OSTEOCHONDROMATOSIS OF THE HIP JOINT

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Osteochondromatosis of the hip joint is uncommon. The available literature published since 1900 has shown a total of 187 cases of osteochondromatosis of all joints, among which there were only twenty-two instances of involvement of the hip. The largest series is reported by Mussey and Henderson (1949), who found five examples of osteochondromatosis of the hip in a total of 105 osteochondromatoses of all joints operated on at the Mayo Clinic between 1910 and 1945. The purpose of this paper is to describe three further cases with hip joint involvement, to discuss the radiological features of the disease and to illustrate the diagnostic value of arthrography.

One patient in whom both shoulder joints were affected and another with osteochondromatosis of the knee are mentioned in this paper. The distribution of these cases and the 187 recorded in the literature is shown in Table I.

### Table I

<table>
<thead>
<tr>
<th>Joint</th>
<th>Bilateral</th>
<th>Unilateral</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Knee</td>
<td>11</td>
<td>99</td>
<td>110</td>
</tr>
<tr>
<td>Elbow</td>
<td>3</td>
<td>33</td>
<td>36</td>
</tr>
<tr>
<td>Hip</td>
<td>2</td>
<td>23</td>
<td>25</td>
</tr>
<tr>
<td>Shoulder</td>
<td>1</td>
<td>9</td>
<td>10</td>
</tr>
<tr>
<td>Ankle</td>
<td>—</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>Carpus</td>
<td>—</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Tarsus</td>
<td>—</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Finger</td>
<td>—</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>17</strong></td>
<td><strong>174</strong></td>
<td><strong>191</strong></td>
</tr>
</tbody>
</table>

### Case Reports

**Case 1**—T. M., a man aged twenty-five years, was first seen in April 1940. He complained that for eight years he had had attacks of pain in the right hip radiating to the knee. Examination of the hip showed 30 degrees of flexion deformity, 60 degrees of flexion movement, and absence of all other movements. There was tenderness around the joint. Radiographs showed a large mass of opacities below the acetabulum, with erosion of the acetabulum and the head of the femur. The appearances were those of synovial osteochondromatosis. At operation, undertaken by Mr Philip Wiles in May 1940, about eighty loose bodies were removed.

**Case 2** (Figs. 1 to 3)—R. W., a young man aged eighteen years, was first seen in May 1946. He complained of pain in the left hip, intermittent for many years and continuous for the past eighteen months; it was worse after exertion. There was slight limitation of movement of the left hip in all directions. Radiographic examination showed many small round opaque bodies in the joint. There were marked defects at the junction of the femoral head and neck causing the neck to appear somewhat conical in shape. Operation was performed by Mr Philip Wiles. Sixty-one
Case 2. Figure 1—Osteochondromatosis of the hip joint. Note the conical appearance of the femoral neck, erosion of bone at the cervico-capital junction, and multiple opaque loose bodies. Figure 2—Tracings of comparable radiographs, to show filling in of the bone erosions after removal of the loose bodies. Continuous line: outline before operation. Broken line: outline three years after operation.

Case 2—Sixty-one osteochondromata removed from the hip.
osteochondromata were removed from the joint. The synovial membrane was found thickened and some of the bodies were embedded in it. Convalescence was uneventful. Three years after operation the clinical condition was satisfactory, and there were no symptoms; radiographs showed that bone deposited at the cervico-capital junction was making the defects in the femur appear shallower.

**Case 3** (Figs. 4 to 6)—G. W., a woman aged thirty-three years, was first seen in November 1948. She complained that for six years she had had pain and stiffness in the left hip, the pain radiating to the left knee. Examination of the left hip revealed slight flexion deformity and moderate restriction of all movements, forcing of further movement being limited by pain and spasm. A radiograph showed a faint opacity on the medial side of the base of the femoral neck. Defects were present at the cervico-capital junction, and the neck tended to assume a conical shape. There was slight narrowing of the joint. A tentative diagnosis of osteochondromatosis was made because the defects in a somewhat conical femoral neck and the small intracapsular opacity appeared, in the light of our previous experience, to be significant. Ten months later there was
no marked change in the physical signs and radiological appearances but the symptoms were sufficiently disabling to demand operative treatment. Before operation, an arthrogram was obtained after injection of diodone (35 per cent solution) into the hip joint. This showed numerous intracapsular translucent bodies. The small opacity seen on the plain radiograph was shown to be in the centre of a large translucent body.

