



INTERNATIONAL SOCIETY
FOR HIP ARTHROSCOPY

MR, CT, Dunn 45, Dunn 90 Comparison of Alpha Angle Measurements in FAI

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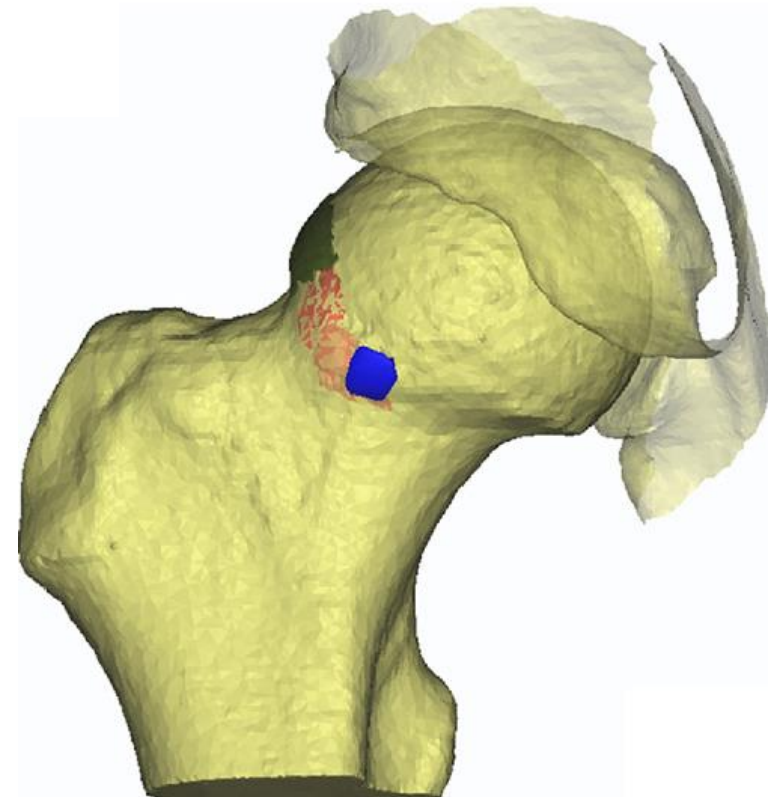
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Disclosures

