

Tibialis anterior transfer for dynamic supination in club foot treatment using a bone anchor: short term follow-up

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Background

Affecting 1.2 per 1000 live births, Congenital Talipes Equinovarus is a common condition, which is treated successfully using the Ponseti technique in most cases. Tibialis Anterior Tendon Transfer has been widely used in CTEV for dynamic supination. Several techniques are described, which all involve breaching the plantar skin either temporarily or more long term. This may have implications with skin irritation and infection and pressure sores as well as posing risk to plantar nerves.

Method

We present a cohort of 81 feet in 68 patients utilising a Mitek GII anchor (Johnson & Johnson, New Jersey, USA) to dock the whole tibialis anterior tendon to the lateral cuneiform. This technique eliminates the need to breach the plantar skin, avoiding plantar skin complications.

Results

The average age at surgery was 5.8 years (SD 2.1 years). The average follow up was 5.5 years with a minimum follow up of 2 years. No tendon transfer in this multi-surgeon series failed, there were no cases of pull out of the anchor and only 1 transfer complicated with a superficial wound infection caused by a stitch abscess which required surgical debridement.

There was one case of relapse dynamic supination, but the tendon in this case remained intact, and anchor in situ therefore we concluded this was an issue with tensioning of the transfer, and did not require revision surgery.

Operative technique

A longitudinal incision is made over the insertion of the tibialis anterior tendon, guided by palpation of the tendon. Once the tendon is identified, it is sharply dissected from its insertion at the base of the first metatarsal. Tendon length is unlikely to be an issue using this technique and therefore it is not necessary to check the length of the resected tendon. A stay suture is placed at the free end of the tendon, a Whip stitch is not necessary. The lateral cuneiform is identified using image intensifier (II), and exposed. A Mitek GII® Titanium Anchor (DePuy Synthes) is placed in the centre of the lateral cuneiform. Drilling is often not necessary. Using the anchor sutures, it should be possible to lift the foot, and this test is used to ensure the anchor will not pull out.



Intraoperative image of anchor placement

A blunt artery clip is used to develop a subcutaneous plane for the tendon to run beneath extensor retinaculum. The tibialis anterior stay suture is then used to transfer the tendon end into the second incision.

The anchor sutures are used to secure the tibialis anterior tendon at the desired tension with the ankle in dorsiflexion and the foot everted. Excess tendon is trimmed along with redundant suture ends. The ankle is now kept in 10 degrees of dorsiflexion and eversion until casted in this position with a very well-padded, full below knee walking synthetic plaster. The patient is allowed to bear weight in the cast for 6 weeks.

Conclusion

This is the largest series of tibialis anterior transfer using any technique in the literature to date. Although bone-tendon anchor fixation is widespread in orthopaedic surgery, it is novel for this indication. It is simpler, and less traumatic for the bone than a bone tunnel and less traumatic for the plantar skin than transcutaneous anchorage, with a very low complication rate.



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