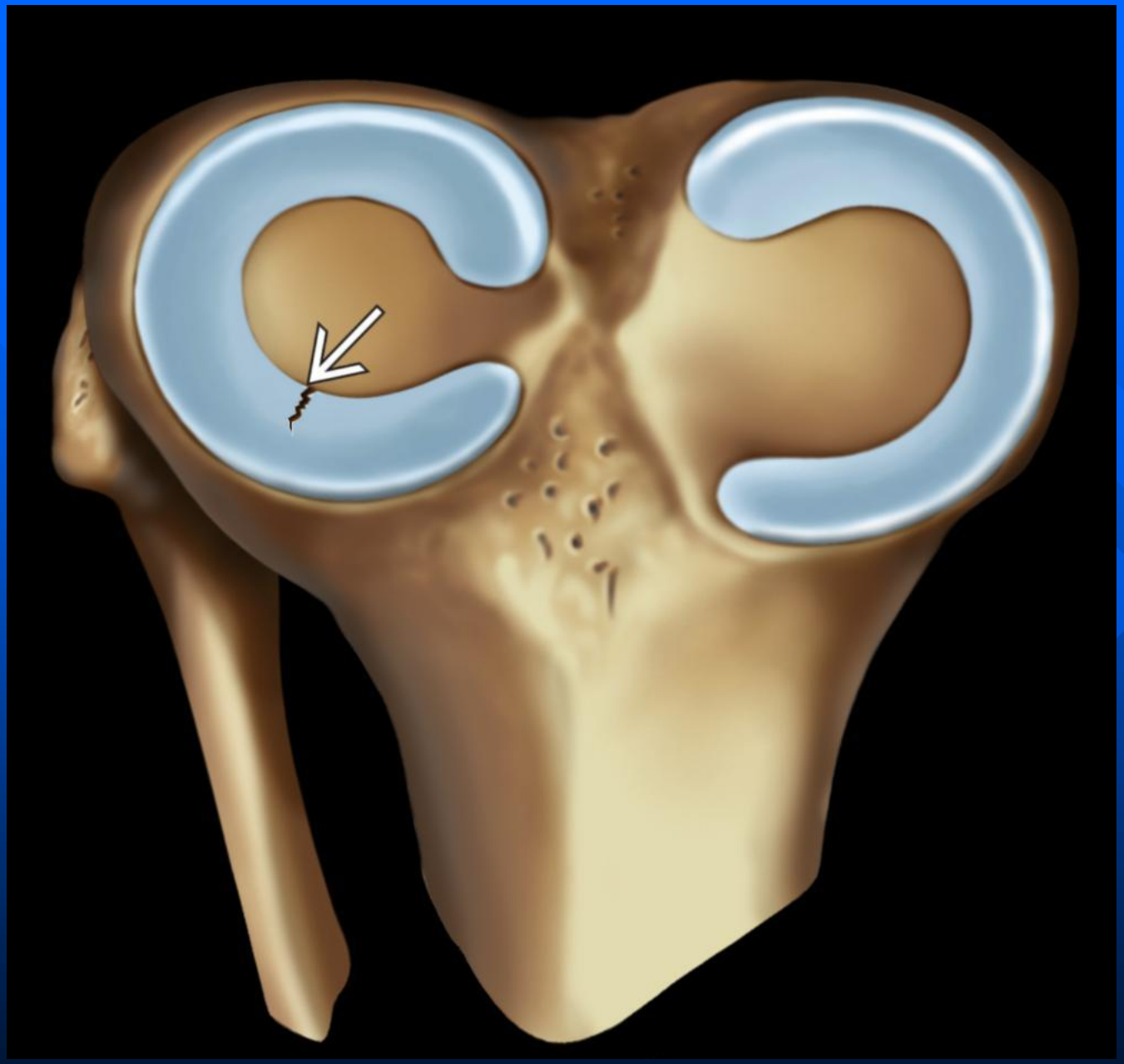
Meniscal Radial Tear

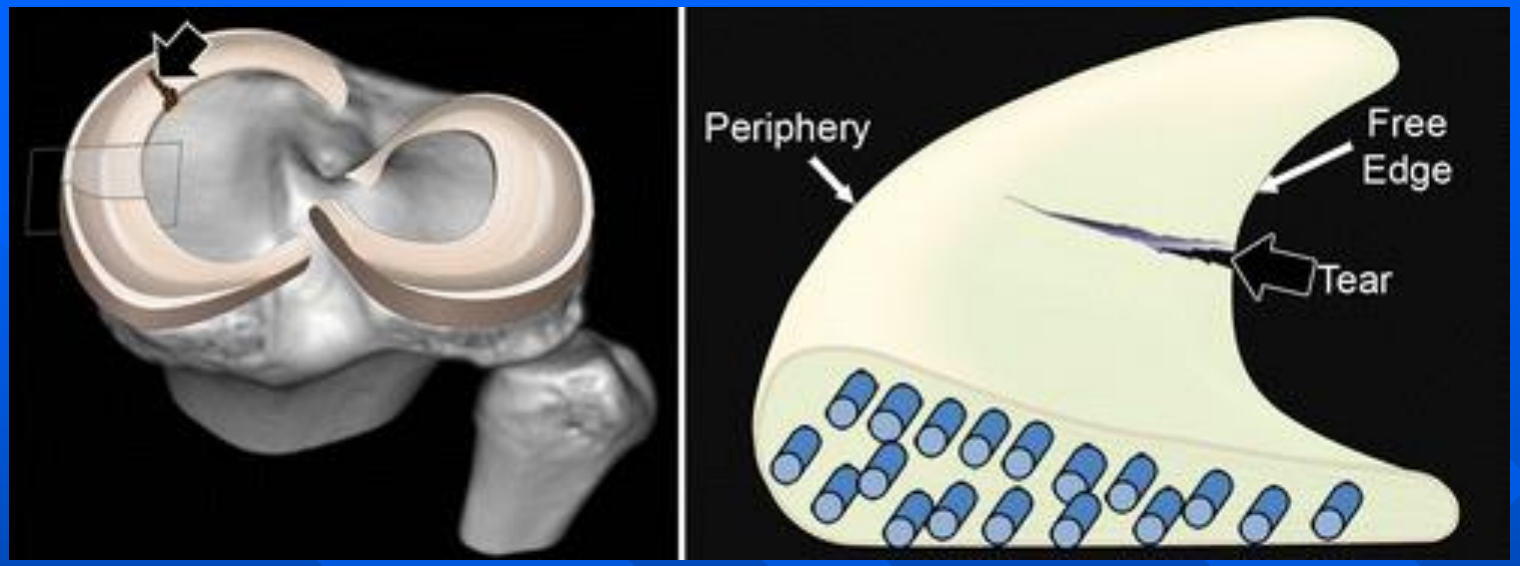
- Vertical meniscus tear oriented perpendicular to long axis of meniscus.
- In contrast to horizontal and longitudinal tears, radial tears disrupt the meniscal hoop strength, resulting in a dramatic loss of function and possible meniscal extrusion.
- Frequently not repaired because they are located within the avascular “white zone” and therefore have a low likelihood of healing or regaining significant function.

