Original Article With Video Illustration

Correlation Between the 2-Dimensional Notch Width and the 3-Dimensional Notch Volume: A Cadaveric Study

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**Purpose:** The purpose of this study was to compare the size of the entrance of the notch, as measured arthroscopically (2-dimensionally), with the volume of the notch as measured by use of computed tomography (CT) (3-dimensionally). **Methods:** For 20 cadaveric knees, the dimensions of the notch entrance were measured arthroscopically, and the notch volume was measured by use of CT. The correlation between the size of the notch entrance and the notch volume was calculated. Intraobserver reliability and interobserver reliability of the arthroscopic and CT measurements were tested. **Results:** The Pearson correlation coefficients between CT-assessed notch volume and arthroscopically assessed notch height and width at the bottom, middle, and top of the notch were 0.603, 0.506, 0.551, and 0.642, respectively. The intraobserver reliability and interobserver reliability of the arthroscopic measurements were above 0.962 and 0.819, respectively, and 0.983 and 0.975, respectively, for the CT measurements. **Conclusions:** There were only moderate correlations between arthroscopic notch measurements and notch volume. Both the arthroscopic and CT measurements proved highly reliable. **Clinical Relevance:** The moderate correlation between 2-dimensional and 3-dimensional notch measurements warrants caution concerning the use of either measurement for assessing risk for anterior cruciate ligament injury or as justification for notchplasty until studies between the relation of 3-dimensional notch volume and anterior cruciate ligament injury are conducted.

Norwood and Cross showed anatomic relations between the anterior cruciate ligament (ACL) and the femoral notch. They showed that the ACL was tight against the intercondylar shelf in extension, which concentrated forces in the midsection of the ligament. Chondrocytes have been identified on the ACL surface around the aforementioned area, which may help to protect the ACL from pressure arising from rubbing of the ACL on the intercondylar notch. From the results of these 2 studies, it was hypothesized that a smaller notch increases ACL-notch contact, which might increase the risk of ACL injury. Some studies confirm this relation between notch size and the incidence of ACL rupture, whereas others have found no relation. Typically, 2-dimensional (2D) notch measurements have included the intercondylar notch width, notch area, transverse and sagittal notch angles, bicondylar width, and notch width index. These measurements were performed either in cadaveric studies, on plain radiographs, or arthroscopically in vivo or on computed tomography (CT) scans or magnetic resonance images. To our knowledge, only 1 study has measured the notch 3-dimensionally, and this study only compared the notch volume...