Management of the Varus Ankle

J. Chris Coetzee, MD
jcc@ocpamn.com
Eden Prairie, Minnesota

When it comes to ligamentous lax ankle, the challenge in future will not be whether an ankle replacement is a viable option, but whether an ankle replacement is the correct option in a specific situation. Chronic lateral ligament instability is one of the most common reasons for “primary” ankle arthritis.

Not all of these ankles will present with a severe, or fixed, ankle varus. It is not uncommon to have an ankle with a fairly symmetric wear pattern, but very significant lateral instability at the time of the TAR. There are situations where it is not apparent pre-operatively, and only becomes obvious once the ankle is prepared and all the osteophytes removed. It should be part of the routine with ankle replacements to test the ankle for varus and valgus stability when the trial components are in place.

In our own initial series from 1995 – 2000 of 200 Agility ankle replacements there were 20 patients with pre-operative varus of more than 20 degrees. Of those 50% failed and were converted to an ankle fusion within 5 years. The early failure rate in standard, non varus or valgus ankles during the same time period was 8%, mainly due to syndesmosis non-unions. Wood et al also showed in their series a significantly higher failure rate of ankle replacements done for severe deformity. (4) Occasionally varus will be due to pure bone erosion and they are easily corrected with the bone cuts required by the TAR system. Most of these will be post-traumatic in origin, and laxity is seldom a problem.

Any deformity in the leg will negatively affect the ankle by tilting the ankle joint which can lead to shear stresses within articular cartilage, as well as changes in contact pressures. Tarr found distal tibial deformities create the highest contact pressures with sagittal plane deformities having the greatest effect. A 15 degree anterior bowing cause a 40% increase in contact pressure, while posterior bowing of 15 degrees cause 42% increase. (1)

Correcting these deformities will reduce the contact pressure on the replaced ankle, and there is evidence in the literature that it might also delay the need for an ankle replacement if done as a first portion of a staged ankle reconstruction. (2,3)

A stable, plantigrade foot is an essential part of a successful ankle replacement. In a varus ankle, any cavovarus issues should be addressed before or at the time of the TAR. Specific attention should be given to the muscle balance of the foot.

Deformity correction should be performed from proximal to distal. Lower leg varus of more than 10 degrees should be corrected prior to dealing with the ankle utilizing corrective osteotomies. The proposed lateral ligament repair is a non-anatomical repair and we do not advocate its use for any other ankle instability pattern other than ankle replacements. It is not in the anatomical planes of either of the lateral ligaments, and will reduce the function of a normal ankle. Even the best artificial ankle is still “non-anatomical”, and the proposed repair proved to add excellent stability without apparent compromise in ankle function. The essence of the repair is a strong check reign against inversion, while the Brostrom part of the repair limits the anterior translation of the ankle. (5)

References
2) Stamatis ED, Cooper PS, Myerson MS: Supramalleolar Osteotomy for the treatment of Distal tibial angular deformities and arthritis of the ankle. FAI. 2003;24(10):754-764
Total Ankle Arthroplasty and Medial Malleolar Lengthening for Reconstruction of the Arthritic Ankle with Varus Deformity

H. Cornelis (Kees) Doets, MD, PhD
kees.doets@hccnet.nl
Amsterdam, Netherlands

Distal Tibial Osteotomies in the Varus Ankle

Beat Hintermann, MD
beat.hintermann@ksli.ch
Liestal, Switzerland

Malalignment can result in the development of osteoarthritis in the ankle joint whether the deformity is of primary or secondary origin. In either case, there is an altered load distribution across the joint that compromises joint functionality and interferes with the normal cartilage metabolism. In a varus deformity of the ankle with medial degenerative changes, a supramalleolar osteotomy restores the alignment of the hindfoot. It can also be used to realign the ankle/hindfoot in end-stage osteoarthritis of the ankle before, during or after total ankle replacement or fusion.

**When do I use them and how?**

I do it for realignment surgery including:

- corrections of malaligned ankles with medial OA
- corrections of malunions after distal tibia fractures
- realignment before or at total ankle replacement or fusion
- realignment before or at fusion
- correction of malaligned total ankle replacements
- corrections after malpositioned ankle fusions
- osteochondral lesions on the medial aspect of the tibiotalar joint

I do not use it for:

- end-stage OA as an isolated procedure
- severe hindfoot instability that cannot be stabilized (“floppy” hindfoot)
- severe vascular or neurological deficiency in the affected extremity
- neuropathic disorders (Charcot foot)

I am careful: