Is Ankle Arthroplasty More Effective than Arthrodesis?

As some people age and develop severe arthritis in the ankle, quality of life can be affected because they have difficulty with mobility and performing every day activities. Traditionally, this type of problem has been treated with arthrodesis, or fusing the bones together. This can be effective but also can cause other problems, such as arthritis developing in the neighboring joints and it can also make it difficult for the patient to walk, because of the decreased range of motion of the ankle.

Some doctors and researchers prefer to use and suggest the use of total ankle arthroplasties, or ankle replacements. However, there is concern about the effectiveness of the replacement and the long-term viability of the replacement. While earlier studies do seem promising, the authors of this study point out that the authors of most of the studies had some sort of relationship with the implants.

In this study, the authors reviewed patients who had received either the fusion or the replacement to examine if patients who had received fusions were likely to need fusion of neighboring joints in the future.

Using a database of 4705 patients who underwent first ankle fusion and 480 who had undergone first replacement over a 10-year period, the researchers noted that the average age for fusion was 55 years (range from 18 to 95) and replacement was 59 years (range from 19 to 88). The groups were fairly equally divided between males and females. The reasons for the fusion and replacement were, respectively, degenerative joint disease: 48 percent and 57.5 percent, rheumatoid arthritis: 7 percent and 10.5 percent, osteonecrosis: 3 percent and 1 percent, uncomplicated diabetes: 6.5 percent and 6 percent, and complicated diabetes: 4 percent and 0 percent.

Even though the patients who had received the fusions were younger, on average, than those who had the replacement, the fusion group patients had a significantly higher rate of complicated diabetes. This group also had a a significantly higher proportion of African Americans or Hispanics. Among the replacement group, the patients had a higher median income.

When the researchers evaluated the rate of complications, they found that short-term complications in both groups included pulmonary embolism (clot in the lungs), infection, and the need for a revision surgery. Patients who had replacements had a higher rate of needing major revisions and had a higher rate of being readmitted to the hospital because of an infection in the ankle. A very small percentage of the patients in the ankle fusion group only included a below-the-knee amputation, acute infection in the bone, and chronic infection in the bone.

Long-term complications were subtalar fusion (fusion of the other joint in the ankle) in 2.8 percent of the ankle fusion joint and in 0.7 percent in the replacement group.

The authors write that 23 percent of the patients who had received a replacement had to undergo a revision surgery within 5 years of the original surgery. Only 11 percent of the fusion group patients had to have a revision surgery in that same period.

The weaknesses of the study, as pointed out by the authors, include the possible difficulty in an adequate comparison of the two groups regarding the indications for surgery; those who had the fusion were more likely to have ankle instability, bone loss, and/or ankle deformity than did those in the replacement group. As well, the data that was available in the database did not allow the researchers to go beyond the usual demographics and surgery results. They were not able to assess functional outcome of the patients after...
undergoing the surgeries.

The authors conclude ankle replacement appears to have a higher rate of major revision surgery as compared with the ankle fusion. However, ankle fusion does result in a higher rate of neighboring joint fusion as compared with the ankle replacement.