

Medial Soft-tissue Release for a Lateralising Calcaneal Osteotomy: a Cadaveric Study

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Introduction/Purpose: Lateralising calcaneal osteotomy (LCO) for pes cavus is generally regarded to be harder to shift than a medialising calcaneal osteotomy for pes planus. Whilst this may be due to tight tissues as in pes cavus, no attempt has been made to define a particular structure that could limit the lateral shift in a LCO. Some surgeons recommend releasing the flexor retinaculum routinely with a LCO to avoid a tarsal tunnel syndrome, suggesting that perhaps it is the flexor retinaculum that is the main restrictor to the lateral shift in a LCO. The purpose of our study was to define the structures that restrain the lateral shift in a calcaneal osteotomy in a cadaveric study.

Methods: Calcaneal osteotomies were carried out by a single orthopaedic surgeon on 10 embalmed, below-knee cadavers. LCOs were performed using standard lateral approach and the lateral calcaneal shift was measured before and after the release of flexor retinaculum in 4 cadavers. Further exploratory dissection around the osteotomy site, however, revealed that abductor hallucis muscle must be the main restraint to the lateral shift of the calcaneus. Subsequently, LCO was performed on another 6 cadavers and the abductor hallucis muscle fascia as well as the plantar fascia was released. The lateral shift was measured before and after the fascia releases, and compared with those of the flexor retinaculum release.

Results: The average shift with a LCO by itself in the first 4 cadavers was similar to the last 6 (4.5 mm and 5.5 mm respectively). Releasing the flexor retinaculum created a further 3 mm lateral shift on average; however, release of abductor hallucis muscle fascia and the plantar fascia increased lateral shift by an additional 7 mm on average; which is an extra 4 mm shift on average compared with those of flexor retinaculum release.

Conclusion: The results of this study suggest that the abductor hallucis muscle along with the plantar fascia is one of the main structures limiting the lateral shift in LCO, and release of fascia over this muscle as well as the plantar fascia should be an essential part of the lateralizing calcaneal osteotomy.

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