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Grading Severity in Trochlear Dysplasia: a Pilot Study

Juan Pablo Martinez-Cano

Investigation performed at Fundación Valle del Lili, Cali, Colombia

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Faculty Disclosure Information

- Juan Pablo Martinez-Cano:
  - Editorial or Governing board of Arthroscopy, Video Journal of sports medicine
  - Board of Directors member for Sociedad Colombiana de Ortopedia y Traumatología

Introduction

- Trochlear dysplasia is one of the main risk factors associated with recurrence in patellofemoral dislocation
- Dejour’s classification is the most frequent trochlear dysplasia classification used, despite of the low inter-observer reliability that has been reported
- It has been proposed that Dejour's subtypes B and D, which have a bump or supratrochlear spur, are high grade dysplasia and may benefit from trochleoplasty in certain circumstances

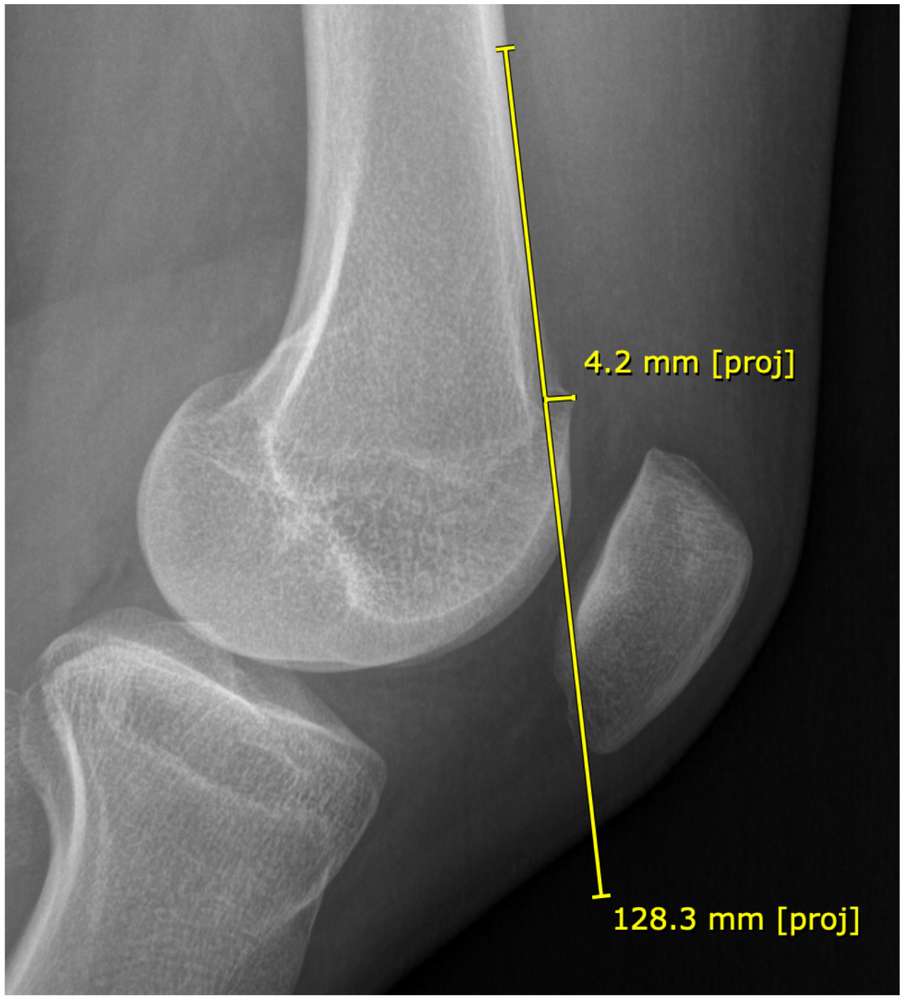
Methods

- Exploratory pilot study, from an institutional cohort of patients between 10-40 years old with history of patellar dislocation and trochlear dysplasia

- Using true lateral computerized radiographs (superimposition of the posterior aspect of the medial and lateral condyles), trochlear dysplasia was classified according to Dejour's classification

