

Reliability of Several Methods of Arthroscopic Assessment of Femoral Tunnel Position During Anterior Cruciate Ligament Reconstruction

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Disclosures:

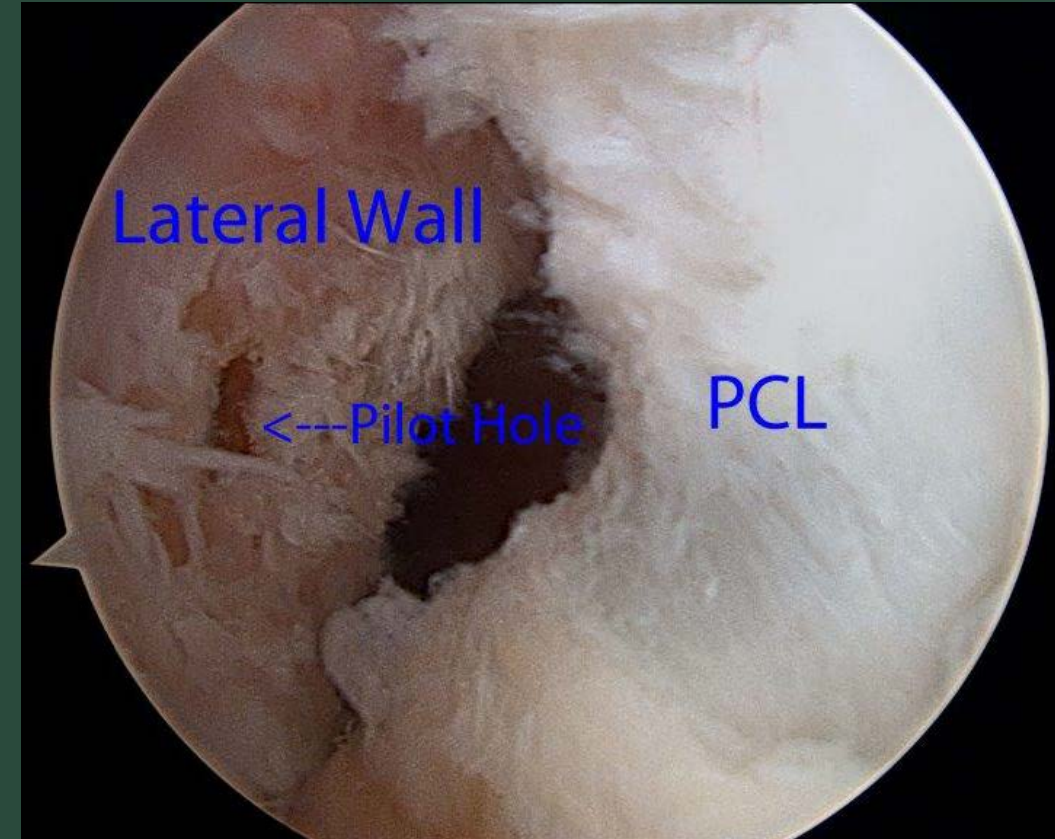
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Introduction

- Inter-observer reliability (agreement) of femoral tunnel position judged arthroscopically using a clock face analogy reported to be poor.
- Potential ways to improve reliability:
 - ❑ Use a half-clock face instead of a whole clock face.
 - ❑ Use linear rather than radial estimation methods.
 - ❑ Superimpose visual aids onto the arthroscopic picture.

Methods

- Standardized arthroscopic pictures of femoral tunnel pilot holes in 27 patients undergoing single-bundle ACL reconstruction independently presented to 3 fellowship-trained arthroscopists.
- Pictures taken with 30° arthroscope through standard anterolateral portal at 90° of knee flexion, with horizontal being parallel to tibial surface.

