

Surgery assists wound healing in patients with diabetic foot ulcers

As a clinician, orthopaedic surgeon Jeffrey E. Johnson, MD, routinely faces the frustration of trying to heal foot ulcers in his diabetic patients. Even when healed, patients' feet tend to reulcerate, particularly in those individuals who also experience tightness in the muscle located just above the Achilles tendon.

One way to relax the muscle is to perform tendo-Achilles surgery, a procedure that lengthens the Achilles tendon, or heel cord, thereby relieving pressure on the forefoot, where ulcers are most common. Surgeons have been lengthening the heel cord in this manner — and seeing improvement in their patients — for many years, but it wasn't until recently that the surgery's results were compared to a traditional healing method.

Five years ago, Johnson met with physical therapy researchers Michael J. Mueller, PT, PhD, and David R. Sinacore, PT, PhD, to outline the design of a study to examine the issue. The team initially received funding for a pilot study from the Washington University Diabetes Research and Training Center which led to a grant from the National Institutes of Health (NIH) to conduct a five-year, randomized, prospective study.



Surgical strategy: Lengthening the Achilles tendon can minimize recurrent foot ulcers.

The research followed two groups of patients; all had diabetic foot ulcers and a limited range of ankle motion. One group was treated in the traditional manner, with the application of a total contact cast to distribute weight evenly over the foot and take pressure off of the ulcer. The other group first underwent the tendo-Achilles lengthening procedure and then received the total contact weight-bearing cast.

The surgery is a short, outpatient procedure. Johnson makes three small incisions on alternate sides of the Achilles tendon, partially cutting the tendon, but

leaving its surrounding sheath intact. The foot is then pushed up into a stretch, creating a controlled rupture of the Achilles tendon, thereby lengthening it. The cast prevents the tendon from overlengthening.

Patients were followed for two years after surgery. The researchers found that healing of the ulcers occurred at the same rate in both groups studied. However, they found that the ulcer recurrence rate was much lower in the group that underwent the heel-cord-lengthening surgery.

Johnson believes the lengthened Achilles tendon helps to restore the normal balance of muscles in the leg and also has a positive affect on pressure distribution on the sole of the foot. Further studies are underway to pinpoint specific reasons why patients who have the heel-cord-lengthening surgery experience fewer reulcerations.

Others in the field are taking notice. This summer, Johnson, with his physical therapy colleagues, submitted a paper on the procedure at the annual meeting of the American Orthopaedic Foot and Ankle Society. It was selected as outstanding clinical paper of the meeting, and Johnson was honored with the society's prestigious Roger Mann Award. — HOLLY EDMISTON