Meniscal Radial Tear

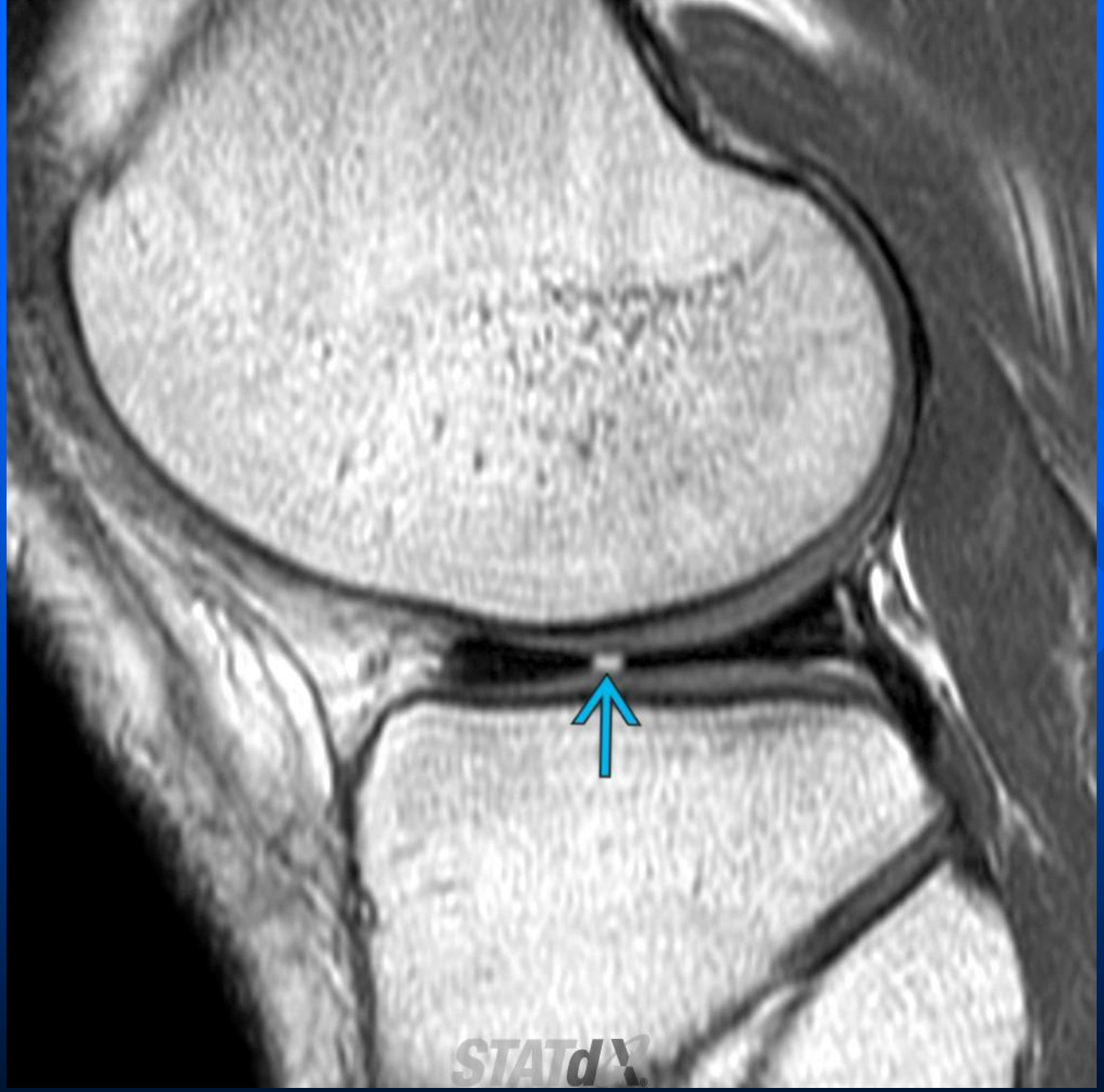
- Focal truncation of free edge of meniscus
  - Best seen on coronal images
- Truncation of posterior root
  - Especially medial meniscus
- Best seen on coronal images as vertical defect through most posterior aspect of meniscus
- Gap sign on sagittal images
- Ghost meniscus sign: Image through plane of RT shows no meniscal tissue
- T2WI more specific for morphologic meniscal change
- If large RT, may be associated with marrow edema due to loss of meniscal cushioning



