



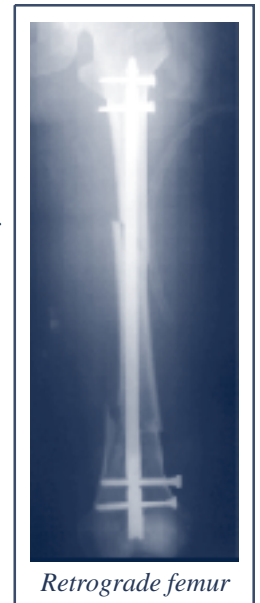
Antegrade femur

SIGN Treatment Moves up the Leg *by Lew Zirkle, MD*

We continually look for ways to improve our products and technique. Many ideas for improvement come from the surgeons in host countries who use the SIGN system almost daily. The following indications for the SIGN tibia nail illustrates as follows:

The intended use of the tibia nail was in open tibia fractures as a non-reamed nail. In less than a year, Vietnamese surgeons reported cases using the tibia nail for distal femur fractures using the retrograde approach. Soon, a large number of these cases were reported, especially from Cho Ray Hospital in Ho Chi Minh City.

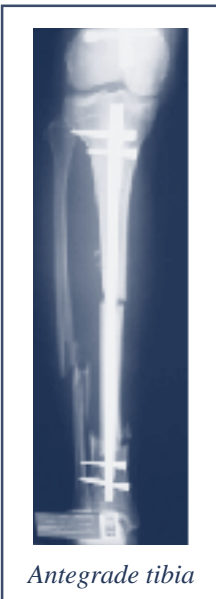
Further innovation by the surgeons in Binh Duong, Vietnam, resulted in the tibia nail being used in proximal femur fractures using the antegrade approach. Most surgeries are performed by inserting the nail through the greater trochanter. This means the SIGN nail system can be used on most fractures in the leg bone.



Retrograde femur

Using the tibia nail in femur fractures brought to light some issues that needed to be addressed.

The direction of the bow in the nail: The direction of the apex of the bow is determined in part by the entrance hole being posterior or anterior in the greater trochanter. The anatomy of the femur is a big factor.



Antegrade tibia

Direction of interlocking screws:

From lateral to medial (standard approach) — the screw creates a stress riser in the medial femoral cortex. Insertion is made easier with a T-handle with one short arm. We have not placed the interlock through the femoral neck because of the difference in anteversion and lack of C-arms.

Anterior/posterior through the greater trochanter — this may require a longer T-handle (in design at SIGN). The increased length of the T-handle arms will involve extending the alignment pin, cannula and drill guides.

Through the greater trochanter — this is a new technique devised in Binh Duong, Vietnam and adopted for use in many SIGN projects.

With these issues addressed, and the successful results of SIGN surgeons, the tibia nail has become a universal nail capable of treating fractures of the femur and tibia.

We continue our research of the bow in the femur. Dennis McQuerry of Battelle negotiated a 6-month trial of the Mimics software. This software will enable us to use CT scans of Bang-

ladesh, Vietnamese, and American bones to determine the anatomy of the femoral canal (inside the bone) and create a pictorial representation of the canal using modeling software. CT scans were donated by Kadlec Medical Center. Once these studies are completed, we will be able to determine proper shape and technique of SIGN nail placement.

Nonmedical reader? Familiarize yourself with some terminology!

Greater Trochanter —

Antegrade: through the greater trochanter into the femur

Anterior: Front

Femur: bone that runs from the knee to the hip

Posterior: back

Retrograde: through the knee into the femur

Tibia: bone that runs from the knee to the ankle

