Talectomy for osteoporotic and neuropathic feet

7 cases followed for 2–3 years

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I modified a technique of talectomy reported previously for osteoporotic cases. A larger medial malleolar fragment is displaced laterally to prevent the bone from being splintered during fixation. 2 Hawkins Group III fracture-dislocations of the talus and 4 equinovarus feet were successfully treated by this technique.

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Talectomy is sometimes indicated for severe foot deformity in patients with spina bifida, arthrogryposis multiplex congenita, postpoliomyelitic paralysis or severe fracture-dislocation of the talus. Although good results have been reported by displacing the calcaneus anteriorly and the medial malleolus laterally (Günal et al. 1993), secure fixation is difficult in osteoporotic patients (Alho 1993).

I report my results after talectomy in osteoporotic feet with a modified technique.

Table 1. Clinical details of the patients

Case	Sex	Age	Pathology	Follow-up mo	Results
1	M	63	Hawkins III	41	Excellent
2	F	79	Hawkins III	36	Excellent
3	M	17	SB	28	Good
4	M	17	SB	25	Good
5	M	23	SB	32	Good
6	F	18	AMC	28	Good

SB spina bifida, AMC arthrogryposis multiplex congenita

Patients and methods

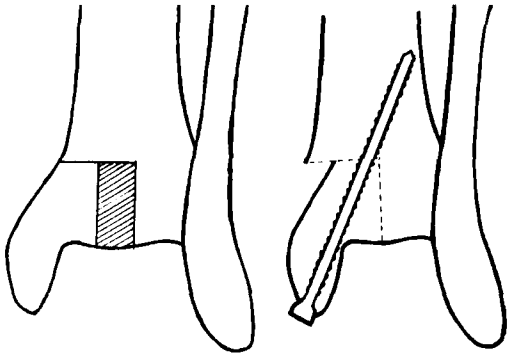
In 1988, we performed talectomy by the technique of Günal et al. (1993) in an arthrogryposis patient with equinovarus foot, but the fixation of the medial malleolus failed due to osteoporosis. Then the technique was modified for osteoporotic patients.

From 1988 to 1992, 2 osteoporotic patients with Hawkins (1970) Group III fracture-dislocation of the talus, 3 patients with spina bifida and 1 patient with arthrogryposis multiplex congenita, all having a neglected clubfoot deformity, were treated by the modification of the technique described below (Table 1). All feet were osteoporotic.

Instead of osteotomizing the medial malleolus transversely at the level of the joint line, as described previously (Günal et al. 1993), the osteotomy was performed transversely 1 cm proximal to the joint line, about one third of the width of the tibia, with a right angle to the joint line. Then 1 × 0.5 cm of bone was resected (Figure).

Following the talectomy and displacement of the foot anteriorly, to make contact between the distal articular surface of the tibia and the posterior articular facet of the calcaneum, the malleolar fragment was displaced laterally to create a new joint with the sulcus calcanei and fixed with a screw (Figure).

Postoperatively the foot was placed in a below-knee plaster which was removed at 3 weeks and par-



Lines of osteotomy. Shaded area is resected.

Displacement of the medial malleolar fragment laterally and fixation with a screw.

tial weight bearing was allowed. Full weight bearing was usually possible after a further 3 weeks.

Traumatic cases were evaluated by the criteria of Morris et al. (1971). Patients with equinovarus feet were evaluated by combining the criteria of Sherk and Ames (1975), Cooper and Capello (1985) and Sølund et al. (1991).

The radiographic examination included on anteroposterior, lateral and axial projections of the foot and ankle. Attention was directed to the union of the osteotomized malleolar fragment and the question whether there was synostosis between tibia and calcaneus.

Results

Following the criteria of Morris et al. (1971), the 2 traumatic cases had excellent results, being able to return to full activity with completely asymptomatic feet and ankles.

All of the 4 neurogenic cases had good results—i.e., no pain that limited activity, no skin breakdown, and a stable, plantigrade foot (Table 1).

On examination at 25–41 months, there was no evidence of calcaneotibial synostosis radiographically and no recurrence of deformity was detected in the neurogenic cases. Union had been achieved at the site of osteotomy in all cases.

Discussion

Osteoporotic patients with musculoskeletal problems need special solutions, and extreme bone fragility is often experienced as an unexpected, disastrous situation intra-operatively; screws do not hold and the bone is splintered during fixation attempts (Alho 1993). This risk can be minimized by placing the implants on relatively larger bone fragments. My new modification was developed to overcome this problem and the results are encouraging.

In the classical technique of talectomy, the foot is displaced posteriorly. According to Menelaus (1971), however, this often produces a poor fit; further, as reported by Cooper and Capello (1985) "Despite an attempt to displace the foot posteriorly, postoperative patients had essentially none". The excellent contact achieved by anterior displacement of the foot and lateral displacement of the malleolar fragment allows early weight bearing and wider range of motion (Günal et al. 1993) and prevents calcaneotibial synostosis.

To prevent the recurrence of the deformity, partial excision or elongation of the Achilles tendon is advocated (Green et al. 1984, Hsu et al. 1984, Sølund et al. 1991). As mentioned by Menelaus (1971), displacing the foot posteriorly, the mechanical advantage of the calf muscle is increased, which may lead to a recurrence of equinus deformity. By displacing the foot anteriorly, this mechanical advantage and consequently a recurrence of the deformity is prevented. I found no recurrence in my patients at the latest follow-up, without elongation or excision of the Achilles tendon.

Moreover, osteotomy of the medial malleolar fragment allows better visualization of the operative field and reduces the risk of leaving a talar fragment behind.

References

Alho A. Mineral and mechanics of bone fragility fractures. A review of fixation methods. Acta Orthop Scand 1993; 64 (2): 227–32.

Cooper R R, Capello W. Talectomy. A long-term follow-up evaluation. Clin Orthop 1985; 201: 32–5.

Green A D, Fixsen J A, Lloyd Roberts G C. Talectomy for arthrogryposis multiplex congenita. J Bone Joint Surg (Br) 1984; 66 (5): 697–9.

Günal I, Atilla S, Arac S, Gürsoy Y, Karagözlü H. A new technique of talectomy for severe fracture-dislocation of the talus. J Bone Joint Surg Br 1993; 75 (1): 69–71.

Hawkins L G. Fractures of the neck of the talus. J Bone Joint Surg (Am) 1970; 52 (5): 991–1002.

Hsu L C, Jaffray D, Leong J C. Talectomy for club foot in arthrogryposis. J Bone Joint Surg (Br) 1984; 66 (5): 694–6.

Menelaus M B. Talectomy for equinovarus deformity in arthrogryposis and spina bifida. J Bone Joint Surg (Br) 1971; 53 (3): 468–73.

Morris H D, Hand W L, Dunn A W. The modified Blair fusion for fractures of the talus. J Bone Joint Surg (Am) 1971; 53 (7): 1289–97.

Sherk H H, Ames M D. Talectomy in the treatment of the myelomeningocele patient. Clin Orthop 1975; 110: 218–22.

Sølund K, Sonne Holm S, Kjolbye J E. Talectomy for equinovarus deformity in arthrogryposis. A 13 (2–20) year review of 17 feet. Acta Orthop Scand 1991; 62 (4): 372–4.