BRIEF REPORT

A NO-TOUCH TEST FOR THE ANTERIOR CRUCIATE LIGAMENT

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Numerous clinical tests have been described to demonstrate loss of integrity of the anterior cruciate ligament. These include the anterior drawer test, the Lachman test, the jerk test and the pivot shift test. Their usefulness in the acute case is often limited because of pain and swelling. The test which we describe is painless, non-invasive and accurate.

Pathomechanics. The concept of the pivot shift, although attributed to Losee and first published by Galway, Beaupré and MacIntosh (1972), was discussed by Palmer in 1938. He wrote of "the lateral femoral condyle, rolling over the posterior margin of the lateral meniscus with loss of the anterior cruciate band, making a circular motion around the medial". These concepts form the basis of our test which might also be called an active Lachman. In our test, when the knee is between 30° and 40° of flexion, the lateral tibial plateau is in a reduced position; with active extension, the quadriceps and iliotibial band pull the tibia into a subluxated position.

![Fig. 1](image)

No-touch technique. The patient lies supine with a firm bolster under the thigh, and the injured knee flexed to 30° to 40°. The patient is encouraged to relax, being reassured that the examiner will not touch the knee. While the examiner closely observes the lateral aspect of the knee, the patient is asked to raise his heel off the examination table by extending his knee and then replace his heel on the table and relax his quadriceps. The test is then performed on the contralateral knee. When there is "isolated" rupture of the anterior cruciate ligament, the lateral tibial plateau will gently subluxate or slide forward on the femoral condyle as extension is initiated (Fig. 1). Even more noticeable will be the slide back into a reduced position when the knee relaxes into the flexed position.

Results. Over a five-year period 212 acutely injured knees in which the history suggested a possible anterior cruciate rupture were examined within seven days of injury. Of these, 182 were judged to have a positive test, and 144 had an early operation. Examination under anaesthesia in all these cases demonstrated a positive jerk or pivot shift test. Arthroscopy was not employed as we feel that the diagnosis of a ruptured anterior cruciate ligament can be made clinically. In all cases arthroscopy showed the anterior cruciate ligament to be torn, and a repair was performed.

Of the remaining 38 cases who were not operated upon immediately all later developed a positive pivot shift test. Of the 30 negative tests, two were later found to have a positive jerk or pivot shift sign and to have had false-negative results.

Discussion. Excessive lateral tibial plateau gliding defines a positive test. If there has been minimal or no disruption of the posterolateral or posteromedial corners, then anterior translocation will be present but less obvious. If the posterolateral corner has been injured or Kaplan's fibres have been disrupted, there will be increased subluxation and posterior rolling of the lateral femoral condyle (Kaplan 1958). It is imperative therefore to compare both knees carefully.

During active extension and flexion a false-positive subluxation and relocation may be elicited in patients with rupture of the posterior cruciate ligament or with posterolateral rotatory instability. In these patients, the lateral tibial plateau will be subluxated in 30° to 40° of flexion (posterior sag). Initiation of extension will pull the tibia back into a reduced position. This anterior gliding looks like a positive test, but represents movement from a subluxated position to a reduced position. This can be augmented by placing a hand on the leg just above the ankle joint and gently resisting the active extension.

As with other tests, accurate assessment of subluxation and translocation requires clinical expertise and experience.

REFERENCES