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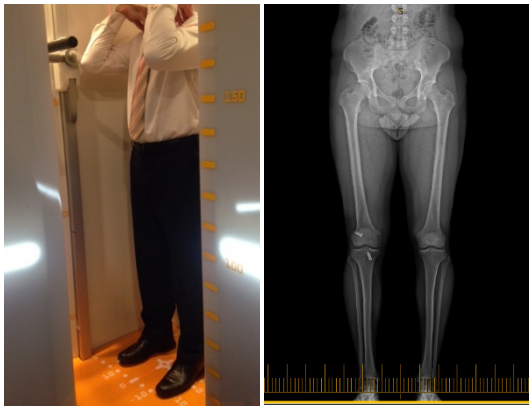
Protocol for EOS imaging of the lower limb to assess posterior tibial slope.

1. **Coronal alignment view**
   a. When imaging both legs at the same time, patient asked to stand with the <u>feet parallel and 10 inches apart.</u>



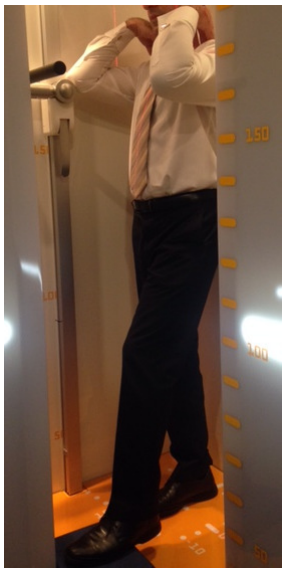
Correct positioning for CORONAL VIEW

2. **Lateral View**

   Each leg to be imaged <u>separately</u>. When imaging the **LEFT** leg:

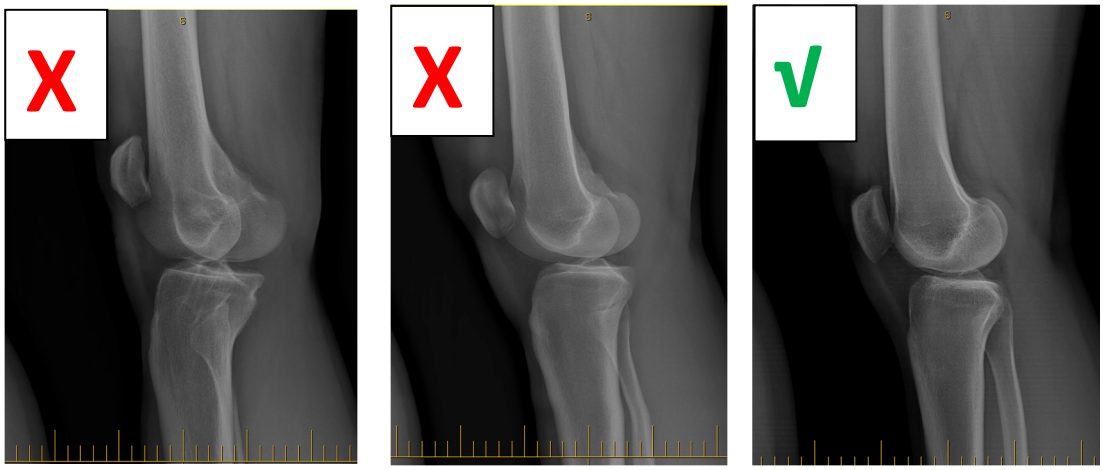
   a. Patient asked to stand with the **LEFT** heel placed at the central target marked on the floor with the LEFT knee in full extension/hyperextension.
   b. Patient asked to support himself/herself by holding the handle bar
   c. The right foot is rested on a block (8cm height)
   d. Patient asked to position hands on the shoulders
   e. <u>A limited knee scan</u> is made to ensure both femoral condyles are superimposed as close as possible on lateral image. This may require more than one shot to achieve (see samples below).
   f. Once correctly aligned proceed to complete views from pelvis down to the floor with the knee in full extension/hyperextension.

Correct positioning for LEFT limb LATERAL EOS



Correct positioning for RIGHT limb LATERAL EOS

   g. Repeat process for **RIGHT** leg, placing RIGHT heel on the central target and LEFT foot resting on the block.



