Achilles Tendon Rupture: Surgery or No Surgery?

If we told you the rate of re-rupture after surgery for acute Achilles tendon injuries is four per cent (compared with 12 per cent for patients treated nonsurgically), would you have the surgery? At first glance, the numbers seem to speak for themselves. But listen to what surgeons and physical therapists have to say about these results.

The large Achilles tendon is a strong, fibrous band that connects the calf muscle to the heel. Along with other tendons, it supports, stabilizes, and helps move the ankle. It is the most important tendon for walking, running, and jumping. It attaches the calf muscles to the calcaneus (heelbone) and allows us to point our toes or raise up on our toes.

In severe cases, the force of a violent strain can rupture the tendon. The classic example is a middle-aged tennis player or weekend warrior who places too much stress on the tendon and experiences a tearing of the tendon. In some instances, the rupture may be preceded by a period of tendonitis, which renders the tendon weaker than normal.

The surgeons and physical therapists who wrote this report have been studying acute Achilles tendon ruptures for a while. This study is actually the result of a previous study where they compared surgical to nonsurgical treatment but the groups did not have identical follow-up treatment.

It was impossible to tell if the differences in outcomes was due to the treatment approach (surgical versus conservative or nonoperative) or a result of the period of immobilization for the nonsurgical group compared to functional bracing and movement prescribed for the surgical group.

In this study, patients in both groups were treated with exactly the same rehab protocol. The idea was to eliminate differences in the rehab approach so that any differences between early treatment (surgical versus nonsurgical) could be seen more accurately.

Everyone was given the initial treatment within 72 hours of the acute injury. They were randomly placed in either the surgical group or the nonsurgical group. The nonsurgical group was treated by placing a cast on the lower leg (below the knee). The foot was held in a equinus position (toes down and turned in slightly). This position takes the pressure off of the healing tendon.

The surgical group had a tendon repair procedure and then were placed in the same type of equinus immobilization cast. After two weeks in the cast, patients in both groups graduated from the cast to an adjustable brace.

The brace was worn by everyone for six weeks. The position of the foot and ankle was changed within the brace every two weeks bringing the toes up and less pointed down. That's what makes it an adjustable brace.

By the end of the six weeks period of time, the foot had been moved from the equinus position (toes down) past neutral (zero degrees of movement) and to a +10 degree position of ankle dorsiflexion (foot pulled up toward the face). At that point, the patients could wear a special shoe with a heel-lift and start putting some weight on the foot.

By week eight, everyone in both groups entered a 24+ week-long rehab program. The program was supervised by a physical therapist and progressed through a wide range of activities and exercises. The therapists performed the follow-up evaluation of results. They measured joint motion, symptoms, muscle

strength and endurance, activity level, and function.

We started out by telling you the final results based on rate of re-rupture. Twelve per cent for the nonsurgical group versus four per cent for the surgical group. But it turns out those figures are not all that statistically significant when all other factors are considered. For example, there are complications from surgery (infections, scarring, contractures, appearance, difficulties walking) that patients in the nonsurgical group don't face.

And the final results one year later were equal between the two groups. Patients in both groups achieved rapid improvements in the first six months after treatment. The surgical group had better results at the end of the sixth month. In both groups, the injured leg still wasn't as strong as the uninjured side even after a year's time.

The early lag in the nonsurgical group may be an indication that there is a longer recovery period required when healing takes place on its own without surgery to help it along. Gradual changes were still recorded for both groups between six and 12 months. But again, by the end of 12 months, there were no major differences between the two groups.

The authors could not say one way of treatment was better than the other. The results were too much the same between groups. Surgery is more expensive and carries the risk of greater complications.

No matter how the acute Achilles tendon injury is treated, it's clear from the results of this study that early mobilization is beneficial. The positive healing effect of early mechanical loading of the tendon has been shown in other studies as well. Use of a functional (adjustable) brace is recommended over rigid casting.

Next step for this group: assess the effect of functional bracing along with early range-of-motion training. Look for better ways to rehab to speed up the process. On the flip side, consider whether a one-year follow-up is too short -- maybe this type of injury takes much longer than that to achieve optimal results. And so, researchers continue to look for the best way to treat acute Achilles tendon ruptures that affect so many athletes of all ages.

Reference: Katarina Nilsson-Helander, MD, PhD, et al. Acute Achilles Tendon Rupture. In The American Journal of Sports Medicine. November 2010. Vol. 38. No. 11. Pp. 2186-2193.