Management of Varus Ankle Osteoarthritis with Joint-Preserving Osteotomy

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KEYWORDS

• Osteotomy • Varus ankle arthritis • Tibiotalar joint

KEY POINTS

- The use of osteotomy in the treatment of varus ankle arthritis may delay or obviate the need for an ankle arthroplasty or arthrodesis.
- Deciding whether to perform an opening or closing wedge supramalleolar osteotomy is important to optimize surgical outcomes.
- The plafond-plasty is an osteotomy that can be helpful in the correction of intra-articular deformities.

The goal of osteotomy in the treatment of varus ankle arthritis is to shift the forces imparted to the ankle to a portion of the joint that is not involved in the degenerative process.[1–4] The redistribution of loads and stresses seen by the tibiotalar joint can be approached either above or below the ankle with an osteotomy of the tibia or calcaneus. Evaluation of the deformity as being subtalar, supramalleolar, or a combination allows the surgeon to best address the increased joint stresses, thereby reducing the risk of failure of the osteotomy.

Choosing the appropriate type of osteotomy for treatment of the deformity can optimize outcomes. The major advantage of the tibial opening wedge osteotomy is in the avoidance of leg shortening, but delayed union or nonunion may occur. Although leg length change may not seem significant if only 1 cm of shortening is performed with a wedge resection osteotomy, it must be kept in mind that the limb is already short from the deformity. Put another way, a deformity treated with an opening wedge that requires a 1-cm graft has a height differential of 2 cm compared with the same deformity treated instead with a closing wedge.[5] If there are skin-related problems (previous incisions with scar formation or prior infection) or if there is potential for vascular compromise, a closing wedge must be performed. Although the closing wedge

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Fig. 1. (*A*) This patient was treated for varus ankle osteoarthritis with a traditional opening wedge supramalleolar osteotomy. Note the location of the osteotomy approximately 5 cm proximal to the articular surface. (*B*) Immediate postoperative radiographs. (*C*) Follow-up radiographs 2 years postoperatively. The orientation of this osteotomy is not able to accurately correct the varus ankle deformity. In the preoperative image, note the medialization of the talus and the flattening of the medial malleolus. This pattern is typical of medial compartment arthritis with or without varus ankle deformity. The postoperative image shows the slight lateral shift of the talus relative to the longitudinal axis of the tibia. This lateralization is beneficial because there is increased load on the lateral articular surface, but the center of the talus is no longer congruent with the center of the tibia. (*Courtesy of* Dr Woo Chun Lee, Seoul, South Korea.)

osteotomy results in leg shortening, it remains an attractive option because it is generally easier than the opening wedge procedure, particularly if this includes the fibula and the tibia.

For the correction of a varus deformity, we generally use either a medial opening wedge osteotomy or a lateral closing wedge osteotomy. The medial opening wedge osteotomy is performed through an anteromedial and a small lateral incision (for the fibular osteotomy). Which bone cut is made first is a matter of preference, but leaving