- JDH: Editorial Board (Arthroscopy; Frontiers In Surgery); Paid consultant (Smith & Nephew); Royalties (SLACK Incorporated); Research support (Smith & Nephew, Depuy Synthes); Committees (AOSSM SAE, AANA Research, AAOS OAFP WG PM)
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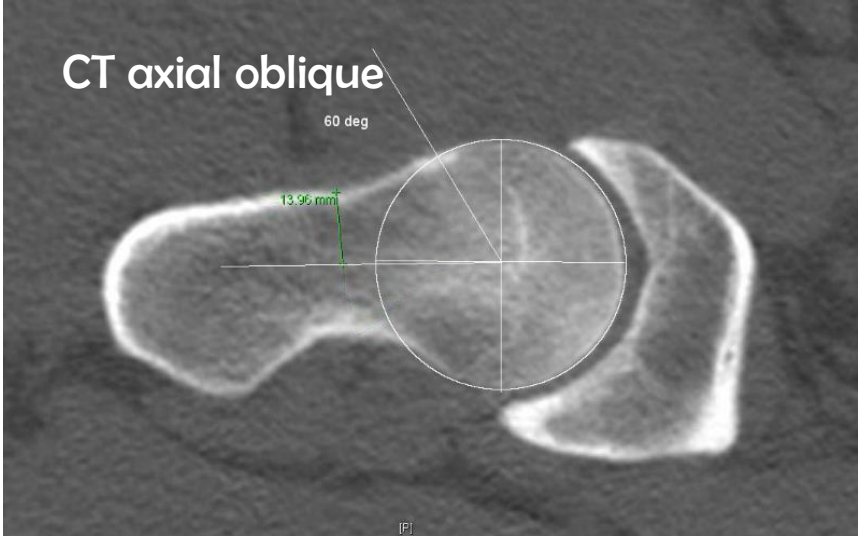
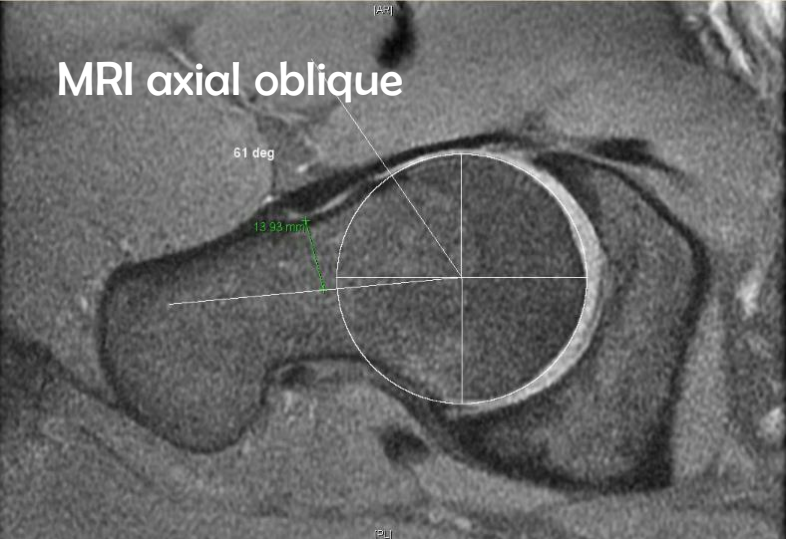
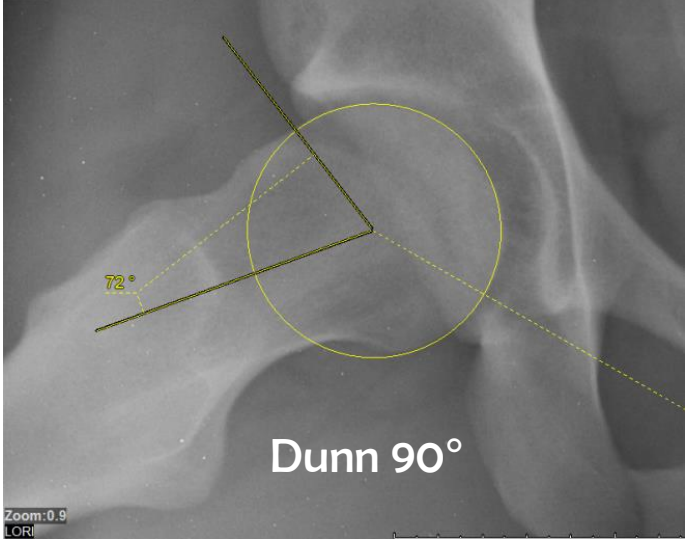
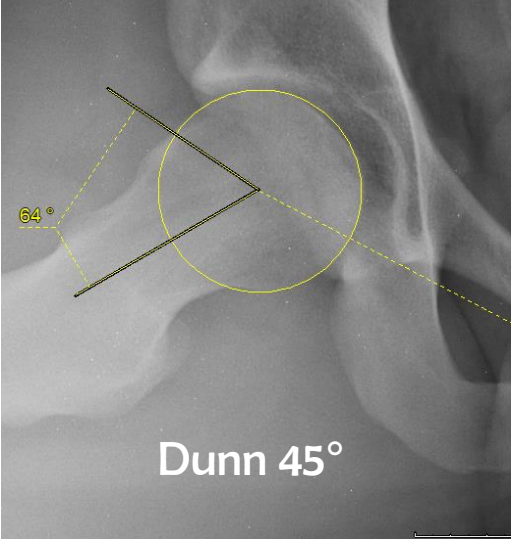
- Femoroacetabular impingement (FAI) is common cause of hip and groin pain
- Cam FAI characterized by:
 - Asphericity, loss of offset
- Imaging (XR, MR, CT)
 - Alpha angle
 - Head-neck offset
 - Head-neck offset ratio
 - Triangular index



- To determine if a significant difference exists between alpha angle measurements on the gold standard axial oblique MRI in patients with symptomatic cam FAI and labral tear and:
 - Axial oblique CT
 - Dunn 45° plain radiographs
 - Dunn 90° plain radiographs
- Hypothesis: The Dunn 45° plain radiograph alpha angle measurement would be significantly greater than all three of the other imaging techniques

- **Single-surgeon, prospective radiographic analysis of consecutive subjects with symptomatic FAI and chondrolabral injury who underwent hip arthroscopy**
 - Sample size calculation required 30 subjects (80% power)
 - Non-arthritic
 - Non-dysplastic
- **Alpha angle measured via Notzli technique**
 - X-ray (Dunn 45°, 90°), MR axial oblique, CT axial oblique
- **Cam morphology defined as alpha angle >50.5°**
- **Groups compared with ANOVA, χ^2**

Methods



- 31 subjects (16F, 15M; 33.5+/-10.5 years of age)
- Significant difference in alpha angle measurements (F[3,120]=8.144; p<0.001)
 - Dunn 45°: 66.3° +/-11.4° vs
 - Dunn 90°: 57.5° +/-10.7° (p=0.015)
 - MRI axial oblique: 53.3° +/-11.5° (p<0.001)
 - CT axial oblique: 54.9° +/-11.6° (p=0.001)
- Significant difference in the number of hips with cam morphology
 - χ^2 9.4; p=0.025

Limitations

- **Selection bias – only surgical patients**
 - Excluded subjects without correct imaging (axial oblique series on MR, CT) from outside institution – did not repeat
- **Only analyzed two plain radiographs**
 - Frog-leg, cross-table, false profile, Lauenstein
- **No radial series on MRI, CT**
- **No calculation of femoral version**
- **Threshold for cam morphology 50.5 °**
- **Single observer**

Conclusions

- **Dunn 45° radiograph yielded significant higher alpha angle than Dunn 90°, axial oblique MRI, and axial oblique CT**
- **Use of the Dunn 90°, axial oblique MRI, and axial oblique CT may result in untreated symptomatic cam FAI**

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