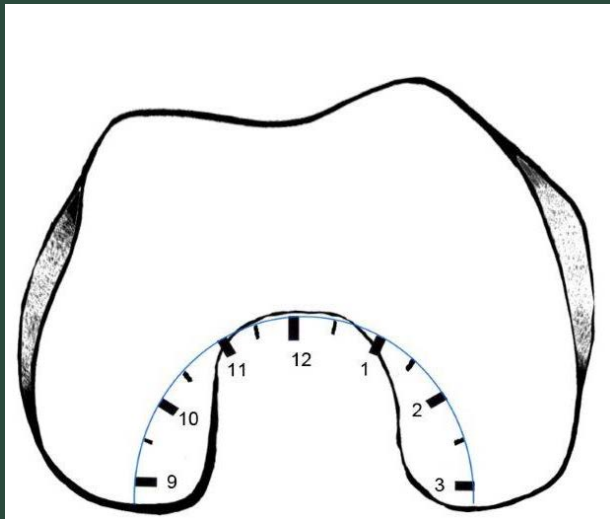
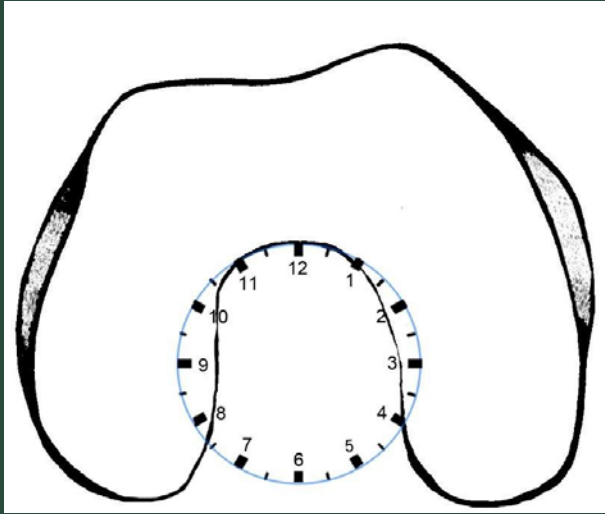


Methods

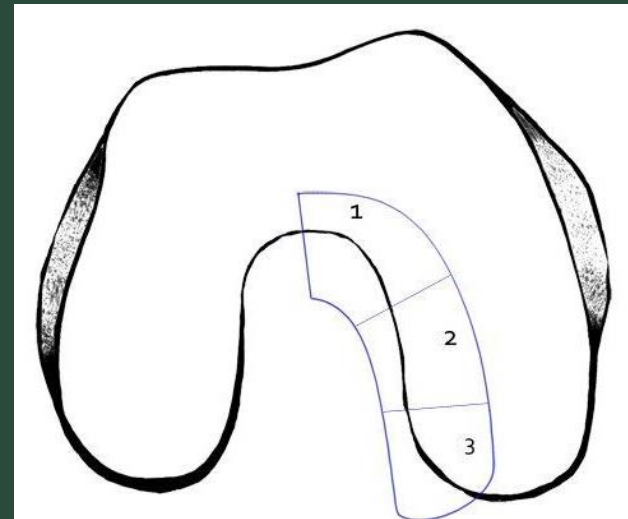
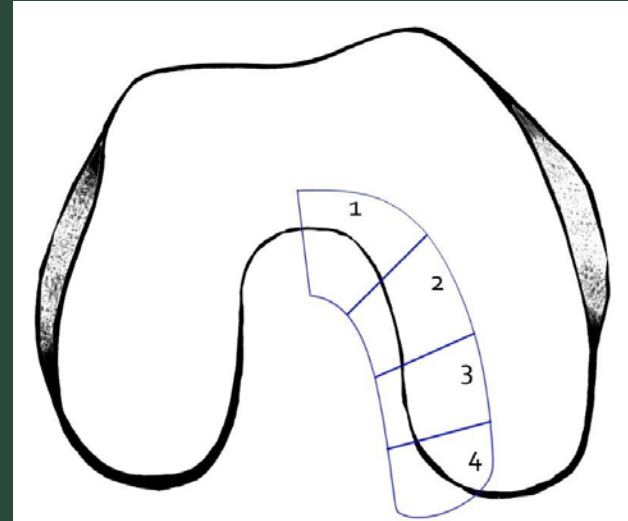
- Each reviewer asked to estimate femoral tunnel pilot hole position to the nearest $\frac{1}{2}$ hour using a whole clock face & a half-clock face; in the top or bottom half of a linear quadrant; in the top or bottom half of a linear trisector.
- Estimation done with each method, then repeated with the aid of overlaid transparent templates of each estimation method.

