

ACC Review:

Soft Tissue Knee Injuries internal derangements: diagnosis

- A thorough history is important to establish a diagnosis
- Clinical tests are of limited value in isolation but may be useful in the context of an appropriate history
- For the diagnosis of tears to the:
 - MCL: a positive valgus stress test performed at 30 degrees of flexion is reasonably accurate
 - ACL: when correctly performed, the Lachman test is reasonably accurate
 - Menisci: with an appropriate history, the McMurray test, localised joint line tenderness, and a block to end range extension, may have some additional diagnostic significance
- The Ottawa Knee Rules provide clear guidelines for requesting knee X-rays to exclude fractures
- With an equivocal diagnosis, MRI may be useful in diagnosing meniscal and cruciate ligament injuries

Background^A

ACC recently launched an evidence-based guideline, *The Diagnosis and Management of Soft Tissue Knee Injuries: Internal Derangements*, to assist health practitioners to evaluate and treat knee injuries in individuals aged 15 years and over. A summary of the evidence for clinical tests and diagnostic investigations is provided. The evidence is graded using the guideline's grading systems.

General Diagnosis^A

A thorough history and clinical examination can assist greatly to establish a diagnosis, and to reveal symptoms and signs of more serious pathology requiring referral. Investigations, which may also facilitate a diagnosis, primarily include X-rays to exclude fractures and magnetic resonance imaging (MRI), considered by specialists where there is an equivocal diagnosis.

X-rays

The routine use of X-rays to exclude fractures is generally not recommended.⁴ The Ottawa Knee Rules provide a guide on the need for X-rays to exclude fractures. These are the only clinical decision rules that meet the highest level of evidence criteria for these injuries. Individuals with haemarthrosis should also be X-rayed.⁴

Imaging

MRI is now widely accepted as the diagnostic investigation of choice, largely replacing diagnostic arthroscopy. Several studies show MRI has a reasonable level of accuracy in diagnosing meniscal and cruciate ligament injuries.^{D++}

Specific Diagnostic Tests^A

Clinical tests are useful for confirming a diagnosis in the context of an appropriate history but they provide little information when used in isolation.

Medial collateral ligament (MCL)

These injuries are more accurately diagnosed 24 hours after injury.³ A positive valgus stress test performed in extension and 30 degrees of flexion is recommended as being reasonably accurate in diagnosing an MCL tear.⁴

Medial and lateral menisci

It is important to identify injuries requiring surgery or early referral for specialist opinion (e.g. a locked knee).^{DSR+} Diagnostic clinical tests, however, are more reliable after 6 weeks when the acute phase is over.⁴

Common tests include the McMurray test, the Apley Grind test, joint line tenderness and loss of end range extension. The McMurray test is neither sensitive nor specific in diagnosing meniscal injuries.^{D++} However, in the context of an appropriate history, the McMurray test, localised joint line tenderness, and a block to end range extension, may have some additional diagnostic significance.⁴ No studies evaluating the Apley Grind test were found but expert opinion suggests that it has little clinical value in diagnosing meniscal injuries.⁴

Anterior cruciate ligament (ACL)

Early diagnosis of an ACL tear is important because of the risk of further injury to other intra-articular structures. If the diagnosis is equivocal, referral to a specialist is advised.

Clinical tests commonly used include the Lachman test, the anterior drawer test, loss of end range of extension, and the pivot shift test.

The Lachman test is more reliable than the anterior drawer test for these injuries. When correctly performed, the Lachman test is reasonably accurate in diagnosing complete ruptures of the ACL.^{D++} This test is more sensitive about 10 days after injury when acute symptoms have subsided.^{D++} The pivot shift test, which is difficult to perform in an acute injury,^{D++} is best performed by experienced practitioners.⁴

Posterior cruciate ligament (PCL)

Increased understanding of the biomechanics of this ligament reveals that it is central to knee stability and function. The posterior drawer test is the most sensitive test to diagnose PCL rupture.⁴

Posterolateral complex (PLC)

To ensure an optimal functional outcome, individuals with a suspected posterolateral complex injury should be referred to an orthopaedic surgeon for appropriate assessment and management.⁴

Clinical diagnostic tests include the external rotation recurvatum test, posterolateral drawer test and the reversed pivot shift, however, it is recommended that they are best performed by experienced practitioners.⁴

Specialist Referral

Urgent referral is required for people with red flag symptoms and signs, severe knee injuries and significant fracture on X-ray.⁴ Early referral is recommended for injuries to the ACL, PCL, or posterolateral complex; locked knee due to suspected meniscal entrapment; and an equivocal diagnosis.⁴

In Summary

There is good evidence to recommend the Ottawa Knee Rules to exclude fractures, and MRI for an equivocal diagnosis of meniscal and ACL injuries. There is also sufficient evidence to recommend that the Lachman test, when correctly performed, is reasonably accurate in diagnosing ACL integrity. However, until further evidence becomes available, the remaining recommendations for clinical tests are based on expert opinion.

Reference and Key

- A. New Zealand Guidelines Group and Effective Practice, Informatics and Quality Improvement. *The Diagnosis and Management of Soft Tissue Knee Injuries: Internal Derangements*. Commissioned by ACC, July 2003.

Adapted Scottish Intercollegiate Guidelines Network (SIGN) grading system – as used in the guideline.^A

- The evidence is graded according to the quality of the study.
- 1++ Meta-analysis (MA)/systematic reviews (SR) of Randomised Controlled Trials (RCTs) with a very low risk of bias
 - 1+ MA/SR of RCTs with a low risk of bias
 - 1- MA/SR of RCTs with a high risk of bias
 - 2++ SR of case-control/cohort studies with a low risk of bias/moderate probability of causal relationship
 - 2+ Case-control/cohort studies with a low risk of bias/moderate probability of causal relationship
 - 2- Case-control/cohort studies with a high risk of bias/significant risk of non-causal relationship
 - 3 Non-analytic studies
 - 4 Expert opinion (from the literature or the multidisciplinary NZ guideline team)

Single Diagnostic Studies^A

- D++ Good single diagnostic studies (D+ Fair, D- Poor)

Diagnostic Systematic Reviews^A

- DSR+ Fair quality MA/SR of diagnostic studies (DSR++ High quality, DSR- Poor quality)