CASE REPORT

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Spontaneous healing of an atrophic pseudoarthrosis during femoral lengthening**A case report with six-year follow-up**

Accepted: 20 May 1998

Abstract A seven-year old girl developed an atrophic pseudoarthrosis at the midshaft of the femur with 8.5 cm of femoral shortening after an open type II fracture. During a femoral lengthening procedure, the pseudoarthrosis filled with spontaneous callus formation and bone union was obtained.

Résumé Une fille âgée de 7 ans 8 mois a développé une pseudarthrose atrophique médiadiaphysaire du fémur à la suite d'une fracture ouverte de type II. Le raccourcissement fémoral a finalement été de 8,5 cms. L'allongement fémoral a permis le comblement de la zone de pseudarthrose par un cal spontané avec une bonne consolidation osseuse.

Introduction

We describe the spontaneous healing of an atrophic pseudoarthrosis in a child, during a femoral lengthening procedure.

Case report

A girl aged 2 years and 5 months sustained an open type II femoral shaft fracture in a traffic accident and was managed with a hip spica cast. Non-union developed and she did not receive further treatment during the next five years. She presented again at the age of seven years and eight-months; at that time there was no evidence of infection.

Radiography revealed an atrophic pseudoarthrosis of the midshaft of the femur, with a femoral length discrepancy of 8.5 cm (Fig. 1). A two-stage approach was planned. The first involved femoral and tibial lengthening in order to reduce the period of application for external fixation. In the second was to be excision of the pseudoarthrosis and cancellous bone grafting. Premature con-

solidation occurred at the corticotomy site above the pseudoarthrosis and a further osteotomy was performed. Using an Ilizarov apparatus, the femur was lengthened by 4 cm, and the tibia by 3.5 cm. Callus formed spontaneously at the pseudoarthrosis site 4 weeks after lengthening, and bone union was obtained 4 months after the Ilizarov application. The second surgical intervention was then unnecessary. The external fixator was in place for 6 months.

Fig. 1 Preoperative radiograph showing an atrophic pseudoarthrosis of the right femur, with 8.5 cm of shortening

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Fig. 2 Postoperative radiograph at 6 years follow-up showing leg length discrepancy of 1 cm and different knee levels due to the tibial lengthening

At 6 years follow-up, there was a leg length discrepancy of 1 cm, and an asymmetrical knee height because of the tibial lengthening (Fig. 2). Her hip and knee joints showed full range of motion.

Discussion

There are many reports [1–4] of spontaneous regeneration in children who have experienced significant bone loss after trauma or resection for treatment of osteomyelitis. This process has been attributed to their greater osteogenic potential, with a thicker periosteum. We are not aware of any reports of spontaneous callus formation during lengthening, without compression, following traumatic pseudoarthrosis. In view of the positive outcome in our patient, it is suggested that this technique warrants consideration in the treatment of traumatic pseudoarthrosis in children.

References

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