

Coronal alignment correction in total ankle arthroplasty using the Infinity system: A prospective observational study

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Introduction: Neutral coronal alignment is a key goal of total ankle arthroplasty (TAA). This study evaluated whether modern Infinity instrumentation restores tibial and talar alignment toward 90° and whether concomitant procedures influence coronal correction.

Methods: Multicenter prospective observational cohort including 107 consecutive ankles treated with the Infinity system (2022–2024) at two centers (Brazil and Colombia). Standardized weight-bearing radiographs were obtained preoperatively and at six months. Primary outcomes were AP tibial and talar angles relative to 90°. Secondary outcomes included lateral tibial angle and the influence of concomitant procedures.

Results: A total of 107 ankles were analyzed. Mean AP tibial angle increased from 88.1° ± 7.2° to 90.0° ± 3.5° (p = 0.016). Lateral tibial angle showed no meaningful change (89.1° ± 8.3° to 88.6° ± 3.2°; p = 0.521). Mean AP talar angle decreased from 92.6° ± 11.5° to 90.0° ± 3.9° (p = 0.050). Preoperative deviation from neutral was -1.9° (tibia) and +2.6° (talus); postoperatively, both approached 90°, although the talus remained, on average, 3.0° farther from neutral than the tibia (p = 0.002). Achilles tendon lengthening (55.1%) and lateral ligament reconstruction (19.6%) were most common; none significantly affected postoperative tibial AP alignment (all p > 0.05).

Conclusions: Infinity TAA reliably corrected coronal alignment toward 90° without a significant change in sagittal alignment.

Keywords: Ankle joint; Arthroplasty, replacement, ankle; Osteoarthritis.

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