



# Knee Avulsion Injuries: What can I Get From a CT?

SHORT ABSTRACT

PIETER VAN DYCK 

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## ABSTRACT

Acute bone and soft-tissue injuries to the knee are commonly seen in emergency departments as well as in the outpatient clinic. Most commonly, these injuries result from a direct blow, a fall, or a twisting injury. Prompt and accurate diagnosis relies heavily on imaging and is mandatory to facilitate adequate management and prevent potential complications [1].

Radiographs are usually the initial imaging modality in the evaluation of the acutely injured knee but have a low yield. Computed Tomography (CT) may be performed as the next imaging study for the evaluation of suspected radiographically occult fractures. In patients with radiographic diagnosis of knee fracture, CT is frequently performed for further classification and characterization of the fracture severity and for prediction or diagnosis of associated meniscal and ligamentous injuries [1, 2].

The knee has numerous tendinous, ligamentous, and meniscal attachments, which make it particularly vulnerable to avulsion injuries after trauma. These include avulsions of the anterior cruciate ligament (ACL) and posterior cruciate ligament (PCL), Segond (small bony avulsion of the anterolateral ligament at the lateral tibial rim that indicates a ACL tear) and reverse Segond (small medial tibial avulsion fracture that indicates a PCL tear) fractures, fibular head avulsion fracture, arcuate complex avulsion, fracture avulsions of the medial collateral ligament, iliotibial band avulsion, avulsions of the semimembranosus, and quadriceps tendons, and patellar sleeve fractures.

In the setting of acute twisting trauma to the knee, CT scan has high sensitivity and specificity in detecting bony avulsion fractures and a high negative predictive value for excluding ligamentous injuries (e.g.: ACL avulsion fracture) [3] (*Figure 1*).

Radiologists should recognize the pattern of these injuries and their underlying mechanism to understand the substantial damage that it frequently represents. This presentation will outline the imaging appearances of common knee avulsion fractures. Specific examples will be used to highlight clinical relevance and learning points.

CORRESPONDING AUTHOR:

**Pieter Van Dyck**

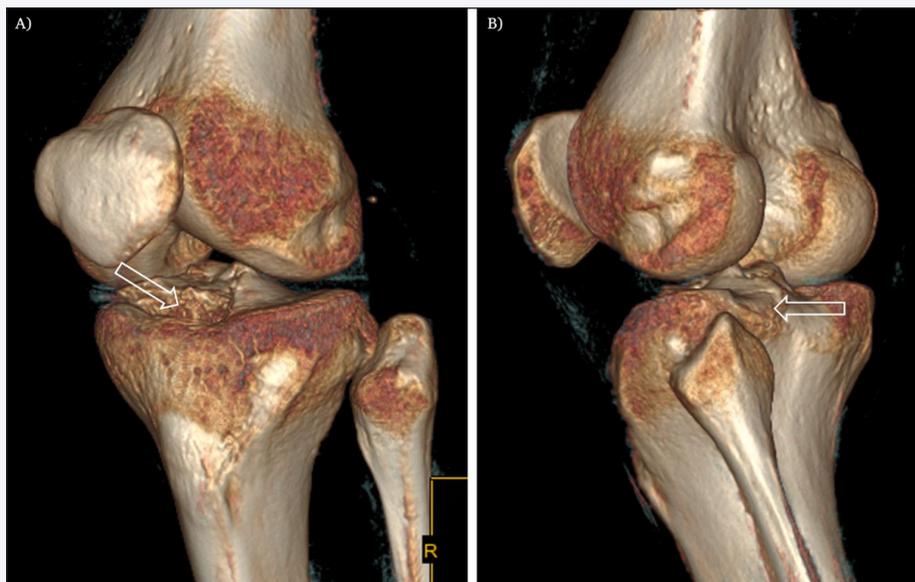
Universitair Ziekenhuis  
Antwerpen, Edegem, BE  
[pieter.van.dyck@uza.be](mailto:pieter.van.dyck@uza.be)

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**Figure 1 A.** CT of the left knee. 3D rendering image shows displaced fracture (open arrow) at the anterior tibial eminence, in keeping with avulsion of the anterior cruciate ligament. **B.** 3D rendering image shows associated cortical depression fracture (open arrow) at the posterolateral aspect of the proximal tibia, after sustained pivot-shift trauma.

## COMPETING INTERESTS

The author has no competing interests to declare.

## AUTHOR AFFILIATION

**Pieter Van Dyck**  [orcid.org/0000-0001-7777-6008](https://orcid.org/0000-0001-7777-6008)  
Universitair Ziekenhuis Antwerpen, Edegem, BE

## REFERENCES

1. **American College of Radiology.** ACR Appropriateness Criteria®, Acute Trauma to the Knee.
2. **Strudwick K, McPhee M, Bell A, Martin-Khan M, Russell T.** Review article: Best practice management of common knee injuries in the emergency department (part 3 of the musculoskeletal injuries rapid review series). *Emerg Med Australas.* 2018; 30: 327–52. DOI: <https://doi.org/10.1111/1742-6723.12870>
3. **Mui LW, Engelsohn E, Umans H.** Comparison of CT and MRI in patients with tibial plateau fracture: Can CT findings predict ligament tear or meniscal injury? *Skeletal Radiol.* 2007; 36: 145–51. DOI: <https://doi.org/10.1007/s00256-006-0216-z>

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