritis (9 per cent) and the elderly seemed to escape this complication altogether.

The initial complications of the injury had been six cases of avascular necrosis, two cases of sciatic palsy and two cases of missed diagnosis in patients with severe head injuries; the latter two were reduced within 10 days but later developed avascular necrosis.

DISCUSSION

In the past, the literature has given the impression that simple dislocation of the hip without fracture gave no long-term complications (Hunter 1969; Epstein 1974). However, in a previous review by two of the present authors (Upadhyay and Moulton 1981) it was apparent that simple dislocation did have a long-term incidence of osteoarthritis but seemingly not as severe as the incidence in fracture-dislocations. We, therefore, gathered more cases of simple dislocation and studied them in greater detail to investigate the incidence of osteoarthritis further. Fifty-six of the 74 cases were considered satisfactory (excellent or good) and 18 unsatisfactory (fair or poor). There was a clear division between the two main groups clinically as well as radiographically with 18 out of 74 hips developing osteoarthritis (24 per cent). Only the unsatisfactory hips had osteoarthritis, but even those classified as satisfactory did not have perfect function as patients who had a good result had the occasional ache or experienced discomfort after prolonged walking or exercise.

The long-term incidence of avascular necrosis occurred at the predicted level of eight per cent; an incidence of 10 per cent had been reported by Nicoll in
The incidence of osteoarthritis increased with age reaching a maximum in patients aged between 31 and 40 years; surprisingly, patients aged between 41 and 60 years were relatively spared osteoarthritis. We felt that after 30 years of follow-up the significance of osteoarthritis was difficult to assess due to its natural occurrence in people over the age of 60 years in the normal population.

We found that avascular necrosis occurred in simple dislocations at the same rate as in fracture-dislocations reported in our previous paper (Upadhyay and Moulton 1981). Initial complications, which had not previously been thought to occur, included sciatic palsy and missed dislocation in patients with severe head injuries; the latter is an ever present complication that always seems to progress to avascular necrosis regardless of the severity of the initial injury.

Due to the paucity of previous published material on the long-term effects of traumatic dislocation of the hip we have no base line with which to compare our findings, but it is our impression that if heavy work is continued after a dislocation then osteoarthritis will supervene.

We wish to thank Mr E. A. Nicoll for his enthusiastic help with our study; Mr G. C. W. Baker and Mr K. Ennis for permission to use their cases; Mr J. Roberts and Mr G. Smith, records officers, for their extensive co-operation; and our secretaries, Miss J. Parkin and Miss M. Riley.

REFERENCES


