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Paper #45

ISAKOS Classification of Meniscus Tears: Arthroscopic Correlations with MRI

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Summary:
The ISAKOS classification demonstrated good to excellent correlation when comparing arthroscopic findings to MRI.

Abstract:

Background

Consensus terminology when describing meniscus tears has been elusive. A uniform classification system of meniscus tears would allow for consistent reporting, which would aid in in proper interdisciplinary communication, pooling of data, pre-surgical planning, longitudinal tracking of the meniscus tears, and evaluation of outcomes. The ISAKOS classification of meniscal tears exhibited sufficient interobserver reliability from international clinical trials designed to evaluate the outcomes of surgical treatment for meniscal tears. This study aims to correlate medial and lateral meniscus tears on MRI versus arthroscopy with respect to the ISAKOS classification system to evaluate whether this surgically validated classification can be used for this purpose. Our hypothesis was that there is good imaging-surgical correlation of the various categories of ISAKOS system.

Methods

In this HIPPA compliant and IRB approved retrospective cross-sectional study, a consecutive series of arthroscopy proven meniscal tears (3/16/2017 - 12/18/2017) and their respective high field 1.5 and 3Tesla MRIs (12/5/2016 - 11/17/2017) were evaluated by a board-certified fellowship trained musculoskeletal radiologist and orthopaedic sports surgeon. The surgically validated ISAKOS classification system of meniscal tears was used to describe medial and lateral meniscus tears. Prevalence-adjusted bias-adjusted kappa (PABAK) and intra-class correlation coefficient (ICC) were calculated for categorical and numerical variables, respectively. 95% confidence intervals were also calculated. Paired t-tests were used to analyze differences in numerical variables.

Results

There were 55 meniscus tears in 47 patients (35 males and 12 females with ages of 24.6 ± 5.94 and 36.17 ± 15.16, mean+/-SD, respectively). There were 27 medial meniscus (MM) and 28 lateral meniscus (LM) tears. For the MM, the PABAK for depth, location, zone, pattern, tear length, and quality of meniscus tissue was 0.7, 0.85-1, 0.54-0.76, 0.7, 0.83, 0.7, respectively. For the LM, the PABAK for depth, location, zone, pattern, tear length, quality of meniscus tissue, and central to popliteal hiatus was 0.85, 0.78-1, 0.78-0.92, 0.78, 0.89, 0.56, and 0.69, respectively. ICCs for tear lengths were 0.83 and 0.89 for the medial and lateral meniscus, respectively. Tear lengths were significantly

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larger on MRI vs arthroscopy (medial meniscus: 10.26 +/- 8.24mm, p<0.0001; lateral meniscus: 5.39 +/-7.13mm, p=0.0006).

Conclusion

The ISAKOS classification demonstrated good to excellent correlation when comparing arthroscopic findings to MRI. Tear lengths were significantly larger on MRI versus arthroscopy. This study validates the use of this classification system to increase effective communication between radiologists and surgeons.