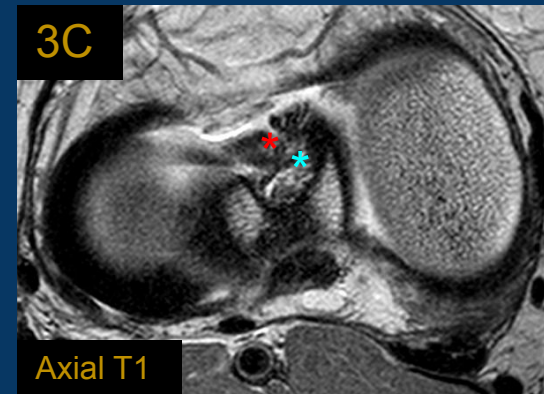
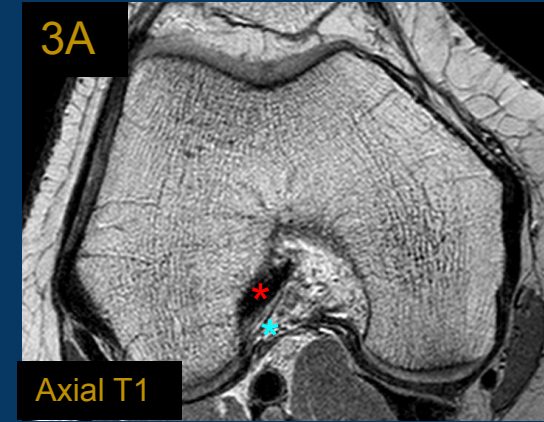
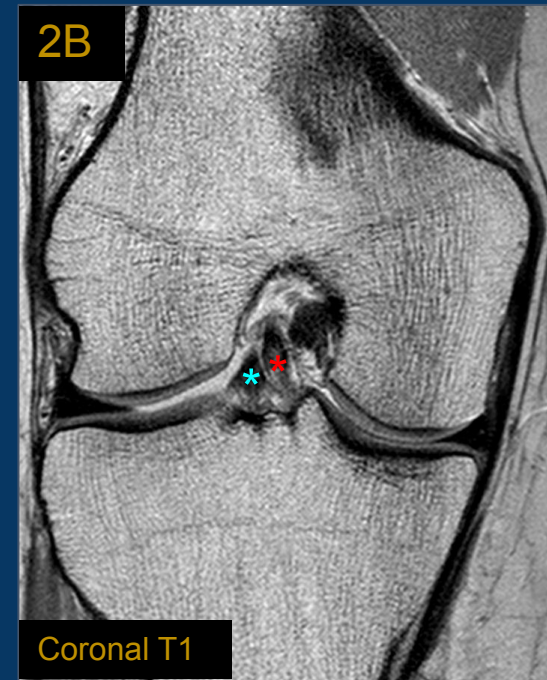
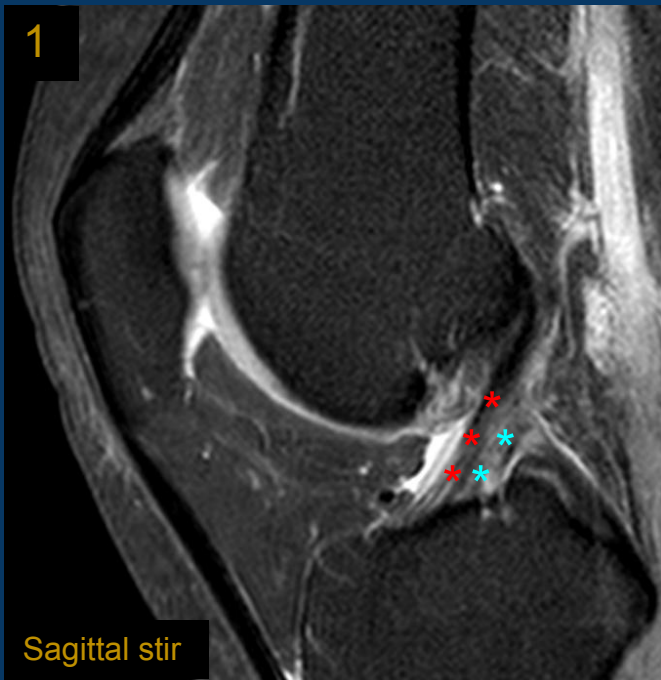


# Normal Anterior Cruciate Ligament



**Figure 1 (stir):** Sagittal image of the anterior cruciate ligament (ACL) reveals two distinct bundles, the anteromedial (red asterisk) and the posterolateral (blue asterisk). These bundles exhibit intermediate to high signal intensity on T2/STIR sequences which should not be mistaken for a lesion, as the fibrillar pattern remains intact.

