

Correction of deformity after femoral birth fracture 16-year follow-up

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At birth a girl sustained a displaced femoral fracture that healed with considerable shortening and angulation. The correction by growth of the deformity was followed radiographically during the entire 16-year growth period.

During birth in the breech position, a healthy girl sustained a right-sided femoral shaft fracture (Figure 1). She was treated with a splint with the hip and knee in slight flexion. At about 2 weeks, there were respectively dorsal and lateral angulations of about 45° and 25°, as well as increased external rotation and a 3-cm shortening. A large callus had developed, and it was decided to leave the fracture without active efforts of correction.

At 4 years of age, the girl walked without a limp. The right femur was 1 cm shorter than the left one; she had a symmetric range of motion, except for slightly reduced internal rotation. The radiographs showed respectively dorsal and lateral angulations of 34° and 15°. At 9 years of age the dorsal and lateral angulations had become 25° and 10°. At 16 years of age the girl had no complaints, and no clinical deformity was seen. The radiographs showed 14° of dorsal angulation, 7° of lateral angulation, and a shortening of 1 cm. She had a symmetric range of movement except for 20° increased external rotation and 10° decreased internal rotation, corresponding to a decreased anteversion of 12°.

Discussion

Fracture of the femur during breech delivery

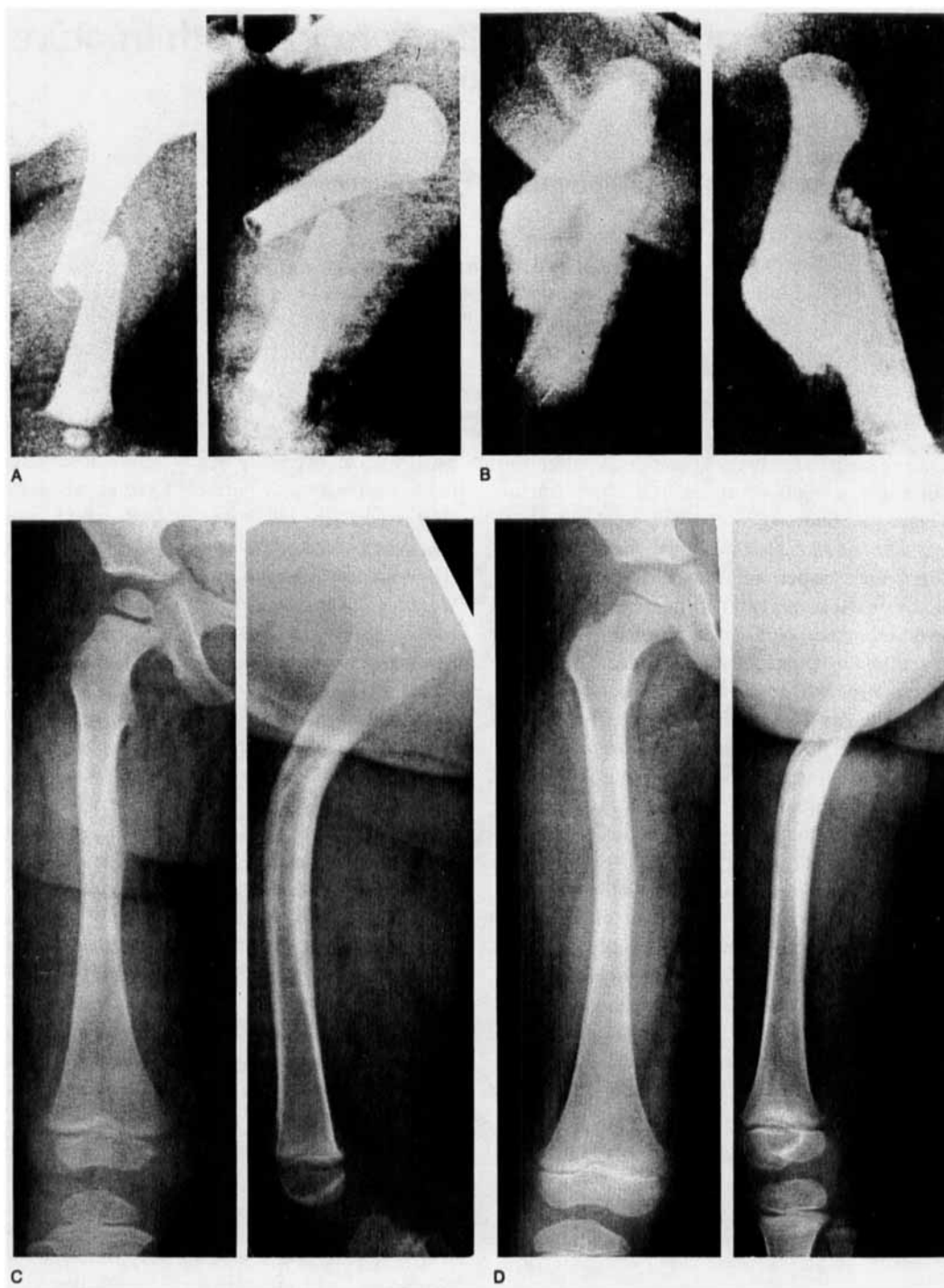
usually occurs when the leg is pulled down after the breech is already partially fixed at the pelvic inlet or when the infant is improperly held by one thigh during delivery of the shoulders and arms (Behrman and Mangurten 1977). When infants in the breech position are delivered by cesarean section, the risk of sustaining a femoral fracture is decreased, but not eliminated (Barnes and Van Geem 1985); a femoral fracture after cesarean section has been described when the mother has uterine myomas (Ehrenfest 1922), diabetes mellitus (Kellner 1982), or when the fetus has growth retardation or osteoporosis secondary to copper deficiency (Blumenthal et al. 1980). In our case the mother was healthy, and the girl had a normal birth weight and no skeletal abnormalities.

The follow-up examinations showed that a correction by growth of the angular deformity and the shortening occurred during the entire growth period. Because anteversion was not measured during the first examinations, correction of rotational deformity could not be evaluated. However, earlier investigations have shown spontaneous correction of torsional deformities after a femoral fracture in childhood (von Laer and Herzog 1978, Verbeek 1979, Häggglund et al. 1983).

It is difficult to maintain reduction of a displaced femoral fracture in the very young infant. Nowadays, treatment using a hip spica in a semielastic plastic material or a bilateral Bryant traction is preferred. Severe deformities should be avoided, but it appears from our case that angular deviations are more or less corrected by growth during childhood and adolescence, as well as rotational and leg-length discrepancies.

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Figure 1. A girl with a right-sided femoral fracture sustained at birth in the breech position.

- A. On first day of life.
- B. At 2 weeks. Angulation 45° dorsal, 25° lateral; shortening 3 cm.
- C. At 4 years. Angulation 34° dorsal, 15° lateral; shortening 1 cm.
- D. At 9 years. Angulation 25° dorsal, 10° lateral; shortening 1 cm.
- E. At 16 years. Angulation 14° dorsal, 7° lateral; shortening 1 cm.