Joint Distraction May Delay Knee Replacement

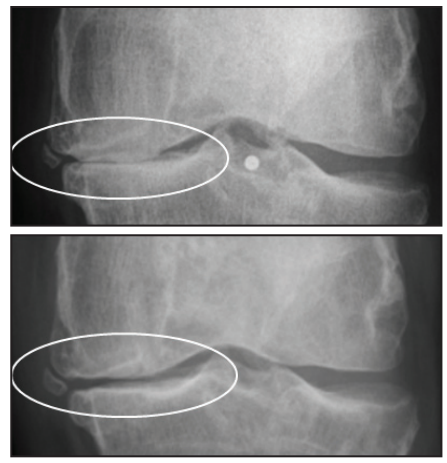
BY M. ALEXANDER OTTO

FROM THE WORLD CONGRESS ON OSTEOARTHRITIS

SAN DIEGO – Separating an osteoarthritic knee joint for 2 months – that is, stretching the top of the tibia away from the base of the femur and holding the bones in place with pins set into an external fixation frame – stimulates the joint to produce new cartilage, thereby reducing pain and improving function for at least 2 years, according to findings from a small European pilot study.

The 20 patients in the trial were all facing knee replacement due to osteoarthritis (OA); the technique, known as knee joint distraction, has postponed surgery for 2 years and counting in the subjects. The hope is the patients will never need an artificial knee, according to senior investigator Dr. Floris Lafeber, a professor of experimental rheumatology at the University Medical Center Utrecht (the Netherlands).

Their minimum joint space width increased from a baseline mean of 1.0 mm to 1.8 mm at 2 years. Patients started the trial with, on average, about 22% of their subchondral bone denuded; that dropped to about 8% at 2 years.



IMAGES COURTESY DR. FLORIS LAFEBER

Three years after a 2-month joint distraction, joint space is larger.

In short, there was an "astonishing increase in cartilage volume," Dr. Lafeber said at the congress, which was sponsored by the Osteoarthritis Research Society International.

Meanwhile, total WOMAC (Western Ontario and McMaster Universities) osteoarthritis index scores increased from about 45% at baseline to about 78% at 2 years, with improvements in WOMAC pain, function, and stiffness subscales. Visual Analog Scale pain scores improved from 73 at baseline to 28 at 2 years. The results were statistically significant.

The technique, which had been used in the past for ankle OAs, "looks very promising" for osteoarthritic knees, Dr. Lafeber said. The 1 year results have been previously published (Ann. Rheum. Dis. 2011;70:1441-6;; RHEUMATOLOGY NEWS, August 2011, p. 28)

His team will next pit knee distraction against total knee replacement and osteotomy in two randomized trials. The researchers will keep tracking the original 20 patients as well. "We are now having follow-up of the first patients for more than 4 years, and no prostheses are placed yet," Dr. Lafeber said.

The researchers plan "more sophisticated MRIs to look at the quality of the cartilage," although the increased joint space on weight-bearing x-rays suggests mechanical competence. Biomarker analysis also suggests "the quality of the cartilage has a hyaline aspect," according to Dr. Lafeber.

The 20 patients' average age was 49 years; 11 were women. All had end-stage, unilateral knee OA with severe pain and cartilage damage. Patients with major problems in both knees were excluded from the study. In a variation of the Ilizarov procedure, a tube with internal coil springs was placed on each side of the patients' osteoarthritic knees, bridging the joints. Joints were then distracted to 5 mm over a few days. Full weight bearing was allowed. The tubes and pins were removed after 2 months.

The theory is that temporarily unloading the knee prevents additional wear and tear and allows cartilage to start repairing itself. Pin sites became infected in 17 of the 20 patients, and were treated with local and oral antibiotics. Dr. Lafeber said he and his colleagues hope that technique refinements will reduce the infection rate.

"On the MRI, it looked [as if] the cartilage was regenerated, but it's unlikely to be truly hyaline articular cartilage.

"It's much more likely to be fibrocartilage, repair-type cartilage. It's difficult to know how long [patients] maintain that fibrocartilage" before it's worn away, said Dr. David Hunter, a rheumatologist, epidemiologist, and professor of medicine at the University of Sydney. "In terms of the clinical applicability of that intervention, I'm not sure it has much utility,"he said, noting that, pending randomized trial results, doubt about the clinical utility of the technique must be maintained.

Dr. Lafeber and Dr. Hunter each reported having no disclosures. The work was supported by the Dutch Arthritis Association. ■