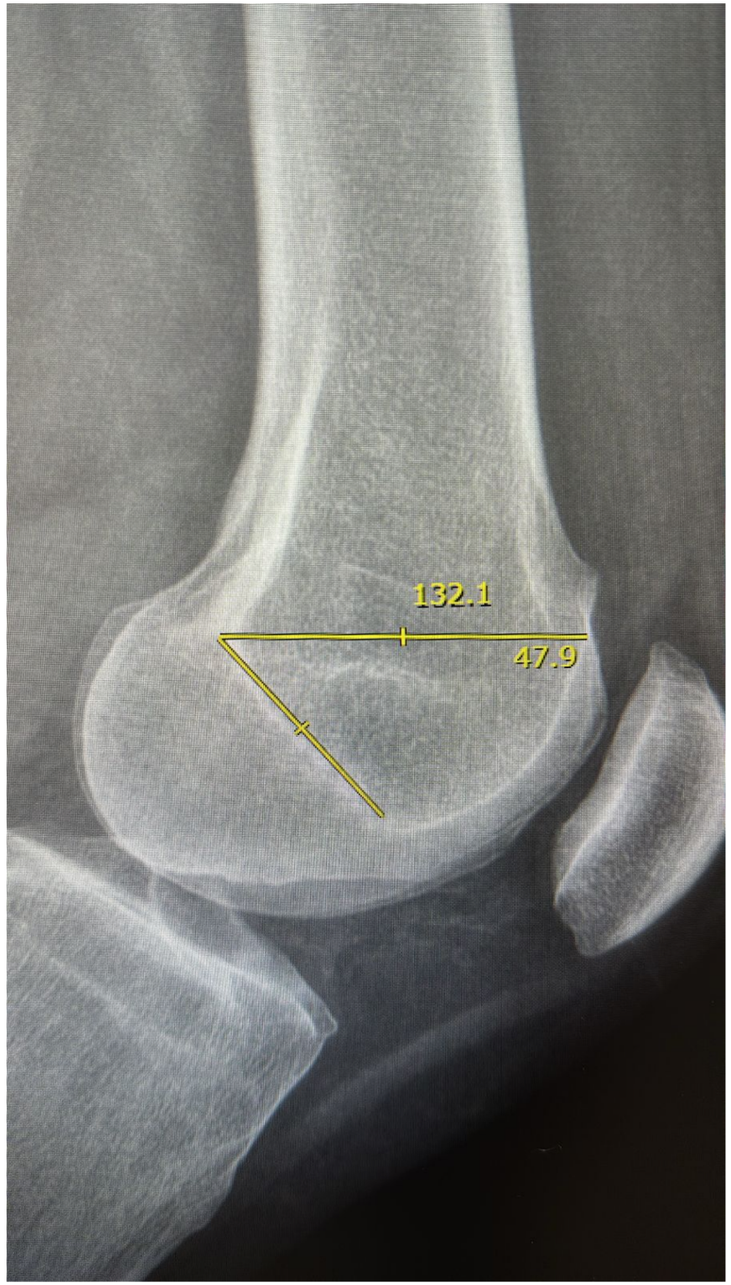
Methods

- This was followed by three measurements:
- a) Measurement of the bump height or anterior prominence (the distance between a line that continues the anterior cortex and the highest or most anterior part of the bump). See Figure 1.



Methods

- b) Calculation of the new "crossing sign – Blumensaat line (CS-BL) angle" (see Figure 2)



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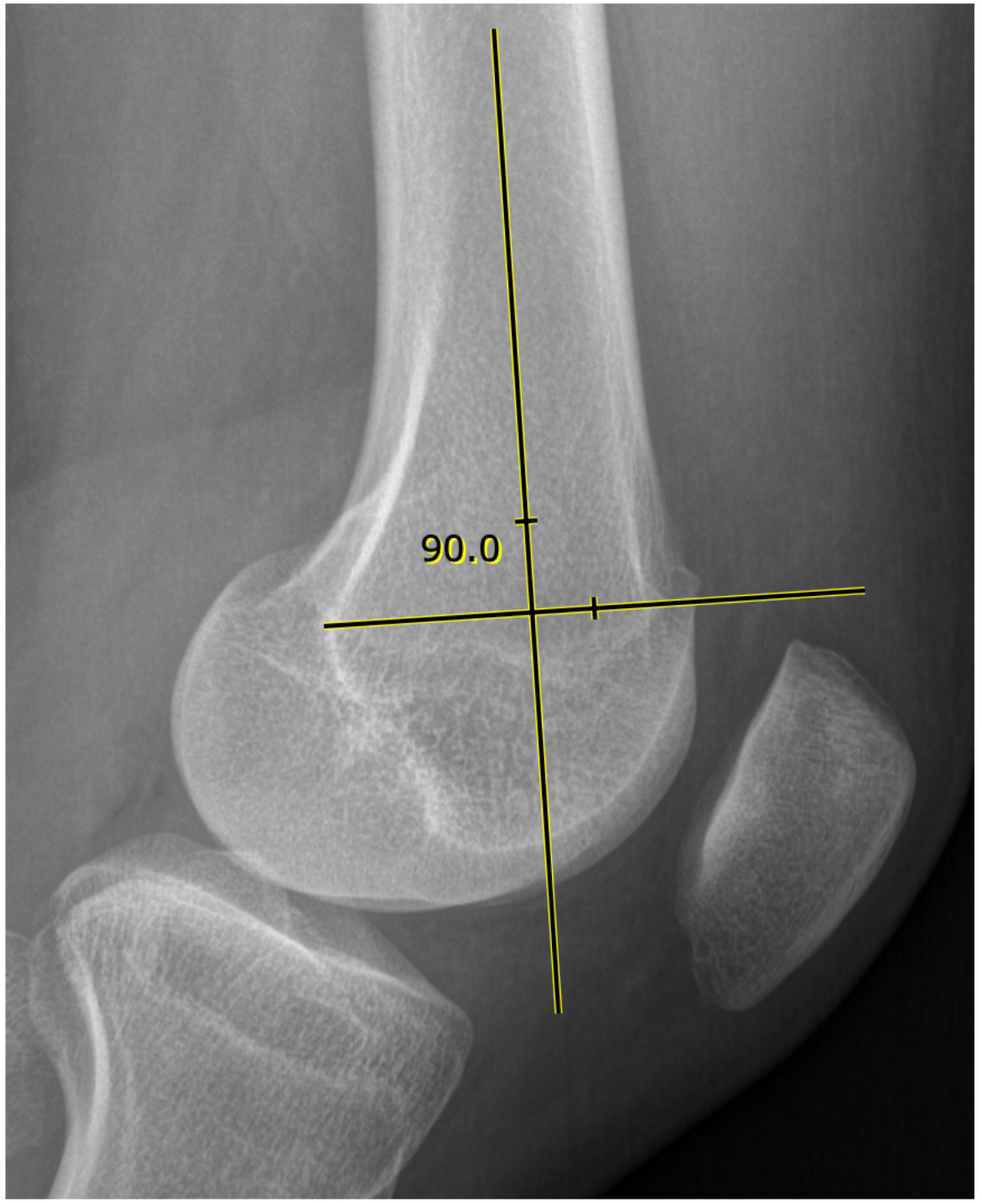
Methods

