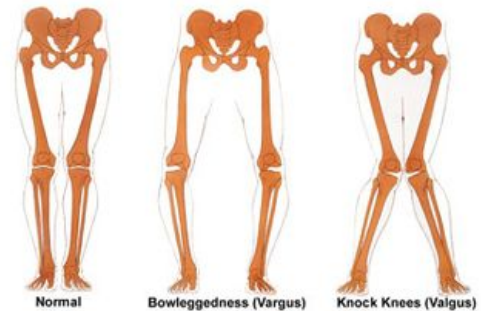




## Osteotomy

Mr Smith has a major interest in osteotomy around the knee and is one of the most frequent practitioners of this procedure in the UK. The concept of osteotomy is an old one that pre-dates joint replacement as a treatment for knee arthritis. The scope of osteotomy and the type of patients suitable for this has increased and diversified in recent years. This is due to a combination of factors, the surgical techniques and implants for osteotomy have become more refined and the understanding of knee kinematics much improved. In addition, the recognition of an increased incidence of knee problems in younger more active patients has demanded the development of an alternative option for these people who are usually not suitable for joint replacement.



The concept of osteotomy is described simply by Mr Smith as ‘moving the plumb line’ of the leg. Strict selection criteria must be met for this procedure to give a good result. Generally the osteotomies under consideration are High Tibial Osteotomy (HTO) or Distal Femoral Osteotomy (DFO).

### HTO

This is the commonest osteotomy in Mr Smiths practice and is appropriate for a patient with what is referred to as a ‘varus’ leg. This is often down to a combination of wearing on the inner side of the knee and possibly an underlying subtle bowing or ‘varus’ of the tibia which is a common finding in sporty men who have slightly bow legs. The majority of people suitable for this procedure are men.

In the out-patient clinic Mr Smith will order full length x-rays of your affected leg whilst you are standing. Using a computer software package he will then sit with you and work out where your ‘plumb line’ or ‘mechanical axis’ presently lies and calculate the angle of correction that would be required to improve your symptoms by moving the load away from the damaged part of your knee. Realignments of 10-20 degrees are appropriate for most people.

The favoured surgical technique is presently the ‘opening wedge’. This requires a surgical break across the top of the shin bone stopping short of going all the way across. The leg is then carefully realigned using x-ray control and the new position secured with a specifically designed plate and screws. Mr Smith no longer uses any form of bone graft, human or artificial for a HTO as this can add to patient discomfort and can cause unwelcome complications.



The North Wales  
Knee Clinic

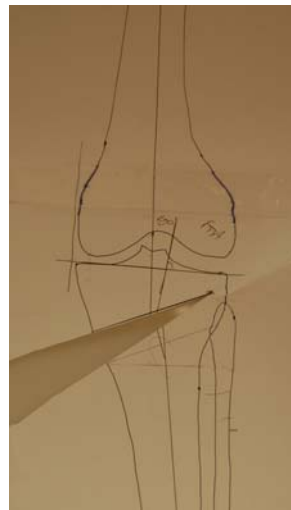


Mr Tony Smith FRCS(Tr and Orth)

Consultant Orthopaedic Surgeon  
and Knee Specialist

After HTO range of motion and weight bearing are carefully controlled by a hinged knee brace and a strict **rehabilitation** protocol for a period of 6 weeks. If a check x-ray at that point looks satisfactory Mr Smith will encourage you to discard the brace and proceed to full weight bearing. Most patients are ready to return to work and even resume a little light training after 10-12 weeks.

HTO does not address the underlying problem of wear in the knee, it works by re-distributing the weight across another part of the knee. Eventually further surgery will be required but it is not uncommon to experience relief of symptoms for 10 years or more with this technique.



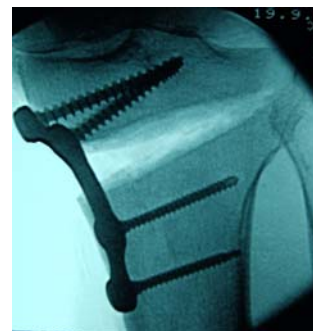
***Calculating the angle of HTO correction***



***Performing HTO***



***Opening the HTO***



***Fixing the HTO***



## DFO

Distal femoral osteotomy (DFO) involves creating an angular correction of the 'plumb line' by performing a partial surgical break at the lower end of the thigh bone, just above the knee joint. This is a much less commonly performed procedure than HTO and once again, strict selection criteria have to be met. Mr Smith will discuss this with you in more detail.

Commonly, patients who are suitable for DFO have an underlying problem with the developmental alignment of the end of the thigh bone, that lead to problems in later life. This condition is called 'Lateral Femoral Condyle Hypoplasia' and leads to a 'knock-knee' deformity on the affected side, also known as 'Genu Valgum' or a 'valgus' knee. Another group of patients who may benefit from DFO are those who have their lateral meniscus removed, often as a teenager. This can lead to premature wear of the outer side of the knee and development of a valgus deformity. Depending upon symptoms, activity levels and the severity of damage, such patients may be better served by a lateral [unicompartmental arthroplasty](#). Mr Smith will discuss this with you as required.

The DFO is a highly complex operation and requires careful planning, much like a HTO. Techniques and implants have improved greatly over the last decade. The 2 main options are lateral opening wedge (like the opening wedge HTO) and medial closing wedge. If Mr Smith feels the lateral opening wedge is the best option for you, supplementary bone graft from your pelvis (hip bone region) will be required. Like a HTO, a period of restricted weight bearing and range of motion with a knee brace will be necessary to achieve satisfactory [rehabilitation](#). Most patients are ready to return to work about 12 weeks after DFO.



**Assessment of the 'plumb lines' in each leg**

**– note the difference between sides**



**Correction of Valgus Deformity**