**Figure 2 (T1):** Coronal posterior (a) and anterior (b) images depict the two bundles of the ACL, the anteromedial and the posterolateral. Both originate from the inner aspect of the lateral femoral condyle and insert into the tibial eminence.

**Figure 3 (T1):** Axial images, progressing from superior to inferior planes (a-c), depict the trajectory of the ACL. The ligament runs from a superior to inferior direction, posterior to anterior, and from lateral to medial.

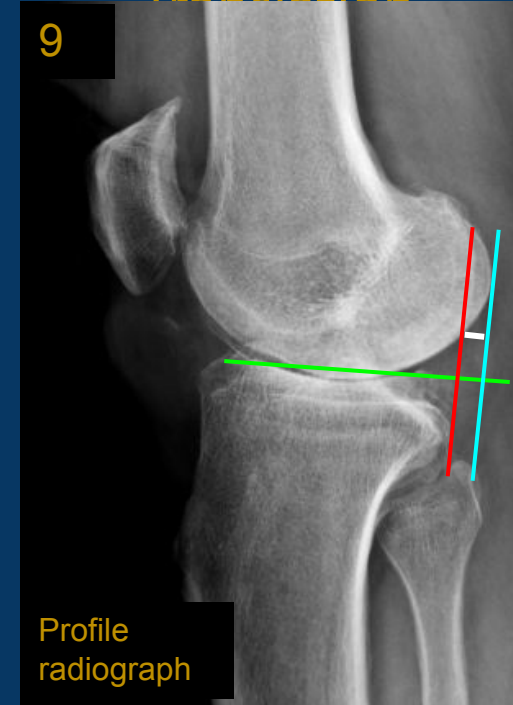
# Indirect Signs of ACL Injury

## Horizontalized ACL



Sagittal stir

## Anterior Tibial Translation

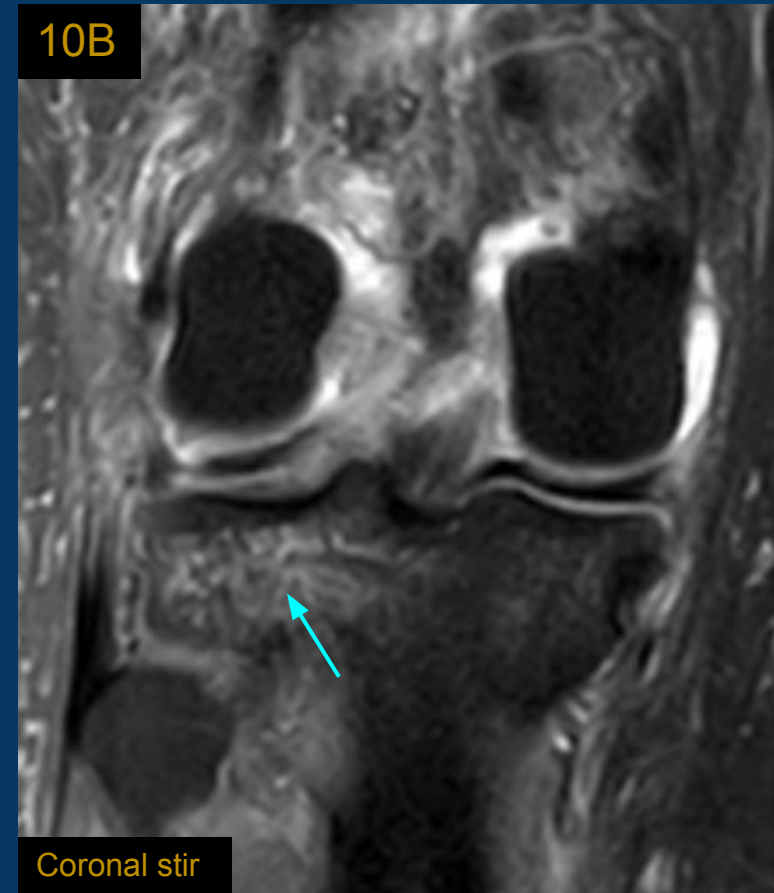


Profile radiograph

**Figure 8 (T1):** In sagittal imaging, a complete ACL rupture is evident, characterized by increased thickness and the absence of the typical fibrillar pattern (**red asterisks**). This high-grade lesion leads to a loss of tension within the ligament, resulting in a more horizontal trajectory. To objectively assess this, a line is drawn along the roof of the intercondylar notch of the femur, known as the Blumensaat line (**blue line**). The ACL should ideally be parallel to this line. However, in Figure 8, the ACL appears to be horizontally aligned in relation to the Blumensaat line.

