

In severe ankle arthritis, total ankle replacement yields better function than ankle arthrodesis

May 19 2021



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For patients with severe arthritis of the ankle, total ankle arthroplasty (TAA) provides better long-term function than ankle arthrodesis (AA),

reports a study in *The Journal of Bone & Joint Surgery*.

"Both established treatments for end-stage ankle arthritis are effective at [pain relief](#) and improved patient-reported outcomes," according to the research by Bruce Sangeorzan, MD, and colleagues at the University of Washington and VA Puget Sound Health Care System. "However, it appears TAA leads to greater improvement in most patient-reported outcome measures at 48 months after surgery."

Study adds to evidence supporting TAA for ankle arthritis

End-stage ankle arthritis is characterized by complete loss of cartilage and "bone-on-bone" contact in the ankle joint, with [patients](#) experiencing pain and stiffness. The [standard treatment](#) for end-stage ankle arthritis is arthrodesis, which uses hardware such as plates and screws to fuse the ankle bones into a single piece.

However, in recent years, TAA has become a popular alternative. In TAA, a prosthesis is used to replace the deteriorated ankle joint—similar to how artificial joints are used in total hip or knee replacement surgery. However, questions remain regarding the results of TAA versus AA, especially in the long term.

Dr. Sangeorzan and colleagues compared the outcomes of the two procedures in 517 patients with end-stage ankle arthritis at six medical centers. Patients were treated according to their preferred procedure, with 414 undergoing TAA and 103 undergoing AA. All operations were performed by orthopedic surgeons with extensive experience with each procedure, as well as hip and knee replacement and surgery for other deformities around the ankle.

At four years postoperatively, both procedures yielded showed improvements in key patient outcomes. By most measures, long-term results were better for patients undergoing TAA compared with AA, including patient-reported ankle function for activities of daily living and sports, as well as physical aspects of quality of life.

Through the first three years postoperatively, pain scores were also better after total ankle replacement. For example, average pain score (on a 0-to-10 scale) decreased from 6.3 to 1.9 in the TAA group versus 6.0 to 2.5 in the AA group. For both treatments, the improvements observed at two years postoperatively were maintained through four years postoperatively.

Seventy-eight percent of patients who underwent TAA were "completely satisfied" with the results of their surgery, compared to 60 percent of those who underwent AA. Patients who underwent TAA also had a lower rate of revision surgery: 8.7 versus 17.5 percent.

Although the study was designed as a [randomized trial](#) with a patient preference arm, too few patients were willing to be randomized, and the trial was converted to a prospective cohort study. According to coauthor Dan Norvell, Ph.D., the researchers controlled for the effects of potential selection bias in their analysis by evaluating and adjusting for unevenly distributed patient characteristics between treatment groups.

Drs. Sangeorzan and Norvell attribute the successful study recruitment and follow-up of the study to the efforts of site investigators, including James Davitt, MD, John G. Anderson, MD, Donald Bohay, MD, J. Chris Coetzee, MD, John Maskill, MD, Michael Brage, MD, Michael Houghton, MD, and their dedicated research staffs.

The findings are "highly relevant" to patients and surgeons during the planning stage when treating severe [ankle](#) arthritis, Dr. Sangeorzan and

coauthors believe. They plan to perform further analyses to report the rates and risk factors for revision surgery for the two procedures with a longer follow-up period.

More information: Bruce J. Sangeorzan et al, Comparing 4-Year Changes in Patient-Reported Outcomes Following Ankle Arthroplasty and Arthrodesis, *Journal of Bone and Joint Surgery* (2021). [DOI: 10.2106/JBJS.20.01357](https://doi.org/10.2106/JBJS.20.01357)

Provided by Wolters Kluwer Health

Citation: In severe ankle arthritis, total ankle replacement yields better function than ankle arthrodesis (2021, May 19) retrieved 21 June 2024 from <https://medicalxpress.com/news/2021-05-severe-ankle-arthritis-total-yields.html>

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