Images A and B are rotated and not adequate. Image C is adequate.
AIM FOR <5mm FEMORAL CONDYLAR OFFSET

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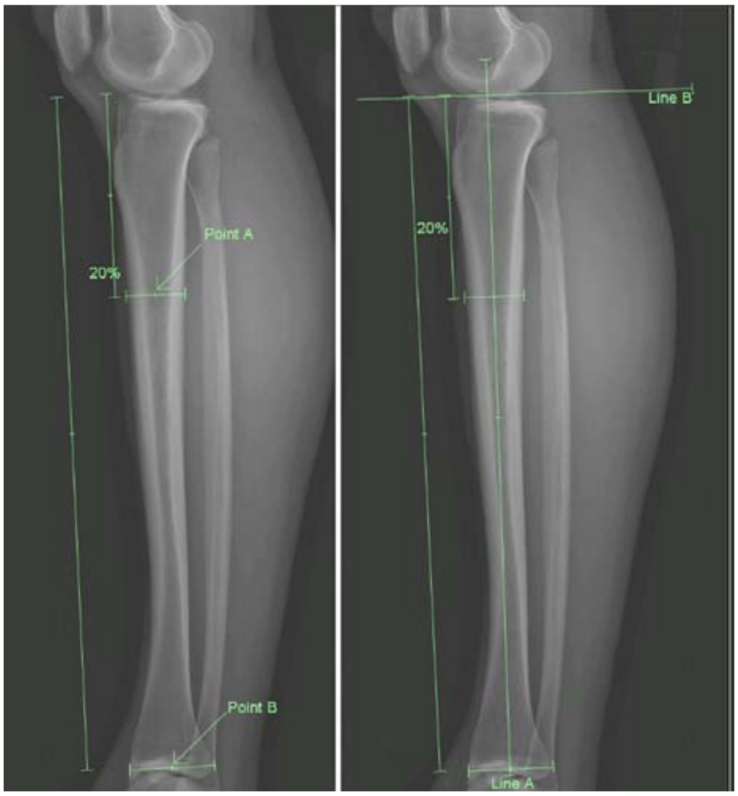
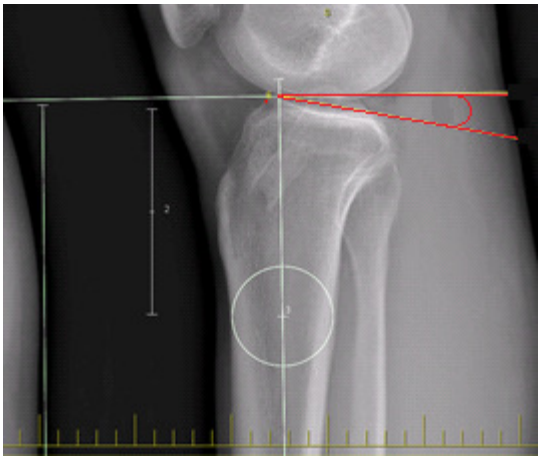
Method of Medial Posterior Tibial Slope Measurement

Our recent study of tibial slope measures suggest that the most reliable and robust method was determined using the whole tibial shaft and the medial tibial plataeu as landmarks. The method is decribed here:

1. Ensure posterior femoral condyles are superiposed with condylar offest is less 5mm
2. Measure length of tibia.
3. Mark the centre of AP distance of proximal 20% of tibial length (Point A).
4. Mark the centre of tibial plafond (midpoint of the anterior and posteior lip of tibial plafond) Point B.
5. Draw a line connecting (Point A) and (Point B) and proximally transecting the proximal tibial plateau cortex. This line represent the Anatomical Tibial Axis (ATA).
6. Draw a perpendicular line to ATA (PL).
7. The medial tibial plateau can be identified by its concave surface. Conversely the lateral tibial plateau has a slightly convex surface
8. The medial tibial plateau (MTP) is defined a line starting from the anterior edge to the posterior edge of the MTP.
9. The medial tibial slope is the angle formed between the ATA and the MTP.



Defining the Anatomical Tibial Axis



Defining medial tibial slope

Coronal View Measurements

From the coronal view the following measurements should be taken

1. Mechanical axis (centre of hip to centre of ankle) both legs
2. Anatomical axis, Varus and valgus (Femoro-tibial angle of the lower limbs)
3. Leg length, defined as distance between the centre of the tibial plafond and the apex of the femoral head