**Figure 9 (radiograph):** In a profile view of the knee, anterior tibial translation is evident, suggesting an ACL lesion, as the ACL is the primary structure responsible for resisting such movement. To assess this, a line was drawn tangent to the posterior contour of the medial tibial condyle (**red line**) and perpendicular to the medial tibial plateau (**green line**). The distance between this line and the posterior edge of the medial femoral condyle (**blue line**) should be less than 7.0 mm (**white line**).

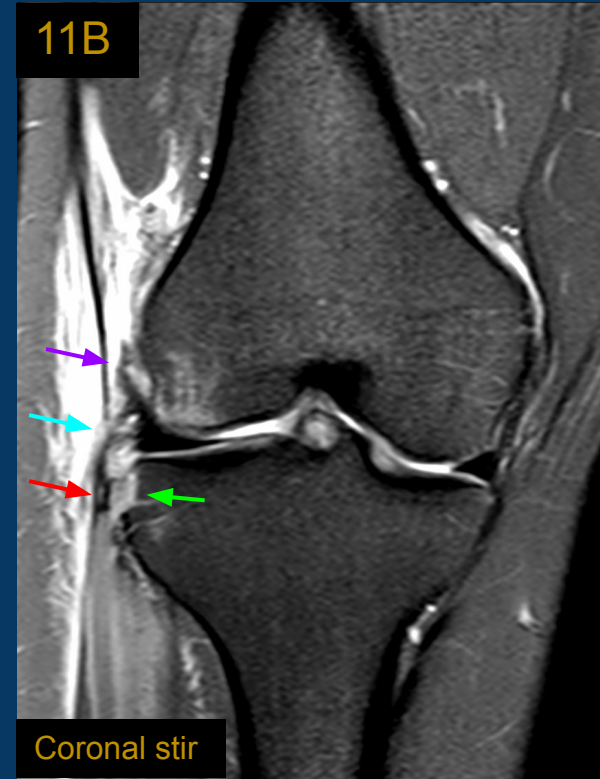
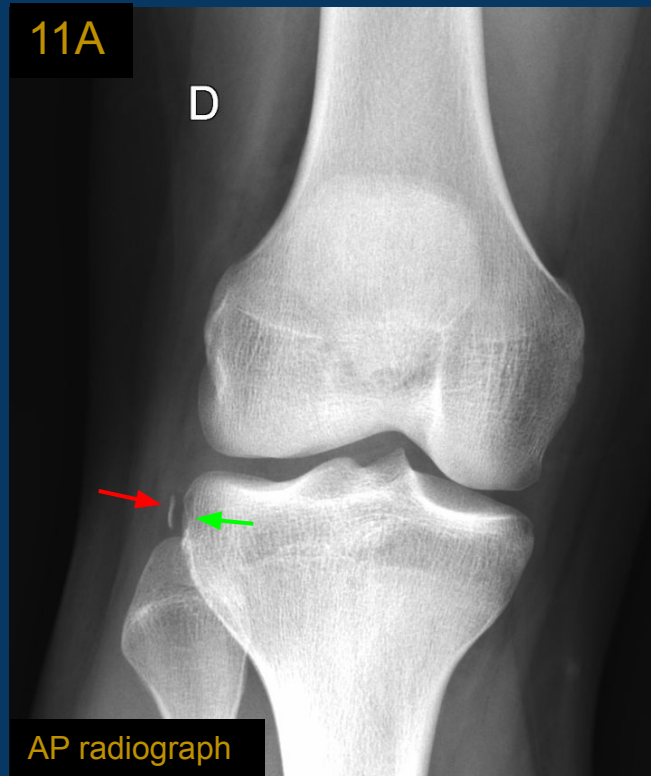
# Pivot Shift Injury



**Figure 10 (Stir):** Lateral sagittal (A) and posterior coronal (B) images of the knee display a pivot shift lesion in a patient who suffered complete thorn of the ACL (not shown). The pivot shift lesion is characterized by subchondral bone bruises and impaction on the central/anterior portion of the lateral femoral condyle (red arrow) and on the posterior part of the lateral tibial plateau (blue arrows). The trauma mechanism of the ACL injury typically involves a combination of valgus stress on the knee, anterior tibial translation, and external rotation of the tibia relative to the femur. The anterior tibial translation results in an impact between the central/anterior femoral condyle and the posterior tibial plateau. Concurrently, the valgus stress leads to a reduction in the lateral femorotibial compartment during the event, explaining why this is the side that gets affected.



