CONGENITAL LATERAL DISLOCATION OF THE PATELLA

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Congenital lateral dislocation of the patella is a rare condition caused by displacement of the extensor mechanism of the knee, which occurs before or shortly after birth (Malkin 1932). The patella is small and cannot be replaced in its normal position except by operation. This type of dislocation differs from recurrent or habitual dislocation of the patella, which occurs during childhood or adolescence and may be caused by congenital anomalies such as failure of the development of the lateral femoral condyle (Smillie 1951) or an abnormal attachment of the iliotibial tract (Ober 1939, Jeffreys 1963). Congenital dislocation may have the same etiology (Malkin 1932, Ober 1939) but must be differentiated from recurrent dislocation from congenital causes.

When the patella and extensor apparatus are permanently displaced laterally, full active extension of the knee may not be possible (Mouchet and Durand 1921, Conn 1925). It is not widely appreciated, however, that the condition may present at birth with a fixed flexion contracture of the knee. The diagnosis is difficult in infancy and secondary deformities may develop in untreated cases.

CASE REPORTS

Case 1—A boy was seen at the age of two months with a 45-degree flexion contracture of the right knee. The tibia was in slight lateral rotation relative to the femur, but the knee otherwise appeared to be normal. He had been born six weeks prematurely with a mild bilateral postural talipes calcaneo-valgus deformity. This had improved without treatment and the feet subsequently became normal. There was no family history of any knee abnormality.

As the flexion contracture persisted, hamstring tenotomy and posterior capsulotomy were done at the age of twenty-two months. A very small patella was found on the posterolateral aspect of the joint. At the end of the operation the knee could be extended fully but the contracture recurred.

A further operation was done when the child was two and a half years old. It was first confirmed that the patella was displaced laterally together with the extensor apparatus. The lateral capsule was incised longitudinally and it was then possible to place the patella in its normal position in front of the femoral condyles. The lateral half of the ligamentum patellae was transposed medially in order to maintain correction. Medial capsulorrhaphy was also done and this was reinforced by passing a strip of medial capsule round the quadriceps tendon to act as a check ligament. It was not possible to close the defect in the lateral capsule.

Histological examination of a specimen from the quadriceps showed normal muscle fibres. The leg was immobilised in a plaster cast for four weeks and he subsequently wore a caliper for a few months. Six months later he was walking without his caliper. He had full active extension of the knee and flexion to 90 degrees. Radiographs showed that the patella was not ossified.

Case 2 (Mr T. F. Stoyle’s case)—A boy of four was seen with a flexion contracture of the left knee, which had...
been noticed shortly after birth. Previous treatment had included hamstring tenotomy and serial plasters at the age of one year, but no improvement had occurred. The patella was felt to be on the lateral aspect of the joint and there was a 90-degree lateral rotation deformity of the tibia on the femur (Fig. 1). Passive extension was limited by 25 degrees.

The knee was explored and the patella was replaced in its normal position after incision of the lateral capsule. The medial part of the capsule was shortened and the whole ligamentum patellae was transposed medially after detachment from its insertion into the cartilaginous tibial tubercle. Three months after this operation the knee could be almost completely extended passively and some active extension was present.

Comment—The final results in these two patients will not be known for several years, particularly in regard to the secondary deformities. In patients with no significant deformity, operation may still be indicated to restore active extension of the knee.

Case 3—This patient was under the care of the late Mr S. A. S. Malkin in 1932 with bilateral congenital dislocation of the patellae. He was first seen at the age of twelve complaining that he "fell over backwards," presumably due to lack of extensor power at the knee. On examination the patellae were small and could be palpated on the outer aspects of the knee joints (Fig. 2). The knees could not be extended actively against gravity, and passive extension was limited by 5 to 10 degrees. At operation the dislocated patellae were reduced and the tibial tubercles were transposed medially.

When seen thirty-four years later he said that he was able to walk as far as he wished and that he had even played football after the age of thirteen. The left knee looked normal and had a full range of movement. The right knee had a slight valgus deformity and hyperextended 15 degrees. Both knees now had full active extension, and radiographs showed that the patellae were in normal position although they were still very small (Figs. 3 and 4).
 Certain developmental anomalies of the patella show a familial tendency, for example the nail-patella syndrome, which is inherited as an autosomal "dominant" (Clarke, McConnell and Sheppard 1961). A familial tendency has also been reported in congenital dislocation of the patella (Mumford 1947, DePalma 1954) and more commonly in recurrent dislocation (Moore 1930, Carter and Sweetnam 1958, Bowker and Thompson 1964). The fourth case reported in this paper adds a further example to the literature.

