Axial Patello-Trochlear Overlap on MRI: A reliable alternative for the evaluation of patellar height.

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# Disclosures:

- No conflict of interests

Introduction

- There are several imaging-based measurements for patello-femoral height. Available methods rely predominantly on sagittal images.

- The latter can be misleading with sagittal oblique slices and when the patella is tilted and/or chronically subluxated.

- In this study we describe a simple method of patellar height measurement using axial MRI overlap.

Methods

- A retrospective observational analysis of 97 knees from 251 patients was conducted. Cases were selected following the exclusion of scans with fractures, massive effusion, patello-femoral pathology.

- Axial patello-trochlear overlap (APTO) was measured on the axial MRI images as follows:

1) Patellar length (P): expressed as the number of axial images showing patellar articular surface

2) Trochlear overlap (T): the number of axial images showing overlap between patellar articular surface and articular surface of lateral trochlea.

3) APTO is the ratio T/P.

- All measurements were carried out independently and on two separate occasions by 6 raters. As a control conventional patello-trochlear index were measured for all patients by a senior musculoskeletal radiologist.

Methods

- APTO (Axial Patello-trochlear Overlap) is the ration between the number of axial images showing overlap between patellar articular surface of lateral trochlea and the number of the axial images showing patellar articular surface
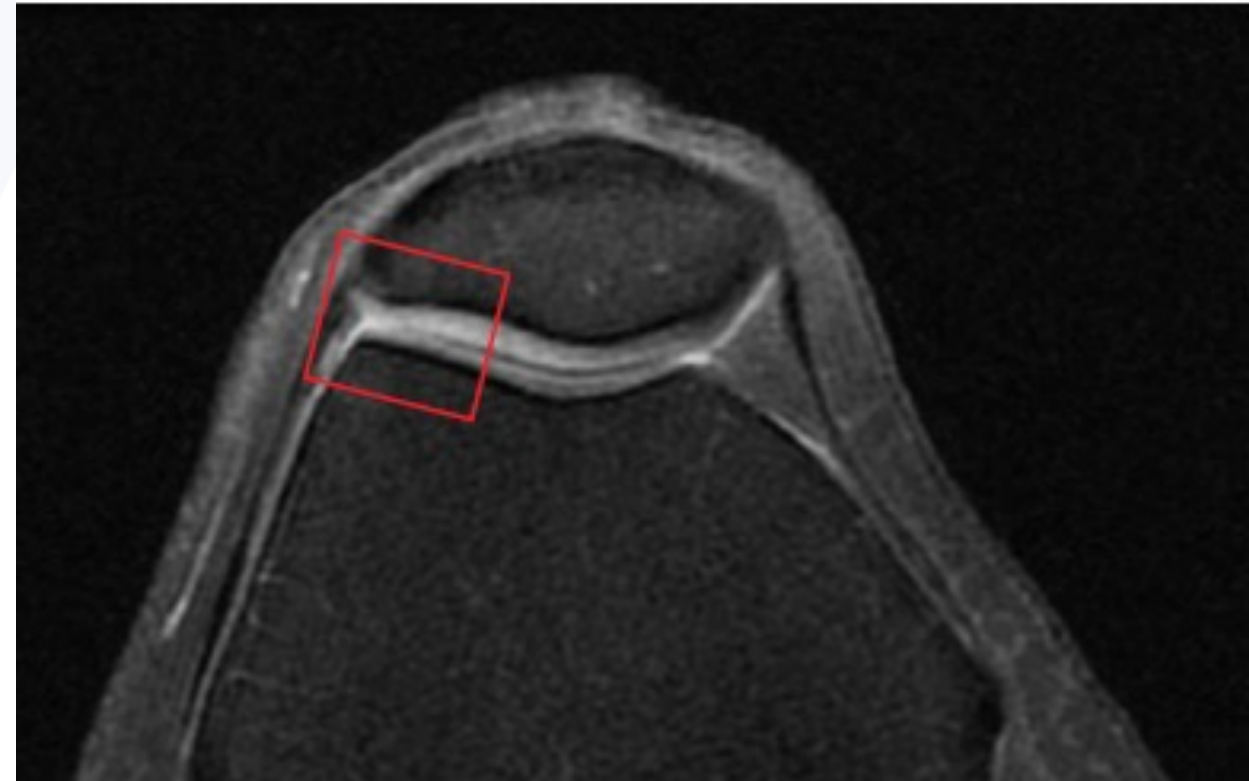
Results

Characteristics (N=97 knees)	
Mean APTO	36.7 (Range 14.2 to 66.6; SD 11.4)
Intra-observer reliability (Good)	ICC: 0.66 95 CI 0.54, 0.76, P < 0.001
Inter-observer reliability (fair)	ICC: 0.51 95 CI 0.41, 0.6, P < 0.001
Correlation with PTI	Positive correlation (Pearson correlation coefficient: 0.76 P < 0.001)

Conclusion

- In the present proof of concept study APTO was shown to be a reliable measurement of patellar height and correlated with patella-trochlear indices.

- The method described can prove valuable in overcoming issues with sagittal image measurements.

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