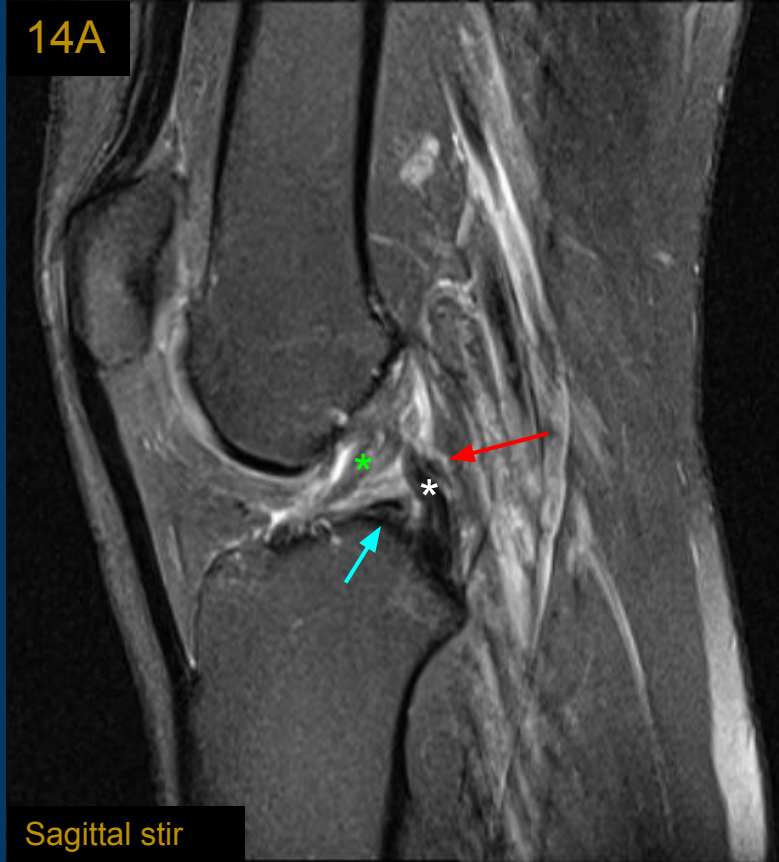
# Segond Fracture



**Figure 11A (radiograph):** Anteroposterior view of the knee shows a bone fragment (**red arrows**) adjacent to the lateral contour of the tibial plateau (**green arrows**), consistent with an avulsion fracture of the distal insertion of the anterolateral ligament, known as a Segond fracture. This type of injury is associated with concomitant ACL lesion in more than 95% of cases (not shown in the figure).

**Figure 11B (Stir):** Coronal image of the same patient depicts the anterolateral ligament with its menisofemoral component (**blue arrow**) and meniscotibial component (**purple arrow**). Both components appear thickened, irregular, and demonstrate elevated signal, suggestive of a sprain or partial lesion. Observe the bone fragment (**red arrows**) attached to the distal end of the meniscotibial component. This fragment was avulsed from the anterolateral contour of the tibial plateau (**green arrows**) and corresponds to the Segond fracture.

# Zip Lesion



**Figure 14 (Stir):** Lateral sagittal (A,B) and posterior coronal (C) images of a patient's knee reveal a complete ACL lesion associated with a 'zip' lesion of the lateral meniscus. This type of injury involves a tear in the periphery of the posterior horn of the lateral meniscus, precisely at the site of the Wrisberg ligament insertion. In **figure 14A**, observe the torn ACL (**green asterisk**), the posterior root of the lateral meniscus (**blue arrow**), and the Wrisberg ligament (**red arrows**) passing posteriorly to the posterior cruciate ligament (**white asterisk**). **Figures 14B and 14C** show the posterior horn of the lateral meniscus (**purple arrow**) and the distal insertion of the Wrisberg ligament, revealing a noticeably widened gap between them. It can sometimes be challenging to distinguish a 'zip' lesion from the regular space between these two structures. Objectively, we might consider it a lesion if such separation stretches more than 1,4 cm from the lateral margin of the posterior cruciate ligament..