

The Use of Autologous Concentrated Growth Factors to Promote Syndesmosis Fusion in the Agility Total Ankle Replacement. A Preliminary Study

J. Chris Coetzee, M.D.¹; Gregory C. Pomeroy, M.D.²; J. David Watts, M.D.¹; Craig Barrow, M.D.³
¹Minneapolis, MN; ²South Portland, ME; ³Spokane, WA

ABSTRACT

Background: The Agility (DePuy, Warsaw, Indiana) total ankle replacement has been in use since 1984. One of the most common complications continues to be delayed union or nonunions of the distal tibiofibular syndesmosis. In the reported studies on the Agility ankle the delayed union and nonunion rate can be as high as 38%. **Methods:** Since 1999, 114 Agility total ankle replacements were done at two centers in the United States without the use of autologous concentrated growth factors. Since July of 2001, 66 Agility ankles were implanted with Symphony (DePuy, Warsaw, Indiana) augmented bone grafting. The standard operative technique was followed in all the patients. Prospective data was collected on all patients. The standard ankle radiographs were taken preoperatively and postoperative at 8 weeks, 12 weeks, 16 weeks, 6 months, and yearly. CT scans were obtained at 6 months if fusion at the syndesmosis was questionable. The Graphpad InStat software (Graphpad Software Inc., San Diego, CA) was used for statistical analysis. The two-tailed unpaired t-test was used, and the value <0.05 was considered significant. **Results:** There was no statistical difference in the demographic data for the two groups. In 114 ankle replacements without autologous concentrated growth factors 70 fused at 8 weeks (61%), 14 fused at 12 weeks (12%), 13 fused at 6 months (12%). There were 17 nonunions (15%); delayed unions (3 to 6 months) and nonunions, therefore, equaled 27%. The syndesmosis fused in 50 of the 66 ankle replacements

(76%) that had autologous concentrated growth fractures at 8 weeks (76%); 12 fused at 3 months (18%), 2 fused at 6 months (3%), 2 had nonunions (3%). Delayed unions (3 to 6 months) and nonunions equaled 6%. There was a statistically significant improvement in the 8- and 12-week fusion rates, and a statistically significant reduction in delayed unions and nonunions. **Conclusion:** Autologous concentrated growth factors appear to make a significant positive difference in the syndesmosis union rate in total ankle replacements.

Key Words: Ankle Replacement; Delayed Union; Nonunion; Syndesmosis Fusion

INTRODUCTION

Total ankle arthroplasty has regained some interest in the past decade. Early in the evolution of ankle replacements problems with component design, prosthesis fixation, operative technique, and patient selection led to early failures.^{29,14} For a while there was a strong appeal to abandon total ankle replacement in favor of ankle arthrodesis.^{6,16,19,30}

During the mid to late 1980s, second generation systems attempted to correct some of the flaws associated with their predecessors. These ankle replacements systems are still undergoing modifications as new technologies and research data are evaluated.^{31,20} Also,