

Anterolateral Ligament Pathological Anatomy and its Associated Injuries: An Infographic

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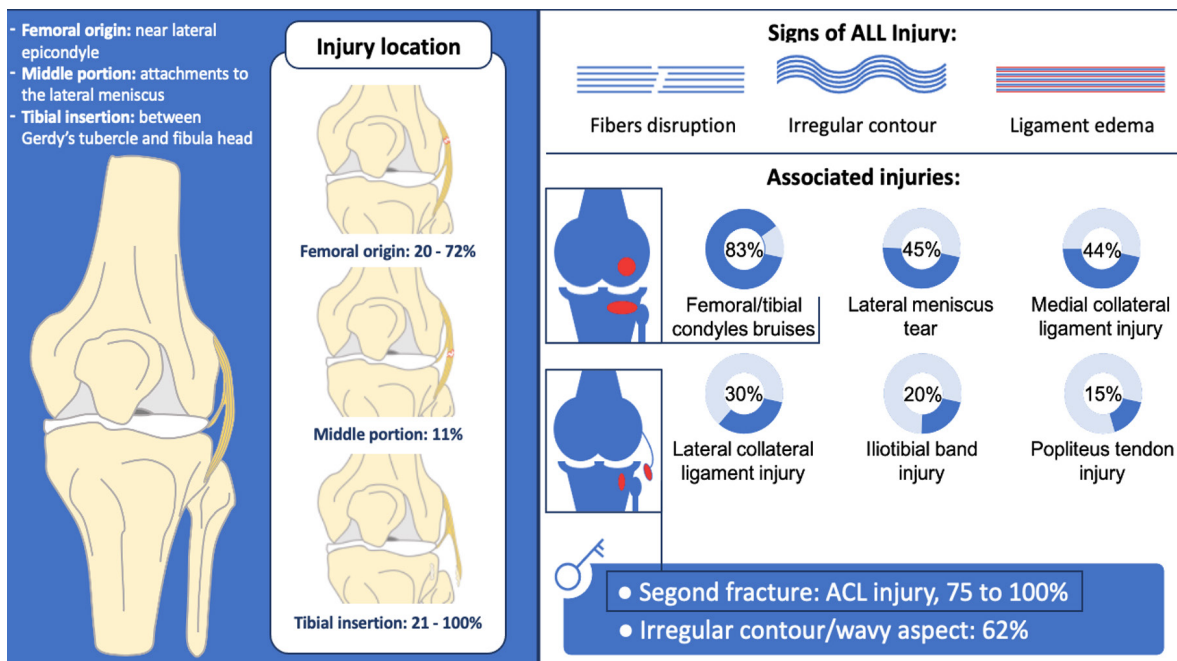
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The anterolateral ligament (ALL) of the knee joint was initially described by Paul Segond in 1879 as a distinct fibrous band from the knee capsule, often associated with an avulsion fragment of the proximal anterolateral tibia due to traumatic internal rotation.¹ In brief, ALL shows an oblique intracapsular course with its origin on the posterior proximal region of the lateral femoral epicondyle and its insertion between Gerdy's tubercle and the fibular head. Additionally, ALL may have almost constant attachments to

the periphery of the lateral meniscus around its middle portion.² The ALL can be divided into three anatomical regions: the femoral, the middle, and the tibial. Studies have reported similar rates of injury location for the femoral and tibial regions, up to 72% and 100%, respectively, while abnormalities in the middle portion of the ligament occur in only 11% of cases [Figure 1].³⁻⁵ This may be explained by the ligament being more easily identified in the distal and proximal portions than in the meniscal portion.⁶ Furthermore, Claes et al,³ assumed that the



ALL: anterolateral ligament; ACL: anterior cruciate ligament.

Figure 1: Anterolateral ligament abnormalities and its associated injuries.

distal portion of the ALL acts as a lever arm far away from the functional axis (transepicondylar axis) of the knee joint, increasing tension on the distal part and explaining the high proportion of injuries in this anatomical site. Claes et al,³ characterized abnormal ALL as cases of complete fiber disruption of the ligament, irregular contour appearance, and intra- or peri-ligament edema [Figure 1].

In the setting of an acute knee injury, magnetic resonance imaging (MRI) has a slice thickness of 3 mm and may be problematic in detecting an ALL tear.⁷ Thus, to assist radiologists in diagnosing ALL tears accurately, several direct and/or indirect signs on MRI have been proposed, such as Segond fracture, bone bruises of the lateral femoral/tibial condyle, and the wavy appearance of the ALL shape [Figure 1].^{5,7} Furthermore, ALL abnormalities can be significantly associated with femoral/tibial bone bruises, lateral meniscus tear, medial/ lateral collateral ligament injury, iliotibial band injury, and popliteus tendon injury [Figure 1].^{1,2} It is well noted in the literature that a Segond fracture has a high association with anterior cruciate ligament (ACL) ruptures, being present in 75% to 100% of cases.⁸ Additionally, there is a significant deviation, ranging from 40% to 80%, of ALL injury on MRI when an ACL tear is present.² Thus, clinicians should have a high index of suspicion for ALL injury when evaluating MRI scans for an acute ACL tear.

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