Comparison of Two Different Three-Component Total Ankle Replacements: Short to Intermediate-Term Outcomes

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Summary:
Total ankle replacements with the HINTEGRA and Mobility implants showed similar clinical and radiographic results in short to intermediate-term follow up. However, the degree of heterotopic ossification was significantly higher in the HINTEGRA group than in the Mobility group, and intra-operative fractures of the medial malleolus were more common in the Mobility group.

Introduction:
Total ankle replacement (TAR) has evolved over the past decade, and modern three-component implants have demonstrated favorable clinical results and improved survivorship. However, the majority of studies have only described the results of one particular design, and there have been few studies comparing the results of different implants. The HINTEGRA implant (Newdeal SA, Lyon, France) and the Mobility implant (DePuy, Leeds, United Kingdom) are both unconstrained, three-component, mobile-bearing designs. Even though there are distinct differences between them, such as in tibial and talar component lengths, we could not find a direct comparative study in the literature that described the differences in outcomes between the two implants. We sought to compare the clinical and radiological outcomes between these two implants with a relatively small number of patients.

Methods:
We retrospectively compared patients who underwent primary TAR between July 2005 and May 2010, with a minimum follow-up of 2 years. Thirty-two patients (32 ankles) were implanted with the HINTEGRA implant, and 35 patients (35 ankles) were implanted with the Mobility implant. All surgical procedures were performed by a single surgeon. The American Orthopaedic Foot and Ankle Society (AOFAS) Ankle-Hind foot score, a visual analog scale (VAS) for pain, satisfaction with the surgery, and range of ankle motion were evaluated preoperatively and at each follow-up visit. The radiographic evaluation included assessment of the alignment of the prosthesis, radiolucencies, osteolysis, heterotopic ossification, and degenerative changes in the adjacent joints. Intra- and post-operative complications, failures, revisions, and additional surgeries were recorded.

Results:
The mean AOFAS score, VAS, and the range of ankle motion significantly improved in the two groups, and there were no significant differences between the groups. No significant differences were found between the two groups with respect to the alignment of the tibial component (coronal plane, $P = 0.148$; sagittal plane, $P = 0.715$), the position of the talar component ($P = 0.947$), radiolucency ($P = 0.529$), osteolysis ($P = 0.893$), the incidence of heterotopic ossification ($P = 0.065$), or degenerative changes in the adjacent joints ($P = 0.153$). However, the most common grade of heterotopic ossification was grade 3 in the HINTEGRA group (10 ankles, 76.9%) and grade 2 in the Mobility group (4 ankles, 57.1%) ($P = 0.025$). Perioperative complications did not differ significantly between the groups. However, intra-operative medial malleolar fractures occurred in 4 TARs (11.4%) in the Mobility group. Four TARs (12.5%) in the HINTEGRA group and one TAR (2.9%) in the Mobility group failed ($P = 0.185$).

Conclusion:
TARs with the HINTEGRA and Mobility implants showed similar clinical and radiographic results in short to intermediate-term follow up. However, the degree of heterotopic ossification was significantly higher in the HINTEGRA group than in the Mobility group, and intra-operative fractures of the medial malleolus were more common in the Mobility group. Further studies with a larger number of patients and longer follow-up time are needed to confirm our findings.