

# TIBIAL FRACTURE AFTER TRANSPOSITION OF THE TIBIAL TUBERCLE

by M. J. VAN HAEFF and A. J. M. SAUTER

**Eight weeks after transposition of the tibial tubercle for recurrent subluxation of the patella, the patient sustained a tibial fracture during rope jumping. In spite of consolidation of the osteotomy in the frontal plane, there remained a small gap in the anterior cortex in the transverse plane through which the tibia failed during bending stress.**

**Keywords :** transposition ; tibial tubercle ; tibial fracture.

**Mots-clés :** transposition ; tubérosité tibiale antérieure ; fracture du tibia.

## RÉSUMÉ

*M. J. VAN HAEFF et A. J. M. SAUTER. Fracture du tibia après transposition de la tubérosité tibiale antérieure.*

Huit semaines après une transposition de la tubérosité tibiale, la patiente se fractura le tibia en sautant à la corde. Bien que l'ostéotomie soit consolidée dans le plan frontal, il restait une solution de continuité dans le corticale antérieur, siège de la fracture.

## SAMENVATTING

*M. J. VAN HAEFF en A. J. M. SAUTER. Tibia fractuur na een transpositie van de tuberositas tibiae.*

Acht weken na een transpositie van de tuberositas tibiae in verband met een recidiverende patella subluxatie, liep de patiënte een tibiafractuur op tijdens touwtje springen. Hoewel de osteotomie geconsolideerd was in het frontale vlak, bestond er nog een klein defect in het transversale vlak waardoor de tibia brak onder buigbelasting.

## INTRODUCTION

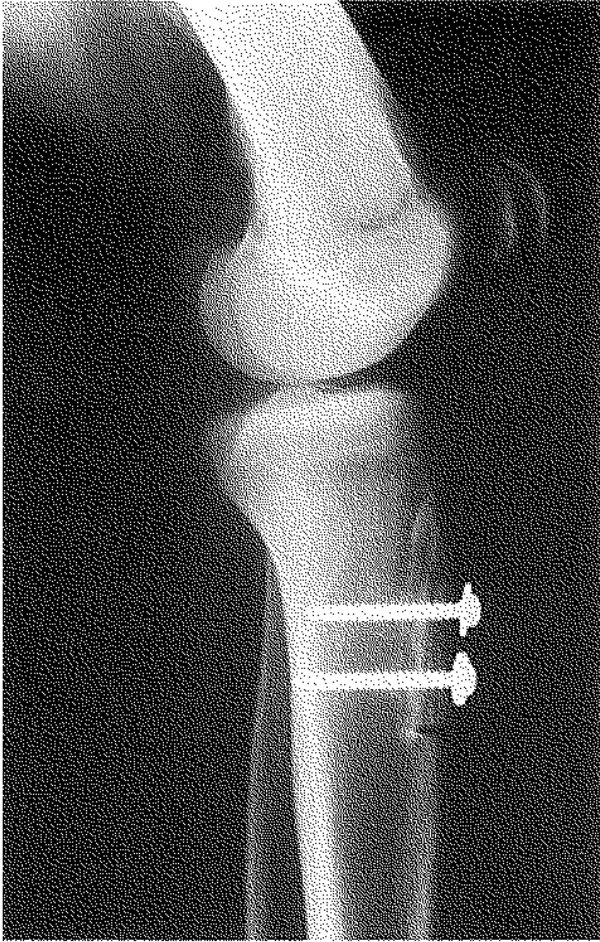
In patients with recurrent patellar dislocation, subluxation or poor tracking, a transposition of the tibial tubercle may be considered. We use a full coronal oblique osteotomy of the tibial tubercle, without a distal hinge, as described by Brown (1). The osteotomy is performed with an oscillating saw under constant cooling with saline solution. Once in the correct position the tubercle is fixed with two 4.5-mm cortical screws and washers. After the operation, no weight-bearing is advised until bone healing has occurred.