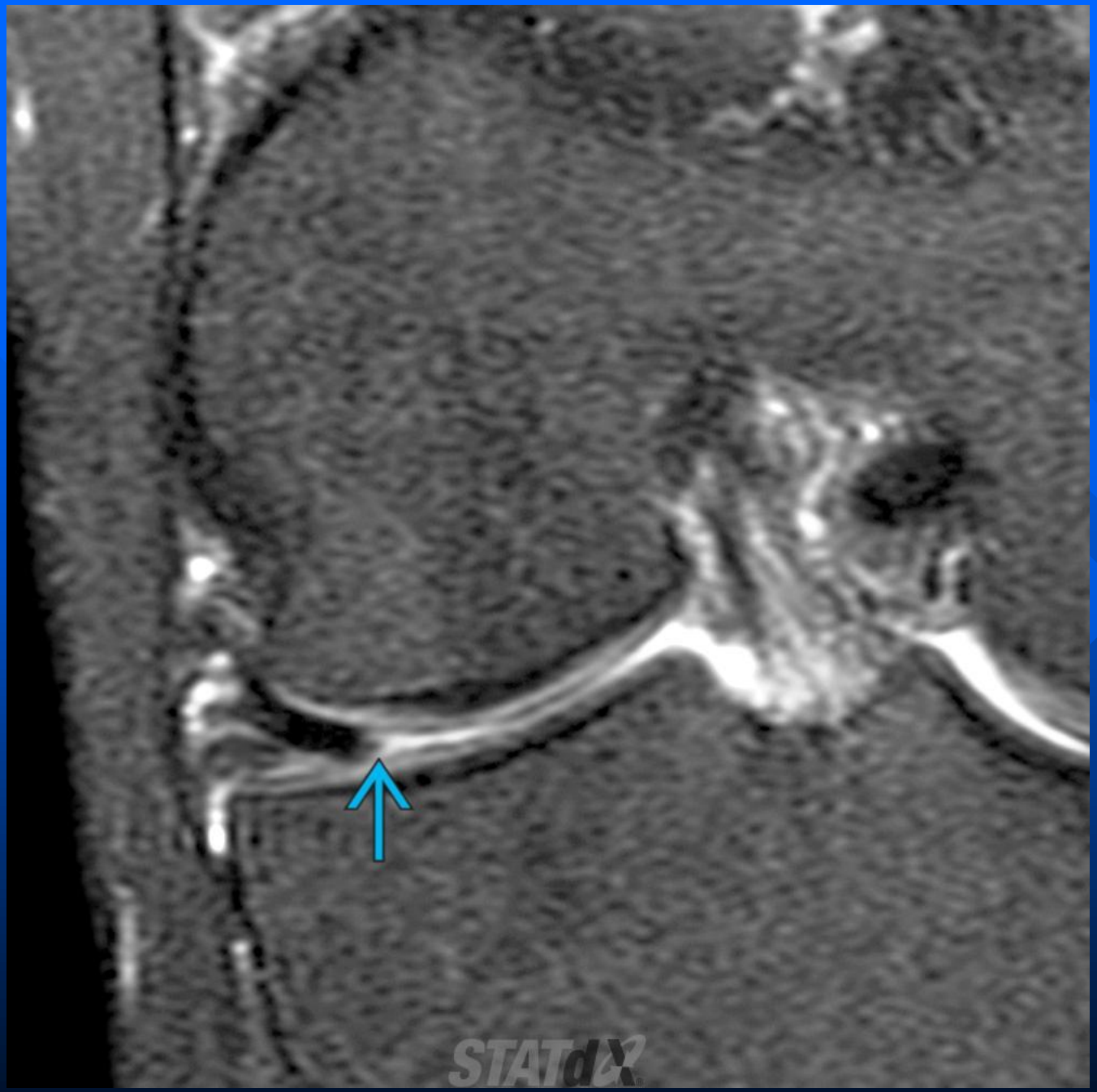
Graphic from a superoanterior perspective depicts a partial-thickness radial tear (white solid arrow) of the lateral meniscus at the junction of the body and anterior horn. Radial tears begin at the free edge of the meniscus and propagate a variable distance toward the peripheral (capsular) margin.



Radial tear (black arrows) that involves the free edge and is perpendicular to the long axis of the meniscus. The circumferential fibers responsible for resisting hoop strength are sequentially torn. Blue cylinders = longitudinal collagen bundles.



Sagittal PDWI MR from the same patient shows a small rectangular gap (cyan solid arrow) in the free edge of the lateral meniscus, consistent with a radial tear. This finding may be subtle with small radial tears, but it is fairly specific when identified.



Coronal T2WI FS MR from the same patient shows truncation of the free edge of the lateral meniscus (cyan solid arrow), indicating a radial tear. This finding may be seen postoperatively or with degenerative meniscal subluxation.