Methods

Radial Estimation Methods



Linear Estimation Methods



Results

- Pairwise kappa statistic values for inter-observer agreement without overlay templates:
 - ❑ Whole clock face: -0.14 to 0.56 (none to moderate agreement)
 - ❑ Half clock face: 0.16 to 0.42 (slight to moderate)
 - ❑ Quadrant method: 0.22 to 0.60 (fair to moderate)
 - ❑ Trisection method: 0.17 to 0.57 (slight to moderate)

Results

- Use of overlay templates increased inter-observer agreement for:
 - ❑ Whole clock face: 0.29 to 0.63 (fair to good)
 - ❑ Half clock face: 0.17 to 0.66 (slight to good)
- Use of overlay templates did not change agreement for the linear quadrant or trisection methods.

Discussion

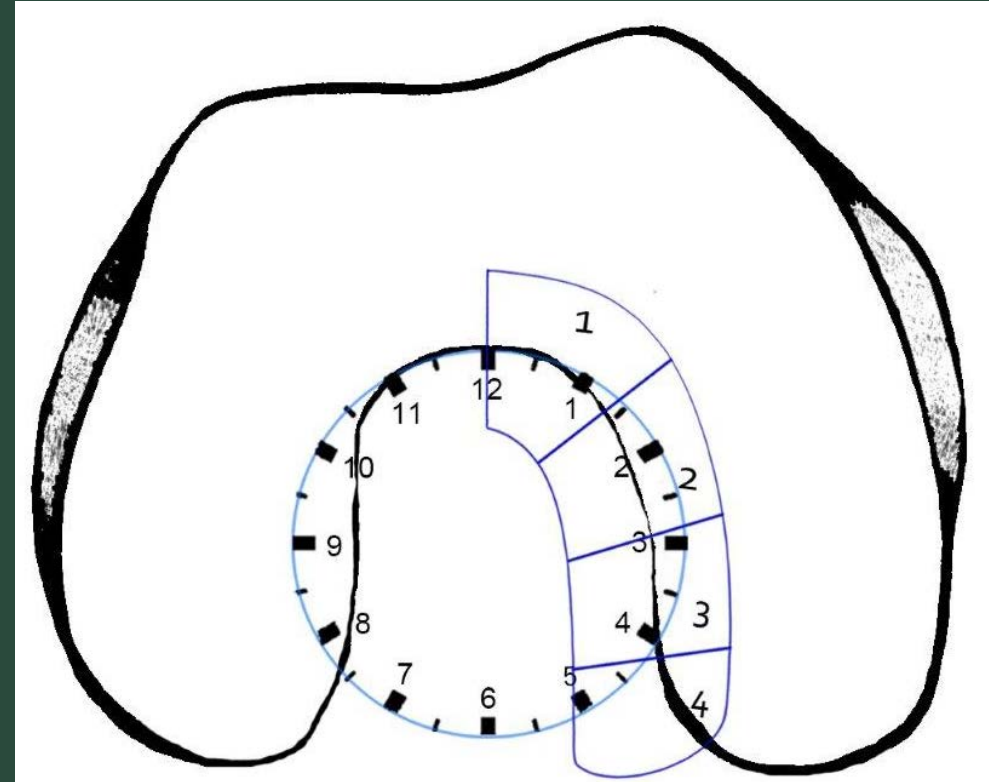
- Using a linear quadrant arthroscopic estimation method can improve inter-observer agreement as to the position of a femoral tunnel pilot hole during single bundle ACL reconstruction to the fair to moderate range, as compared to the none to moderate range for the whole clock face analogy and slight to moderate range for the half clock face analogy.

Discussion

- For the whole clock face analogy, use of a visual template can increase inter-observer agreement about the position of the femoral tunnel pilot hole to the fair to good range, from the none to moderate range achieved without visual template aid.
- In contrast, visual templates don't appear to improve agreement of linear methods of estimating femoral tunnel position.

Discussion

- The 2 o'clock (10 o'clock for right knees) femoral tunnel position favored by many surgeons using a whole clock face analogy falls in the upper half of the second quadrant in the linear quadrant method.



Thank You

