PERTHES' DISEASE OF A SEVERE TYPE DEVELOPING AFTER SATISFACTORY CLOSED REDUCTION OF CONGENITAL DISLOCATION OF THE HIP

A REPORT OF THREE CASES

T. S. LINDHOLM, L.-E. LAURENT, K. ÖSTERMAN, O. SNELLMAN

From the Orthopaedic Hospital of the Invalid Foundation, Helsinki

A report is presented on three children, aged six, seven and nine, who developed a severe type of Perthes' disease after successful closed reduction of congenital dislocation of the hip diagnosed by the age of two years. An outstanding feature of the new disorder was acetabular dysplasia which failed to respond to varus osteotomy.

Some 2500 children with congenital dislocation of the hip were treated at the Orthopaedic Hospital of the Invalid Foundation over the period 1954 to 1974 and have been regularly followed up to the end of growth. One of us (Laurent 1953) had already observed that the vulnerability of the femoral head had often led to changes resembling Perthes' disease. In 1957 preliminary traction and adductor tenotomy was adopted as an essential part of the treatment, and from that time the incidence and severity of necrosis of the femoral head decreased markedly. Recently, neonatal diagnosis and treatment led to a remarkable change, the number of cases of established dislocation falling to between two and four a year compared with the previous average of 120. In cases developing Perthes' disease, varus osteotomy was performed whenever a tendency to subluxation was observed—a practice similar to that of other workers (Lloyd-Roberts, Catterall and Salamon 1976). Epiphysiodesis of the greater trochanter to prevent severe coxa vara was also performed in a few cases (Laurent 1959).

Over the twenty years, a severe form of late-onset Perthes' disease developed in three children who had been successfully treated for congenital dislocation of the same hip. As this occurrence had not to our knowledge been previously described, we found it appropriate to present these cases.

CASE REPORTS

Case 1. A girl, born in 1960 and the youngest of three children, started to walk at eighteen months and had a dislocation of the left hip diagnosed at the age of two (Fig. 1). She was treated conservatively by traction, closed reduction, immobilisation in plaster for eight months and then a Denis Browne splint.

Three years later, in 1963, the development of the hip appeared to be normal in every respect (Fig. 2). In 1967, however, a limp and restricted abduction were noted, and the radiograph showed Perthes' disease with a tendency to subluxation (Fig. 3).

Despite treatment in a Thomas's splint the subluxation worsened, and in 1969 a varus osteotomy with transfer of the psoas tendon to the greater trochanter was performed. To compensate for shortening, an epiphysiodesis of the opposite lower femur was also performed.

On examination in 1976, a limp and shortening of 2 centimetres were observed. The range of extension and flexion was normal, but abduction and lateral rotation were restricted. The radiograph now showed a subluxated hip with a shallow dysplastic acetabulum (Fig. 4).

Case 2. A boy, born in 1961 and the youngest of four children, started to walk at eighteen months and bilateral dislocation was diagnosed at two years. Unfortunately the first radiograph is not available. The treatment comprised adductor tenotomy and traction, followed by closed reduction, immobilisation in plaster for three months and a Denis Browne splint for nine months. In 1970, at the age of nine, the hips appeared to be normal (Fig. 5).

A year later Perthes' disease of the left hip was observed at follow-up (Fig. 6). In April 1971, a varus osteotomy was performed, and the limb rested in a Thomas's splint for a year. Dysplasia of the acetabulum developed, with subluxation of a distorted femoral head and a shortened femoral neck (Fig. 7). In 1975, a shelf operation was performed using autologous bone but with little improvement.

At the last review shortening was by 2 centimetres and rotation was moderately restricted, but the patient walked without a limp. Case 3. A boy, born in 1961 and the youngest of four children, had a dislocation of the right hip noticed when he started to walk at the age of fifteen months (Fig. 8). After traction, adductor tenotomy and closed reduction, the hip was kept in plaster for six months and then in a Denis Browne splint for another six months. In 1967, the state of the hip was good, and again in November 1970 (Fig. 9). Seven months later, in June 1971, the boy returned because of a limp and pain. Radiographs disclosed the initial stage of Perthes' disease and a slight subluxation (Fig. 10). In July 1971, a varus osteotomy was performed (Fig. 11), and in October 1973 a shelf operation. The last review in 1976 showed a slight restriction of rotation and the radiographic appearances of a moderately enlarged head of femur and a short neck (Fig. 12).
Case 1. Figure 1—Congenital dislocation of the left hip at the age of two years. Figure 2—The result of closed reduction at the age of five years. Figure 3—Perthes' disease and subluxation of the hip at the age of seven years. Figure 4—The result by the end of growth.

Case 2. Figure 5—A radiograph taken at the age of nine years, showing the result of treatment commencing at two years. Figure 6—The same hip one year later. Figure 7—The hip at the age of fourteen years.

Case 3. Figure 8—Showing a congenital dislocation at the age of eighteen months. Figure 9—The same hip at the age of nine years. Figure 10—Showing an initial stage of Perthes' disease at the age of ten. Figure 11—The state five months after varus osteotomy.
DISCUSSION

Avascular necrosis of the opposite hip appearing during treatment of a unilateral dislocation has been described by several authors (Gore 1974), and has been observed in our own department. The cases described here are very different.

Tachdjian (1972) reported that the incidence of Perthes' disease was 1 in 750 for boys and 1 in 3700 for girls. We therefore find it quite natural that an occasional child previously treated for congenital dislocation should develop this disorder. The dislocation need not play an aetiological role, though it is possible that the femoral head may have been damaged in some relevant manner during the treatment.

In our three patients, the dislocations were diagnosed by the age of two years and all were treated by closed reduction. Perthes' disease developed when the children were six, seven and nine years old, well after treatment had been considered entirely successful. The course of the Perthes' disease was much more severe than usual, the common feature being a tendency towards subluxation. This must be regarded as a secondary change because in all three cases the acetabular rim looked perfect after treatment of the dislocation. We are of the opinion that the capsule and other soft parts of the hip, primarily adapted to the dislocated position, may play an important role in the development of this subluxation.

The tendency to subluxation was not adequately controlled by the usual varus osteotomy, which was apparently performed too late in our first patient but early enough in the other two. In each case the acetabulum became shallow; in the last two cases a shelf operation was performed, with considerable improvement in the third patient. In retrospect, early Salter operations might have been more effective.

One point is clear: special attention should be paid to preventing acetabular dysplasia whenever Perthes' disease develops after the sound healing of a congenital dislocation of the same hip.

REFERENCES


