Diagnosis of complete and partial posterior cruciate ligament ruptures. Stress radiography compared with KT-1000 arthrometer and posterior drawer testing


Abstract: Stress radiography was performed on 21 patients with unilateral posterior cruciate ligament tears: 10 complete and 11 partial. An 89-N posterior load was applied to the proximal tibia and a lateral radiograph was taken of each knee in 70 degrees of flexion. The relative amount of sagittal translation (involved minus noninvolved) was determined at both the medial and lateral tibial plateaus from the radiographic films. Arthrometric (KT-1000 arthrometer) and posterior drawer tests were also performed. The mean relative posterior translation averaged 12.2 +/- 3.7 mm for knees with complete tears. Arthrometer testing of the same knees showed 7.6 +/- 2.5 mm of increased translation, and posterior drawer testing showed 9.2 +/- 3.3 mm of increased dropback. Stress radiographic results were statistically similar to the electrogoniometric measurements in cadaveric knees. In knees with a partially torn posterior cruciate ligament, mean relative translation measured on stress radiographic was 5.6 +/- 1.5 mm, which was significantly different from that for knees with complete ruptures. The arthrometer and posterior drawer test data were not significantly different for knees with complete and partial tears. Stress radiography is superior to both the arthrometer and clinical posterior drawer testing for determining posterior cruciate ligament status. Eight millimeters of more of increased posterior translation on stress radiographs is indicative of complete rupture.