**Introduction:** The dial test is generally used for diagnosing posterolateral rotatory instability (PLRI). However, to our knowledge, there have been no clinical or biomechanical studies on the reliability of the dial test. This study evaluated the reliability of the dial test and the effect of the posterolateral structure and PCL on PLRI.

**Materials and Methods:** Fourteen paired cadaveric legs and feet were fixed into a custom-made isotonic rotation machine with the knee flexed at 30 degrees in the prone position. For Group I (7 right knee), the LCL, popliteofibular ligament, popliteus tendon and PCL were cut sequentially. For Group II (7 left knee), the PCL, LCL, popliteofibular ligament and popliteus tendon were cut in sequence. The external rotation angles were measured with a preset rotational torque (6Nm or 12Nm).

**Results:** For group I, the mean increases in the external rotation angle after cutting the 3 posterolateral ligament structures were 17.9±6.4 degree with a rotational torque of 6Nm. The additional increase in mean external rotation after cutting the PCL was 4.7±2.1 degree at 6Nm. For group II, the mean increases in external rotation angle after cutting the PCL were 8.4±4 degree with a rotational torque of 6Nm. Cutting the three posterolateral ligament structures, increased the external rotation by 10.7±5.3 degree at 6Nm. A statistically significant difference in the increase in external rotation was observed after cutting the three posterolateral ligaments in group I (Duncan test, P=0.05), and after cutting the PCL and two posterolateral structures in group II (Duncan test, P=0.05).

**Discussion:** Using the isotonic rotation machine, we could obtain relatively objective data on the dial test used for diagnosing PLRI. The value of the dial test was confirmed after cutting the three posterolateral ligaments and after cutting the PCL and two posterolateral structures. Minor posterolateral instability with only one or two structure injuries might not be detected using the dial test. Therefore, in these cases, comprehensive diagnostic

**References:**