

**Success rate:** Most patients will have significant improvement at five years. Over time the pain tends to return in some patients. Even so, there is an 80% 10 year success rate .

**Risks and complications:** There is about a one percent incidence of deep infection. However, about half the patients will have superficial skin infections around the pins at some point. These are usually easily treated with oral antibiotics. Occasionally a patient will have stiffness requiring further surgery. Other complications that rarely occur include nerve injury and CRPS (pain syndrome).

**Associated procedures:** The following procedures are often performed at the same time as the HTO: microfracture, autologous chondrocyte implantation, or osteochondral allograft.

**Options if the procedure fails:** If HTO fails then either a unicompartmental knee replacement or total knee replacement may be needed. HTO is generally not a permanent cure for arthritis, although it can provide many years of excellent pain relief and increased function.

**Why we use the external fixator method:** HTO also can be performed by cutting the bone all at once and inserting a plate. At Illinois Sports-medicine we use the external fixator method instead for two reasons. First, the fixator permits the patient to reach an exact alignment that can be checked with X-rays. With the plate method, the bone is cut, a wedge of bone is removed , and the tibia is straightened all at once. It is difficult to achieve the desired alignment using this method with as high a degree of accuracy as the external fixator method. Second, the external fixator method does not compromise future total knee replacement if that procedure becomes necessary. The plate method is done near the knee joint and in some cases can make future total knee replacement difficult and the ultimate result less successful.



Pre-Surgery

3.5 Months Post-Op

The tibia is not yet fully healed but note the increased space between the bones where new cartilage has already formed. Note also the improved alignment.

*Illinois  
Sportsmedicine and  
Orthopaedic Center*

## *High Tibial Osteotomy*



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## High Tibial Osteotomy

### Definition of a varus knee:

The knee of a bowlegged person. Some people have this alignment naturally. Others develop it when a knee collapses from arthritis.



### Definition of medial compartment arthritis:

Degeneration of the medial or inside compartment of the knee. Patients experience pain in this area. They also have swelling and reduced function.

**Purpose of procedure:** There are two main reasons to perform

high tibial osteotomy. For patients with medial compartment arthritis and a varus knee, its purpose is to provide years of relief prior to knee replacement. This is particularly important in patients too young to be optimal candidates for knee replacement. The other reason it is done is to correct malalignment in patients undergoing another procedure such as cartilage implantation. In these patients the HTO is performed to protect the cartilage from failure due to excessive compression.

**Surgical notes:** The procedure is performed in a hospital with the patient going home one or two days after surgery. The tibia or shinbone is cut and straightened. At Illinois Sportsmedicine we insert pins above and below the



bone cut. Then a device called an external fixator is used to connect these pins. The patient turns a small crank at home to gently, painlessly and imperceptibly straighten the tibia. X-rays are taken in the office during the initial one to two weeks that the patient wears the fixator. These x-rays are used to ensure that the knee is precisely corrected to the desired alignment. Once satisfactory alignment is achieved, the fixator is locked and the bone is allowed to heal. During the healing period, patients gradually progress their activities as tolerated. At about 3 months, healing is generally complete enough to remove the fixator and the metal pins. This is done under a brief general anesthetic in the operating room.

