THE ANATOMIC RELATIONSHIP OF MEDIAL FEMORAL CONDYLE OSTEOCHONDritis DISSECANS TO THE POSTerior CRUCIATE LIGAMENT

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INTRODUCTION

- The most common location for symptomatic knee OCD is the lateral aspect of the medial femoral condyle (MFC).\(^1\)
- The close proximity of the PCL origin to MFC OCD location has suggested that the PCL may play a role in the formation or progression of these lesions.\(^2\) 3
- The objective of this study is to examine the anatomic relationship between the femoral origin of the PCL and MFC OCD lesions. We hypothesized that these OCD lesions will have a consistent anatomic relationship in close proximity to the PCL.

RESULTS

- All MFC OCD lesions were medial to the PCL origin on the coronal MRI cuts. On sagittal cuts, 47% of the OCD lesions were posterior to the PCL origin; 23% were anterior, and 30% directly distal.
- Distance from the center of the PCL origin to the center of the OCD lesion on the coronal cuts was a mean of 14.2 mm.
- Center to center distance on the sagittal cuts was a mean of 11.6 mm. The distance was less than 2 cm in all but one patient. The mean distance from any point on the OCD to any point on the PCL was 3.2 mm in the coronal plane and 2.8 mm in the sagittal plane. The OCD was within 1 cm of the PCL in all but 2 patients.
- Omen sign was present in 60% (112/188 between 2 observers) and a break in the cartilage was present in 49% (93/188). 52% of knees with signs of instability had a break or omen on the medial half of the lesion, while 75% had lateral instability. 56% had a sign of instability in the anterior half of the lesion, and 72% had posterior half instability.

DISCUSSION

- This study shows that the PCL origin and MFC OCD lesions are consistently in close proximity, suggesting the PCL may impact development and progression of MFC OCD lesions.
- Recent research has shown that watershed areas in the epiphyseal vasculature of the MFC may predispose the area to the development of OCD.\(^4\) 5
- The PCL vasculature may support the MFC regions, and vasculature compromise to the PCL may impact MFC OCD Lesions.
- In addition to the vascular insult potential, the PCL may also apply tensile forces to this region, further compromising MFC OCD healing.
- Now that the anatomic relationship has been established, further research is needed to examine the relationship between MFC OCDs and the PCL, with particular attention to the PCL vascularity, and its role in supporting the MFC region, and if biomechanical /tensile forces may influence progression of OCD lesions and failure of healing.

MATERIALS AND METHODS

- Magnetic resonance imaging (MRI) studies of a consecutive series of patients with MFC OCD lesions seen at our institution from 2008 to 2015 were reviewed. 94 MRIs were reviewed. Skeletal maturity status was recorded for all patients based on growth plate signal in T2 sequences.
- The gross anatomic relationship of the PCL femoral footprint to the MFC OCD lesion was noted on both the coronal and sagittal T2 sequences.
- The distance from the center of the PCL femoral footprint to the center of the MFC OCD lesion was measured on both the sagittal and coronal T2 sequences.
- Similarly, the distance between any point on the PCL footprint to any point on the OCD lesion was measured and the distances were recorded.
- Presence of signs of instability – as defined by a break in the cartilage or an omen sign – was also evaluated. The location of this sign of instability within the lesion itself was recorded.
- Two observers (SR and PC) reviewed each MRI and were blinded to the other’s measurements. Two of the senior authors (MT and MM) reviewed 21 studies each to confirm accuracy of the measurements.
- Mean distances were calculated for all data points and interrater reliability was calculated between observers for each variable measured.

REFERENCES


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