- c) Evaluation of the crossing sign point in relation with the new "crossing sign line" (CSL): a perpendicular line to the lateral axis of the femoral diaphysis that begins in the most proximal aspect of Blumensaat line, see Figure 3.



Methods

- These measurements are analyzed in the context of **severity** of trochlear dysplasia with the assumption that having a higher bump height, a lower CS-BL angle and a crossing sign that is distal to the CSL, are factors that aggravate trochlear dysplasia.

Results

- 15 knees were included in this study, with a mean age 16.7 ± 9.2 years old, where 60% were female sex
- Mean bump height was 4.7 ± 1.9 mm
- Mean CS-BL angle was 58.2 ± 6.6 degrees
- 60% of crossing signs were distal to the crossing sign line

Results

- If we consider cut-off points for bump height (≥5.0 mm), CS-BL angle (<60 degrees) and relation of the crossing sign with the CSL (distal), we could graduate trochlear dysplasia severity in:
- I (low)
- II (medium)
- III (high)
- and IV (very high)
  - **When presenting no risk factors, one, two or three, respectively**

Conclusions

- Having objective measurements that help to grade trochlear dysplasia severity could be very useful to classify patients, define prognosis and decide on adding or not a trochleoplasty for treatment
- There is more data needed to establish the appropriate thresholds for bump height and CS-BL angle
  - To establish the association between these measurements and outcomes
  - To evaluate the inter-observer reliability and to consider the usefulness in the decision-making process for trochleoplasty indication
- Though, these measurements offer promising characteristics for the analysis of trochlear dysplasia

References

1. Martinez-Cano JP, Tuca M, Gallego A, Rodas-Cortes Y, Post WR, Hinckel B. The Dejour classification for trochlear dysplasia shows slight interobserver and substantial intraobserver reliability. Knee Surgery, Sports Traumatology, Arthroscopy. 2024 Jun;32(6):1363-9.

2. Dejour DH, de Sanctis EG, Müller JH, Deroche E, Pineda T, Guarino A, Toanen C, Patellofemoral Imaging Group, Amarossi A, Baujard A, Cance N. Adapting the Dejour classification of trochlear dysplasia from qualitative radiograph-and CT-based assessments to quantitative MRI-based measurements. Knee Surgery, Sports Traumatology, Arthroscopy. 2024.

3. Dejour, D., Reynaud, P. & Lecoultre, B. (1998) Douleurs et instabilité rotulienne. Essai de classification. Médecine et Hygiène, 56(2217), 1466–1471.

4. Danielsen O, Poulsen TA, Eysturoy NH, Mortensen ES, Hölmich P, Barfod KW. Trochlea dysplasia, increased TT-TG distance and patella alta are risk factors for developing first-time and recurrent patella dislocation: a systematic review. Knee Surgery, Sports Traumatology, Arthroscopy. 2023 Sep;31(9):3806-46.

5. Huntington LS, Webster KE, Devitt BM, Scanlon JP, Feller JA. Factors associated with an increased risk of recurrence after a first-time patellar dislocation: a systematic review and meta-analysis. The American journal of sports medicine. 2020 Aug;48(10):2552-62.

6. Parikh SN, Lykissas MG, Gkiatas I. Predicting risk of recurrent patellar dislocation. Current reviews in musculoskeletal medicine. 2018 Jun;11:253-60.

7. Arendt EA, Askenberger M, Agel J, Tompkins MA. Risk of redislocation after primary patellar dislocation: a clinical prediction model based on magnetic resonance imaging variables. The American journal of sports medicine. 2018 Dec;46(14):3385-90.

8. Martinez-Cano JP, Chica J, Martinez-Arboleda JJ, Rincón-Escobar E, Zamudio-Castilla L, Renjifo M, Martinez-Rondanelli A. Patellofemoral dislocation recurrence after a first episode: a case-control study. Orthopaedic Journal of Sports Medicine. 2021 Jan 28;9(1):2325967120981636.