At operation sixty-two osteochondromata were removed from the joint. Many of them were loose, but some were embedded in the synovial membrane which was moderately thickened. The bodies varied greatly in size, the largest being one inch long and half an inch across, and the smallest about one-tenth of an inch in diameter. They were composed mainly of cartilage but radiographs of the larger specimens showed a few areas of calcification.

**DISCUSSION**

Radiographs in two of these three cases showed defects at the cervico-capital junction and a femoral neck of a rather conical shape. Case 1 showed erosions of both the acetabulum and of the head of the femur. The radiographic changes were most marked in Case 2. The arthrogram in Case 3 showed that several of the osteochondromata lay in defects at the junction of head and neck and formed a corona there. The findings suggested that the loose bodies had caused pressure-resorption of bone in this region. This hypothesis is supported by the radiograph taken three years after operation in Case 2, which shows the defects to be partly filled by the deposition of new bone. A similar filling-in of bone erosions after operation was observed in a patient with osteochondromatosis of the shoulder joint (see below). The site of the erosions in the hip joint is probably determined by the characteristic distribution of the cartilaginous bodies at the synovial-cartilaginous junction (Wilmoth 1941).

Radiographic appearances similar to those described above have been reported by Brailsford (1948), who also found that further growth had occurred inside the capsule, and the lesion in the femoral neck appeared to have resolved within a year of operation for osteochondromatosis of the hip. Indentation of the femoral neck by osteochondromata was also recorded by Fairbank (1950). The radiographs published by other authors have been examined and there appear to be similar erosions in one of the cases recorded by Kartal (1930). An erosion may also be present in the case reported by Lieberman (1936). However, this feature is not mentioned by either of these authors. Erosion of the neck of the femur was noted by Freund (1937). Of the remaining seventeen cases in the literature, radiographs were not published in eight, and in seven they are not clear enough to permit a definite
opinion as to the presence of bone erosion. In two cases there were no erosions visible in the antero-posterior views.

Erosion of bone by osteochondromata of the knee has been recorded by Lexer (1907) and by Kienböck (1916-17); and in the shoulder by Hagemann (1913) and by Curr (1949). In some instances the bodies have eroded through the capsule and been found lying outside the joint. We have also seen erosions of the humerus in a female patient aged thirty-one years, first seen in June 1940, suffering from osteochondromatosis of the left shoulder; many loose bodies were removed (Fig. 7). Ten years later a radiograph showed osteoarthritic lipping of the inferior articular margin of the humerus and glenoid (Fig. 8). The erosion seen previously was no longer visible and there were no opaque loose bodies. Radiographs of the right shoulder showed five opaque loose bodies lying in the medial part of the joint (Fig. 9), and osteoarthritic lipping of the lower articular margins of the humerus and glenoid; no erosions were visible.

In a typical case the radiological diagnosis of osteochondromatosis presents no difficulty. But when there are no opaque loose bodies—as in cases recorded by Jones (1927), Freund (1937) and Fairbank (1950)—or when there are only one or two opaque bodies—as in our Case 3—arthrography is a valuable aid to diagnosis. It should assist in the differentiation of this condition from loose-body formation due to other causes such as osteochondritis dissecans. Moreover it will demonstrate the full extent of the lesion when only a few of the bodies are radio-opaque. We have recently seen a patient with osteochondromatosis of the knee joint in which there were multiple small opaque bodies posteriorly and anteriorly below the patella. The arthrogram revealed multiple translucent bodies in the suprapatellar pouch.

SUMMARY

1. Three cases of osteochondromatosis of the hip joint are described.
2. Attention is drawn to the diagnostic importance of erosions at the junction of head and neck of the femur, and the conical shape of the femoral neck.
3. Arthrography is of particular value in diagnosis when the loose bodies are radio-translucent.

We wish to express our grateful thanks to Mr Philip Wiles for his kind help and advice in the preparation of this paper.

REFERENCES