**Case 4**—A woman of seventy-six was seen with a painful, swollen right knee which was held in 45 degrees of flexion. Investigations proved the presence of a tuberculous infection. She also had a 30-degree flexion contracture of the left knee and small patellae were palpable on the lateral aspects of both joints (Fig. 5). She said that her knees had been "bent" for as long as she could remember but this had not prevented her from doing housework and bringing up her three children.

**FIG. 5**
Case 4—Radiograph of the left knee showing the small patella lying on the lateral aspect of the knee. The tibia is subluxated laterally. The right knee was similar but there were destructive changes due to the tuberculous infection.

**FIG. 6**

Left knee of the daughter of the patient in Case 4. She had recurrent dislocation of the congenitally small patellae.

**FIG. 7**
Figs. 6 and 7
The family history showed a strong hereditary tendency to small patellae with or without dislocation (Fig. 8). Her daughter had very small patellae and had suffered from recurrent dislocation as a child. The tibial tubercles were transplanted at the age of twelve and she now has very little disability (Figs. 6 and 7). Two of her grandsons have small patellae but their knees are symptomless.

**DISCUSSION**

The association of a flexion contracture with congenital dislocation of the patella was found in one patient reported by Goldthwaite in 1899. Mouchet and Durand (1921) described a similar case and two more were added to the literature by Stéren in 1965. Although a flexion contracture is by no means invariable there is nearly always a loss of active extension. If the extensor apparatus is sufficiently dislocated posteriorly the quadriceps muscle can act as a flexor of the knee, so that a contracture develops with secondary adaptive shortening of the posterior structures.

The diagnosis should be made as soon as possible after birth, but in practice this may not be easy. The patella can be felt in a normal infant, but only when the knee is extended. A dislocated patella is smaller than normal and may not be palpable in its lateral position until the age of three or four years. Radiographs are usually not helpful because the ossific nucleus of the patella does not appear until the age of two or three years (Pyle and Hoerr 1955), although it may be possible to see that the normal soft-tissue shadow of the extensor apparatus is not present in the lateral view. However, if a flexion contracture of the knee is present at birth congenital dislocation of the patella is the most likely cause if arthrogryposis or other gross congenital anomalies are excluded.

There are theoretical grounds for believing that operation should be carried out as early as possible, at least before the age of one year. An extensive soft-tissue procedure may first be necessary in order to regain full passive extension of the joint. A month or two later the patella is placed in its correct position by incising the lateral capsule and shortening the medial parapatellar structures. The quadriceps is then realigned by transplanting the ligamentum patellae medially, but the cartilaginous tibial tubercle should not be transferred as it may be followed by premature fusion of the anterior part of the tibial epiphysis (Harrison 1955). This occurred in Case 3.

Secondary deformities are likely to occur if treatment is delayed (Case 2). Associated genu valgum and lateral rotation deformity of the tibia (Fig. 1) have been described (Conn 1925, Stern 1964, Støren 1965) and can be related to the dynamic effect of the abnormally aligned extensor mechanism on the upper tibial epiphysis. Early operation should have the effect of avoiding these complicating deformities but it is not known at what age satisfactory
realignment can be expected to correct the existing abnormalities of epiphyseal growth or whether the patella will grow to its normal size.

In some cases congenital dislocation of the patella gives rise to remarkably little disability (Marion and Barcat 1950). However, the power of active extension can be improved by operation and this may also prevent the onset of degenerative changes in later life (Mumford 1947, DePalma 1954).

The family history may be helpful in diagnosis, and in Case 4 there was a well marked hereditary tendency. The progression from congenital dislocation in the mother to recurrent dislocation in the daughter supports the theory that congenital and recurrent dislocation of the patella have the same etiology.

**SUMMARY AND CONCLUSIONS**

1. Four cases of congenital lateral dislocation of the patella are described.
2. The significance of the associated flexion contracture is emphasised.
3. Early diagnosis and operative realignment of the extensor mechanism is considered to be important because it should avoid the secondary growth changes which can produce serious disability.

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**REFERENCES**


