

## **TIBIOTALOCALCANEAL (TTC) CANAL SYNDROME**

The tibiotalocalcaneal (TTC) canal is formed by the structural arrangement of the medial malleolus of the distal tibia, the talus, and the calcaneus. It is a notable landmark mainly because of the neurovascular bundle that converges and passes through it. The bundle includes the posterior tibial, posteromedial calcaneal, medial plantar, lateral plantar and medial calcaneal nerves as well as the tibial artery and various assundry veins.

Should the canal become inflamed (as may be defined by DSR survey), the patient will complain of burning on the bottem of the foot (most often occurring unilaterally). The burnng described by afflicted patients appears to rival that reported by those suffering from plantar fasciitis. This condition most often appears without other components, but it has been known to occasionally (though rarely) appear along with plantar fasciitis.

The etiology TTC canal inflammation remains unknown to the author. Experience, however, suggests that prolonged pressure by a tight shoe heel or an external blow into the canal might be reasonable suspects for providing the necessary soft tissue stress. Afflicted patients, thusfar, have been unable to verify which conditions may have occurred to produce the condition.



**The high skin resistance pattern commonly associated with the TTC Canal Syndrome**

## Treatment

Treat the *TTC Canal Syndrome* by eliminating any inflammation and adhesions that may be present in the inflamed zone, as well as increasing capillary circulation and desensitizing the sensitized inflamed tissues.

### Application:

- Preset an electrical stimulation unit to deliver a medium frequency current, with a duty cycle of 10-seconds on and 10-seconds off, and an amplitude sufficient to produce near tetanic contraction of the muscles stimulated. Place a negative electrode over the inflamed zone area and a positive electrode over the long toe extensor muscles. Stimulate for 15 minutes
- Manipulate the soft tissues in and around the inflamed zone to eliminate any adhesions that may be present.
- Preset the ultrasound unit to deliver a 3 (or 3.3) MHz, pulsed waveform, at 1.5 W/cm<sup>2</sup>. Ultrasound the inflamed zone, utilizing an effective non-steroidal anti-inflammatory as a coupling agent, for six minutes.
- Preset the electrical stimulation unit to deliver a visible rhythmic contraction at 7 Hz. Place a negative electrode over the plantar inflamed zone and a positive electrode over the gastrocnemius muscle. Stimulate for 20 minutes;
- Mechanically vibrate the plantar surface of the foot, for two minutes (preferably with a foot vibrator), to further increase capillary circulation and to desensitize the involved tissues.

*The following treatment forms have also been effective.*

### Variation:

- Preset the ultrasound unit a 3 (or 3.3) MHz pulsed waveform, at 1.8 W/cm<sup>2</sup>. Ultrasound the inflamed zone, utilizing an effective non-steroidal anti-inflammatory as a coupling agent, for six minutes. This procedure is designed to soften the adhesions that may be present.
- Manipulate the tissues in and around the inflamed zone to eliminate any adhesions that may be present.
- Twenty minutes after the first ultrasound, preset the ultrasound unit to deliver a 1 MHz pulsed waveform, at 1.5 W/cm<sup>2</sup>. Ultrasound the inflamed zone, utilizing an effective non-steroidal anti-inflammatory as a coupling agent, for six minutes. This is performed to “cool off” the manipulated zone by effectively halting the production of prostaglandins by the stressed tissues.
- Mechanically vibrate the plantar surface of the foot, for two minutes (preferably with a foot vibrator), to further increase capillary circulation and to desensitize the involved tissues.

### Variation:

- Preset the ultrasound unit a 3 (or 3.3) MHz pulsed waveform, at 1.8 W/cm<sup>2</sup>. Ultrasound the inflamed zone, utilizing an effective non-steroidal anti-inflammatory as a coupling agent, for six minutes. This procedure is designed to soften the adhesions that may be present.
- Manipulate the tissues in and around the inflamed zone to eliminate any adhesions that may be present.

- Apply cold laser (with or without simultaneous electrical stimulation provided by the laser applicator) to the inflamed zone for approximately six minutes. This is performed to “cool off” the manipulated zone by effectively halting the production of prostaglandins (or facilitating enzyme destruction of **all** inflammatories being produced) by the stressed tissues.
- Mechanically vibrate the plantar surface of the foot, for two minutes (preferably with a foot vibrator), to further increase capillary circulation and to desensitize the involved tissues.

Successful treatment may take only one or two sessions for complete resolution of symptoms. Continued relief will depend (in the author’s opinion) on the patient avoiding further trauma into the TTC canal.

#### **Post Treatment Suggestions:**

Encourage the patient to acquire a mechanical foot vibrator or a hand-held vibrator, and vibrate the bottom of the feet for two minutes, twice a day, for the duration of the treatment course. Vibrating the bottom of the feet should be avoided for the two-hour period before going to bed, because of the possibility that it might interfere with deep sleep patterns. However, vibration upon rising seems to invigorate and make sensory awareness more acute (i.e., to help one to wake up).

#### **Trigger Points**

The following trigger point formations may, singly or in combination, imitate or contribute to the pain accompanying the *TTC Canal Syndrome*: Gastroc-nemius and Abductor hallucis.