

Tibial Malunion: corrective osteotomy to restore alignment and prevent osteoarthritis progression: corrective medial closing wedge osteotomy to restore alignment and prevent osteoarthritis progression



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Background

Malunions of distal tibia fractures are common complications of traumatic injury. Intramedullary nailing of distal tibia fractures are specially associated with valgus malunion. Deformities greater than 15° in the distal tibia can decrease the tibiotalar contact area by 42% with resulting unequal forces on the mortise that result in pain and advance the deterioration of the ankle joint. Supramalleolar osteotomies have been described and advocated by many authors. Supramalleolar osteotomy will realign the malaligned ankle joint, thus equally distributing the forces on the joint. Realignment, through osteotomy, improves ankle joint mechanics and slows the progression of osteoarthritis and may delay the need for more extensive procedures.

Case Presentation

A 40 year-old man was referred to us with ankle pain. He had a history of distal 1/3 tibial shaft fracture submitted to intramedullary nailing 4 years ago. He was previously submitted to material extraction. Upon presentation, the patient complained of pain with ambulation and decreased range of motion. At physical examination no signs of crepitus, bony impingement or instability at foot and ankle joints. No muscle or tendon contracture. Adequate vascular status and no neurologic deficits. There were no soft-tissue issues or scarring around his ankle and hindfoot.

Weightbearing radiographs revealed valgus malunion. Lateral distal tibial angle (LDTA) – 74.7° . CORA angle – 14.1° in AP, with no additional malalignment in lateral plane.

After failure of conservative treatment, he was submitted to a medial closing wedge osteotomy with plate fixation. Then he was submitted to immobilization and rehabilitation protocol.



Fig.1 (Xray): Weight-bearing antero-posterior and lateral ankle xray (left – pre-op; right – pos-op).

Results

At 6 months follow-up, he was satisfied with the procedure, with no residual pain. X-rays revealed consolidation of the osteotomy.

Weightbearing radiographs revealed an Lateral distal tibial angle (LDTA) – 84.7° and CORA angle – 2.4° in AP after osteotomy. Therefore we had a residual deformity but asymptomatic. To fully restore alignment we would have to associate peroneal osteotomy.

Before surgery, VAS score was 7/10 and AOFAS SCORE was 57/100. At 6 months VAS score was 0/10, and AOFAS score was 87/100.

Discussion

Ankle arthritis is a challenging condition that still has few treatment options with good outcomes. For that reason, restoration of ankle malalignments using supramalleolar osteotomies may be an important procedure to prevent progression of arthritis.

Despite being challenging procedures, we can use different osteotomies on deformity type, location and method of fixation. This can restore the harmonious balance of functional forces that ankle supports and prevent arthritis progression and improve quality of life.

Conclusions

Supramalleolar osteotomy is a joint-preserving surgical treatment for patients with asymmetric valgus or varus ankle arthritis that improves functional outcomes in patients with altered biomechanics associated with asymmetric arthritis.

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