## Types and proportions of medial meniscal tears in early osteoarthritis of the knee

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INTRODUCTION: Draft proposal for classification criteria for early osteoarthritis of the knee (EKOA) according to Luyten et al. contains 1) Pain, symptoms/signs, self-reported function, and quality of life using tools such as Knee Injury and Osteoarthritis Outcome score (KOOS): scoring ≤85% in at least 2 out of these 4 categories; 2) Clinical examination: at least 1 present out of joint line tenderness or crepitus; 3) Knee radiographs: Kellgren & Lawrence (KL) grade of 0 or 1. Magnetic resonance imaging (MRI) examination was not included as a criteria, because it's not suitable to identify or define EKOA in routine clinical practice or primary care. However, when MRI studies are performed in patients with EKOA, abnormal findings in the cartilage and meniscus are often experienced. The purpose of this study was to clarify MRI findings of the medial meniscus in patients with EKOA diagnosed by the criteria of Luyten et al. We hypothesized that patients with EKOA would have a high probability of having abnormal findings in the medial meniscus.

METHODS: This non-randomized, prospective, multicenter clinical trial included patients with knee joint pain between January 2018 and April 2024 diagnosed with early knee OA based on the diagnostic criteria of Luyten et al. We targeted 241 patients who underwent MRI. The MRI images of the subjects were read twice with a 3-week interval by the author. The presence or absence of medial meniscus tears and tear morphology (horizontal, radial, flap-shaped, and posterior root tears) were investigated. Horizontal tears were classified as Mink classification 3 or higher, and those classified as 2 or lower were considered normal.

RESULTS:

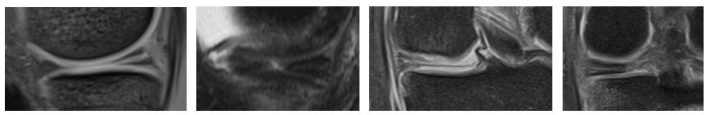
Average age of patients was 59.9±12.25. Medial meniscus tears were suspected in 212 (88.0%) of patients evaluated by MRI. The tear morphology of the medial meniscus were horizontal tears in 140 (57.9%) cases, radial tears in 48 (19.8%), flap tears in 63 (26.0%) cases, and posterior root tears in 57 (23.6%) cases. 29 (12.0%) cases had normal menisci of Mink classification 2 or 1. (Figure)

DISCUSSION AND CONCLUSION:

It has been reported that meniscal tears were present in 15% of women and 30% of men in an unselected population between ages 50 and 59, regardless of knee pain. The prevalence increases with age. However, in our study, the prevalence of medial meniscus tears on MRI evaluation was 88% in patients with early OA, diagnosed according to the diagnostic criteria of Luten et al. This study suggests that patients with symptomatic EKOA in the knee have a higher probability of having a medial meniscus tear than asymptomatic population. Therefore, even in patients with EKOA who have no obvious radiographic abnormalities, MRI evaluation of the meniscus is of some value in order to provide appropriate intervention at an early stage.

In conclusion, in patients with early-stage knee OA who do not have obvious abnormalities on plain radiographs, MRI scans show a high probability of medial meniscus abnormalities.

**Presence of any meniscus tear: 212 knees (88.0%)**



| Horizontal tear | Radial tear | Flap tear | Root tear |
|---|---|---|---|
| 140 knees | 48 knees | 63 knees | 57 knees |
| 58.1% | 19.9% | 26.1% | 23.7% |

No abnormal findings (Mink classification 2 or below): 29 knees (12.0%)