## CASE REPORT

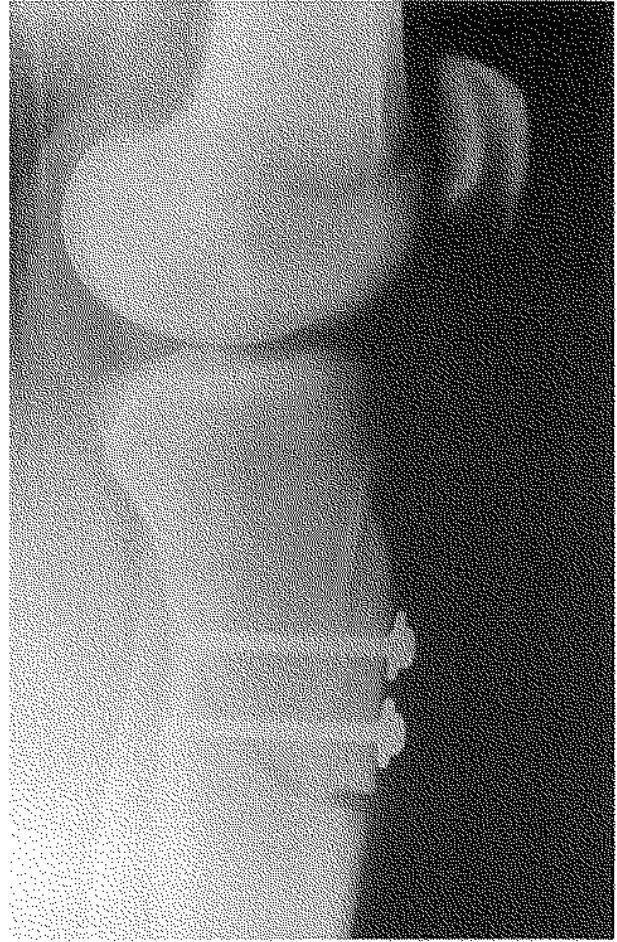
A 17-year-old woman had a tubercle transposition of her left knee because of recurrent subluxation of the patella. Postoperatively she was mobilized with crutches (nonweight-bearing). After 6 weeks radiographic examination showed bone healing of the osteotomy in the frontal plane, but still there remained a small gap in the anterior cortex in the transverse plane (fig. 1). Full weight-bearing was then allowed and rehabilitation by a physiotherapist was started. During rope jumping 8 weeks postoperatively the patient heard a "crack" and felt a sharp pain in her left knee. Radiographic examination showed an isolated tibial fracture just beneath the tibial tubercle (fig. 2), which was treated with reduction and immobilization in a cast. Consolidation of the fracture was uneventful.

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*Fig. 1.* — Six weeks postoperatively: consolidation of the tibial tubercle, except for a small gap in the anterior cortex.



*Fig. 2.* — Isolated tibial fracture 8 weeks after transposition of the tibial tubercle.

Four months postoperatively, she had no complaints and the limb showed full function and a consolidated fracture on X-ray. The patient requested the same operation for her right knee.

### DISCUSSION

There is some controversy about the necessity of cast immobilization after transposition of the tibial tubercle. However in this case, cast immobilization for 6 weeks would not have prevented tibial fracture.

There are several techniques for transposition of the tibial tubercle. A medial rotation of a distally hinged tubercle is frequently used, but distalization

is limited (2). Transposition of the tibial tubercle by a rectangular bone block leaves no possibility for secondary correction in case of malpositioning (3). Transposition of the tibial tubercle, as used in this case and described by Brown (1), permits a wide choice of positioning and possibilities for secondary correction. In the standing position with a flexed knee the force of the quadriceps muscle causes a bending stress on the tibia. The anterior side of the tibia is under tension, the posterior side under compression (4). Transposition of the tibial tubercle in this case left a small gap in the anterior cortex (fig. 1). Consequently the anterior side of the tibia was weakened especially with respect to tension forces. We there-

fore suggest closing the gap in the cortex carefully and avoiding jumping until union of the cortex has taken place.

To our knowledge, other cases of this type have never been reported in the orthopaedic literature.

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