Classification of ligament injuries: why an anterolateral laxity or anteromedial laxity is not a diagnostic entity


Abstract: To interpret clinical laxity tests, the clinician must apply the kinematic and biomechanical concepts listed in Figure 12-13. These concepts have been briefly introduced here and are discussed in greater detail elsewhere. Figure 12-13 illustrates the importance of first selecting a laxity test to diagnose a specific ligament structure abnormality. The test selected, and the diagnostic information gained, is based on an understanding of the primary and secondary ligamentous restraints which are being tested. It is difficult to guess which ligaments are resisting specific joint displacements; therefore, biomechanical tests must first experimentally determine the restraints. Performing these tests obviates the first level of disagreement that existed when interpretations of clinical laxity tests were based only on "clinical impressions." The results of the laxity tests must be understood and communicated in terms of the six degrees-of-freedom system that determines abnormalities in motion. Resultant joint subluxations are readily understood by examining the medial and lateral tibiofemoral compartments separately. Our bumper model illustrates the different types of anterior subluxations that occur after anterior cruciate disruption. The final diagnosis of a ligament defect must be made in precise anatomic terms. In cases of partial disruption, or after healing occurs, the clinician must analyze the remaining functional capacity of the ligaments. In the future, newer diagnostic machines will provide even more detailed information enabling clinicians to determine the different types of compartmental subluxations under defined loading conditions. These machines will also provide measurements of ligament and joint stiffness. In this way, the functional deficits of the individual ligaments, and the joint as a whole, can be more readily characterized. The concepts that we have presented here can be applied qualitatively by the clinician, and in the future, they can be quantitatively applied. Our goal is to provide the basic scientific and clinical principles upon which the diagnosis and classification of ligament injuries should be based.