



## Case report

# Stabilization of medial longitudinal foot arch by peroneus longus transfer



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## HIGHLIGHTS

- The mechanical integrity of the medial longitudinal arch depends on the dynamic support of muscles and the static support of ligaments.
- Surgical repair of the spring ligament has become an important adjunct to treating posterior tibial tendon abnormalities.
- Peroneus longus tendon transfer may augment medial column stability, although this requires further clinical research.

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## ABSTRACT

The mechanical integrity of the medial longitudinal arch depends on the dynamic support of muscles and the static support of ligaments. Although the posterior tibial tendon is the main dynamic stabilizer of the arch, the static structures provide the most support especially while the person is standing. After rupture of the posterior tibial tendon, the spring ligament may be compromised under increased stress and leads to talar derotation and peritalar subluxation. Surgical repair of the spring ligament has become an important adjunct to treating posterior tibial tendon abnormalities. A technique of peroneus longus transfer to augment the static stabilizers of the medial column is described in this article.

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## 1. Introduction

Posterior tibial tendon dysfunction is the frequent cause of acquired flatfoot deformity in adults. The forward propulsive force of the gastrocnemius-soleus acts at the midfoot instead of at the metatarsal heads when the function of the tibialis posterior is lost. The resultant excessive midfoot stress leads to medial longitudinal arch collapse, subtalar joint eversion, heel valgus and abduction of the foot at the talonavicular joint [1]. Flexor hallucis longus and flexor digitorum longus tendon transfers are frequently used to restore the function of a deficient tibialis posterior tendon in stage II adult acquired flatfoot deformity [2]. However, there is evidence that restoration of the function of the tibialis posterior tendon cannot prevent, compensate for, or correct a plano-valgus foot deformity [3,4]. The static supports especially the spring ligament have an important role in the medial column stability. Surgical repair of the spring ligament has become an important adjunct to treating posterior tibial tendon abnormalities [5–8]. A technique of peroneus longus tendon transfer to augment the medial col-

umn stabilization in stage II adult acquired flatfoot deformity is described in this article.

## 2. Technique

The patient is put in a supine position with a thigh tourniquet to provide a bloodless surgical field. A lateral incision is made over the plantar side of the cuboid. The peroneus longus tendon is identified and the attachment of the os perineum is released. The tendon sheath of the peroneus longus tendon at the sole is stripped proximally from the tarsal bone by means of a small periosteal elevator. This can facilitate the passage of os perineum to the medial side during the tendon transfer. The peroneus longus tendon is cut proximally and is retrieved to the distal wound (Fig. 1). A 2.7 mm arthroscope trocar is inserted from the lateral side along the peroneus longus tendon at the sole to the medial wound. The cannula is inserted along the trocar from the medial wound (Fig. 2). The trocar is removed and the cannula serves as the passage of the stay stitch of the peroneus longus tendon [9,10]. The tendon is transferred to the medial wound and then transferred proximally deep to the abductor hallucis muscle (Fig. 3). The flexor hallucis longus (FHL) and flexor digitorum longus tendons are identified

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**Fig. 1.** (A) The attachment of the os perineum is released. (B) The peroneus longus tendon is cut proximally and is retrieved to the distal wound. Note that the distal wound was extended proximally in this case to explore the ruptured peroneus brevis tendon and the calcaneofibular ligament. Note that the extensive lateral wound in this case was mainly for exploration of the ruptured peroneus brevis with extensive scarring.

and are sutured together. A stay stitch is applied to the FHL tendon proximal to the anastomosis. The FHL tendon is cut between the anastomosis suture and the stay stitch. The stay stitches of the FHL and peroneus longus tendons are sutured together. The peroneus longus tendon is brought to the posterior ankle through the fibro-osseous tunnel beneath the sustentaculum tali by retrieval of the FHL tendon (Fig. 4). The FHL tendon is fixed to the navicular through bone tunnel. Any tear of the spring ligament is repaired. The peroneal longus tendon is then retrieved to the proximal lateral

wound and sutured to the peroneus brevis with the first metatarsal plantarflexed (Fig. 5). The tendon graft can also be sutured to the flexor hallucis longus tendon at the navicular tubercle. The valgus heel is corrected by subtalar arthroeresis.

### 3. Case report

A 54 year old lady had history of left medial heel pain for 2 years. She noted progressive flatfoot deformity. She was treated



**Fig. 2.** (A–D) A 2.7 mm arthroscopic trocar is inserted from lateral along the peroneus longus tendon at the sole to the medial wound. The cannula is inserted along the trocar from the medial wound.

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