What is a Tendon Transfer?
Tendon transfers are surgical procedures that move a tendon from its normal point of anchorage to another. This is done for a number of different reasons. Tendon transfers can correct deformity, improve joint function, or establish a better foot shape.

Symptoms or Clinical Presentations
Muscle or tendon weakness can cause problems with gait (walking), instability of the ankle or foot, or changes in the underlying architecture of the foot. The specifics of a patient’s symptoms depend on the specific muscle/tendon or group of muscles/tendons that are not functioning properly.

Muscle deficits can be limited to one muscle group. An injury to the nerve that powers a muscle causes weakness of that muscle. Nerve injury to the muscle that lifts up the foot (dorsiflexion) causes a foot drop.

More complex patterns of weakness can occur, as seen in Charcot-Marie-Tooth disease. Many patients with this nerve disorder have an imbalance in the relative strengths of the lower limb muscles. This may cause a high foot arch and inward-turned heel.

Tendon transfers may be used for these and other conditions to restore strength and balance.

Cause (include risk factors)
A wide variety of problems may cause muscle or tendon weakness. These include hereditary (genetic) neurologic diseases, stroke, other neurologic injury, trauma, or wear and tear.

Anatomy
The foot is a unique weight-bearing structure specifically designed for normal efficient gait (walking). The muscles of the lower leg are connected to tendons that attach at specific points on the foot. During a normal step, these muscles and tendons move the ankle and foot to enable normal gait. As we walk, a single limb normally undergoes heel strike, foot flat, heel off, and then toe off. As this is occurring, the opposite limb undergoes a similar, yet slightly staggered series of movements. The result is a fluid and efficient gait.

The muscles that drive the ankle and foot during normal gait are balanced. When certain muscles act to raise up the foot (dorsiflexion), counteracting muscles that push the foot down (plantarflexion) are inactive. This balance occurs across the ankle and foot. Underactivity or overactivity of a particular muscle (or group of muscles) can cause inefficient gait, instability, and deformity of the bones and joints.

Diagnosis
Observations about how the foot hurts or how it may have changed may help the orthopaedic surgeon to identify the specific problem. The physical examination is important to determine the diagnosis, establish the underlying cause, and define which muscle/tendon(s) or nerve(s) may be involved.
Treatment Options
Before performing any tendon transfer, the orthopaedic surgeon and patient have a discussion about the needs and goals of the patient. The patient should have an understanding of the realistic expectation of improvement that can be obtained with a tendon transfer. It is important to understand that a tendon transfer increases function in one place but may cause some limitations in the area from which the tendon was transferred.

Tendon transfers require good healing of the skin and soft tissues. The joints that the tendon will span should be mobile and stable for the tendon transfer to be effective. The muscle that is to be transferred should have adequate strength to perform its new function. At times, tendon transfers are accompanied by other procedures that help realign or balance the foot and ankle.

Recovery
The orthopaedic surgeon balances the need for healing of the tendon transfer with the need to get the patient moving. The surgeon will recommend a postoperative plan that will optimally balance these two requirements. The patient likely will need physical therapy after a tendon transfer has been performed.

Outcome
With careful preoperative planning by the surgeon and appropriate expectations of the patient, tendon transfers may have a good result. The patient should speak with the orthopaedic surgeon about the expectations after surgery with the specific procedure or set of procedures planned.

Complications
As with all surgical procedures, complications such as wound infection may occur. Although uncommon, the fixation (reconnection) of the transferred tendon can fail to heal. This risk may be minimized with a careful postoperative rehabilitation plan that balances healing with movement.