Unhappy Triad



PLAY PICMONIC

Lateral Force on Knee with Planted Foot
Football player being tackled with lateral force on knee with planted foot
The "Unhappy Triad", also known as a "blown knee" is an injury to the anterior cruciate ligament or ACL, the medial meniscus, and the medial collateral ligament or MCL. The most common mechanism underlying an "unhappy triad" injury is a valgus or lateral force on a knee with a planted or fixed foot underneath. This strong force tears the ACL, MCL, and meniscus all at once. These kinds of injuries are especially common in sports that involve tackling, such as football and rugby.

Anterior Cruciate Ligament
Anteater-Cross
The anterior cruciate ligament, or ACL, is one of the ligaments injured in the unhappy triad. It is one of several ligaments that connect the distal femur and proximal tibia. Its purpose is to restrict the tibia from sliding anteriorly and from rotating internally with respect to the femur. It is this anterior sliding of the tibia on the femur that is demonstrated in a positive anterior-drawer test.

Medial Collateral Ligament
Medal-Collie
The medial collateral ligament, or MCL, is one of the structures injured in the unhappy triad. It connects the medial distal femur to the medial proximal tibia. It acts to resist forces that would push the knee medially, which would cause a valgus or "knock-knee" deformity.

Medial Meniscus
Medal-Man-Discus
The medial meniscus is one of the structures torn in an unhappy triad injury. It sits between the surfaces of the femur and tibia to act as a cushion. Tear to the medial meniscus will cause a positive McMurray's sign on physical exam.

Diagnosis and Treatment

Pain and Swelling of Knee
Pain-bolt over swollen knee
The most common symptom seen in patients with an unhappy triad injury is pain and swelling of the knee.

Knee Instability
Unstable Knee-column falling over
Given that the ligaments torn in the unhappy triad are necessary for restricting the movement of the tibia relative to the femur, tearing of these ligaments causes unrestricted motion in various directions leading to instability when the patient tries to walk or use their leg. This will manifest on physical exam as a positive anterior drawer test, demonstrating a torn ACL, and abnormal joint laxity on application of a lateral-to-medial or valgus stress on the affected knee, demonstrating a torn MCL. A torn medial meniscus is demonstrated by a positive McMurray sign.

MRI
MRI Machine
MRI is the best way to definitively diagnose an unhappy triad injury, as it is the best imaging method for visualizing soft tissues such as muscles, tendons, and ligaments.

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Surgery

Surgeon

The definitive treatment of an unhappy triad is surgery, which usually involves reconstruction of damaged ligaments, typically with grafts of tendons taken from elsewhere in the patient's body. As with any serious musculoskeletal injury, physical therapy and rehabilitation is also crucial in the recovery process.

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