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Checkrein Deformity – Flexor Hallucis Tethering: Two Case Reports

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ABSTRACT

The authors present two cases of checkrein deformity, a tethering of the flexor hallucis longus (FHL) tendon, following ankle surgery. The first case was treated by tenolysis and tendon lengthening posterior to the ankle. The second case was treated by lengthening of the FHL at the midfoot, a more simple procedure which produced a better outcome and faster recovery. The authors recommend this latter treatment should be considered to treat this problem.

Key Words: Checkrein Deformity; Hallux Flexus Deformity

INTRODUCTION

The checkrein deformity is an entrapment of the FHL. It has been described following removal of fibular graft and after non-surgical or surgical treatment of ankle fractures.^{1,2,3} The clinical presentation is a flexion deformity of the big toe that can include the second and third toes also. The deformity increases with dorsiflexion of the ankle and decreases or disappears with plantar flexion. We present one case of checkrein deformity following removal of fibular graft. It was treated by tenolysis and lengthening of the FHL at the posteromedial aspect of the ankle. In the second case the deformity developed after a Weber C ankle fracture which was treated on the day of injury. In this second case the deformity was successfully treated by a distal lengthening of the FHL (at the midfoot area), a simple procedure which produced a satisfactory result.



Fig. 1: Checkrein deformity, flexion of the interphalangeal joint of the big toe.



Fig. 2: Observe the resolution of the deformity with the ankle plantarflexion.

Case 1

A 45-year-old man developed a flexion deformity of the interphalangeal joint of the big toe eight weeks after removal of a distal fibula graft for hip surgery (avascular necrosis of the femoral head). The deformity could be corrected by ankle plantar flexion. The MRI showed signal alterations at the posterior aspect of the ankle joint. A posteromedial approach of the ankle was performed. An abundant fibrous scar tissue was identified and adhesion of the FHL musculotendinous unit to the

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Fig. 3: Intraoperative photograph of case 2. Observe the relatively small incision and correction of the deformity even with the ankle in dorsiflexion.

posterior aspect of the tibia was observed in this area. The adhesions were released, a FHL lengthening was performed, and the interphalangeal joint reached full extension even with the ankle in dorsiflexion. In the post-operative period, he was not immobilized, but encouraged to move his ankle and toes. One year after surgery, this patient was able to walk without pain although his toe extension was not complete. He developed some loss of extension after surgery, probably from recurrence of adhesions.

Case 2

A 31-year-old woman developed a flexion contracture of the hallux, second and third toe six weeks after surgery for Weber C ankle fracture. The fracture was treated by internal fixation on the day of injury. The deformity could be fully corrected by plantar flexion of the ankle joint, as in case 1. The surgical options were discussed with the patient and a distal (midfoot) FHL and flexor digitorum longus lengthening were indicated. An incision 3 cm long was performed along the medial aspect of the midfoot and a lengthening was performed allowing full correction of the deformity. After surgery, she followed the same post-operative protocol for case 1.

Eight months after surgery this patient was able to walk without pain in her big toe and she preserved the same mobility she had reached in the early post operative period.

DISCUSSION

Flexor hallucis longus tendon entrapment has been described following calcaneus fractures² and in ballet dancers,⁵ occurring below the sustentaculum tali⁶ and in the sesamoid area.⁴ The entrapment following ankle trauma has been rarely described and the posteromedial approach was always recommended.^{1,3} A modification of this surgery, which was done in the second patient (case 2), required a small incision. We did not need to approach the medial aspect of the ankle joint, and therefore avoided the neurovascular structures. After surgery both patients lost some flexion at the hallux interphalangeal joint, but they had no complaints about pain or functional loss. Patient 2 did not lose extension of the toe after surgery. We observed that both techniques were effective in relieving the symptoms of fixed toe flexion. The distal lengthening was simpler.

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