Joint Replacement For the Big Toe

Physical Therapy in Merrimack Valley for Foot

Joint replacements are widely used for the hip, knee, and shoulder. Ankle, elbow, and finger joint replacements are available but are less common. Now on the cutting edge are toe replacements -- specifically the first metatarsophalangeal joint (MTP) or base of the big toe.

Companies that make joint implants are working with surgeons to find the right materials and design for the first ever successful metatarsophalangeal (MTP) joint replacement. Actually, the first MTP joint implant was tried back in 1952. Surgeons continued to modify implant designs to get a functional unit.

But as you can imagine, with the weight of the body behind every footstep, an artificial joint at the base of the big toe doesn't hold up very long. The natural anatomy of the big toe is complex enough to make duplication with an implanted joint difficult at best. For example, two tiny bones called sesamoids just under the joint support and cushion the toe in a way that an implant hasn't been able to reproduce.

Until recently, arthrodesis (fusion) of the joint has been the favored treatment. Patients suffering pain and joint destruction from trauma, gout, arthritis, and other conditions (e.g., deformities, bunions) have had success with arthrodesis.

With an arthrodesis procedure, wires, pins, and plates are used to fix or hold the joint in a locked or fused position. Fusion does limit motion at that joint, which in turn, causes changes in the way a person walks. Loss of motion at this joint can limit activities such as rising up on toes or running.

Silicone joint replacements have been tried but studies show that patients don't put weight on the toe. Even with reduced weight-bearing on the silicone implants, they don't hold up. The implants themselves start to break down and the bone underneath the implant softens and flakes away. Bone spurs form around the area as the body's response to the changes in toe and foot biomechanics.

Results of the current total toe arthroplasty (another term for big toe joint replacement) in use compared with arthrodesis don't favor the arthroplasty just yet as a long-term solution for joint degeneration of the big toe. Some patients do report decreased pain. But the overall satisfaction rate is only around 77 per cent after five years. That doesn't begin to compare with the 90 per cent rating for arthrodesis and up to 98 per cent rating for hip or knee replacements.

For those patients willing to try this approach, the implant can always be removed and the toe fused if it doesn't work out. But there is usually bone loss with this type of revision surgery, so it isn't done routinely.

The author proposes that the implant science around total toe arthroplasty will continue to evolve and improve. When results are equal to or better than for arthrodesis and when the implant survives 10-years or more, then the metatarsophalangeal (MTP) implant will be used more often. Improving the implant's ability to function under normal weight-bearing without loosening is an important goal.

Reference: Nicholas A. Abidi. First Metatarsophalangeal Arthritis: Arthrodesis Versus Arthroplasty. In Current Orthopaedic Practice. May/June 2010. Vol. 21. No. 3. Pp. 258-263.