Successful Re-replacement With Third-Generation Ceramic Talar Whole Prosthesis

Written by Toni Rizzo

Re-replacement or arthrodesis for a painful, loosening total ankle arthroplasty (TAA) is difficult because of the large cavity left after prosthesis removal. Prostheses for TAA have evolved since the first-generation metal prostheses used by the presenter, Yoshinori Takakura, MD, Nara Medical University, Nara, Japan, from 1975 to 1980. Prof Takakura used the second-generation prosthesis, made of ceramic and fixed with cement, from 1980 to 1991. Subsequently, he developed the third-generation ceramic Takakura Nara Kyocera (TNK) ankle prosthesis, which is fixed with a screw. This prosthesis is custom made from a computed tomographic image of the patient's normal opposite talus.

From 1992 to 2012, total replacements were performed in 213 patients (229 ankles) with osteoarthritis (OA), using the third-generation TNK prosthesis [Takakura Y et al. IFFAS 2014]. The patients included 22 men and 191 women, with a mean age of 68 years (range, 52 to 85 years). After a mean follow-up period of 8.2 years (range, 1.8 to 20 years), the outcomes were good (n = 63) to excellent (n = 97) in 83.3% of the patients, fair in 14 patients, and poor in 18 patients. The survival rate of the TNK prosthesis in this group of patients was 92% at 19 years. Among the 213 patients, there were 13 deaths and 5 patients lost to follow-up at 19 years.

From 1993 to 2012, 16 of the patients (6.9%; 3 men and 13 women), with a mean age of 73.7 years (range, 59 to 83 years), required revision surgery because of infection. Two of these patients underwent arthrodesis and 14 underwent re-replacement surgery with the third-generation ceramic talar prosthesis. Four of the re-replacement patients received a talar dome prosthesis and 10 received a talar whole prosthesis. The time from first arthroplasty to revision was an average of 4.2 years (range, 1.8 to 12.1 years). Seven of the patients also received a tibial prosthesis fixed with cement. All patients wore a below-the-knee non–weight-bearing cast for the first 2 weeks, followed by a weight-bearing cast for 3 weeks. The patients were assessed with the American Orthopaedic Foot & Ankle Society ankle-hindfoot scoring system.

At an average follow-up of 5.3 years (range, 2 to 12 years), 78.6% of the patients had good (n = 4) to excellent (n = 7) results, 2 patients had fair results, and 1 patient had poor results. One patient underwent re-revision. Two patients who received a talar dome prosthesis underwent re-replacement with a talar whole prosthesis at 2.3 and 3.7 years after revision because the remaining talar head and neck developed loosening and fracture.

In summary, revision surgery for 14 patients with OA who had a failed TAA was performed with a ceramic talar dome or talar whole prostheses. Prof Takakura did not recommend use of a talar dome prosthesis for revision surgery of TAA. However, he did recommend re-replacement with a talar whole prosthesis after a failed TAA.

No Significant Difference in TAA Outcomes in Varus vs Neutral Ankles

Written by Toni Rizzo

Total ankle arthroplasty (TAA) has gained greater acceptance as an alternative surgical treatment to ankle arthrodesis for end-stage ankle arthritis. Implant design and techniques have improved over the last few decades, with increased implant survival and equivalent pain relief and functional outcomes compared with ankle arthrodesis. Coronal malalignment remains a challenge for successful TAA. Previous study results suggest that a 10° to 15° varus alignment is a relative contraindication and a 20° varus alignment is an absolute contraindication for TAA [Valderrabano V et al. *J Bone Joint Surg Br.* 2005; Wood PL, Deakin S. *J Bone Joint Surg Br.* 2003]. More recent studies reported good TAA outcomes in patients with varus, including those with >20° varus alignment [Sung KS et al. *Foot Ankle Int.* 2014; Trajkovski T et al. *J Bone Joint Surg Am.* 2013].

The objective of this study, presented by Alan Y. Yan, MD, Duke University Medical Center, Durham, North Carolina, USA, was to compare outcomes of TAA in patients with varus vs neutral (<5° [valgus]) alignment. A total of 230 TAAs were prospectively followed from October 2007 to October 2011. The varus alignment group included 100 ankles (96 patients) and the neutral alignment group included 130 ankles (129 patients). The patients received the STAR ankle, the Salto Talaris, or the INBONE I or II. The preoperative and postoperative outcome measures included the Short Form-36 (SF-36), the Short Musculoskeletal Function Assessment Questionnaire (SMFA), Visual Analog Scale (VAS), Foot and Ankle Disability Index (FADI), and American Orthopaedic Foot & Ankle Society (AOFAS) hind foot-ankle scores. The mean follow-up was 43.2 months for the varus group and 45.0 months for the neutral group.

Analysis of the outcome measures showed no significant difference in preoperative, postoperative, or mean