Differences in Hip Alpha Angles on Different Imaging Modalities

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Background
- Identify differences in alpha angles on plain radiographs, MRIs, and CTs of patients diagnosed with abnormal hip pathologies.
- Determine which modality is the most effective at predicting patient outcomes.

Methods
- Retrospective review of 60 (n=93 hips) patients diagnosed with:
  - Pelvic apophyseal injuries
  - Slipped capital femoral epiphysis (SCFE)
  - Hip dysplasia
  - Legg-Calvé-Perthes disease
  - Femoroacetabular impingement (FAI)
- Imaging performed prior to intervention:
  - Plain radiograph
  - MRI
  - CT
- We compared the alpha angle of the affected hips using a one-way ANOVA and defined statistical significance as p<0.05.

Results
- No statistically significant differences between the alpha angle on plain radiograph, MRI, or CT (p=0.48).
- No statistically significant differences in alpha angle between genders on plain radiograph (p<0.53), MRI (p<0.93), or CT (p<0.17) for those diagnosed with FAI.
- When comparing open versus closed physes, open physes had significantly higher alpha angles on plain radiograph (p<0.03) and CT (p<0.01), not MRI (p<0.11).

<table>
<thead>
<tr>
<th>Imaging Modality</th>
<th>Open Physes</th>
<th>Closed Physes</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>X-ray</td>
<td>57.7°</td>
<td>43.8°</td>
<td>0.03</td>
</tr>
<tr>
<td>MRI</td>
<td>57.7°</td>
<td>44.6°</td>
<td>0.11</td>
</tr>
<tr>
<td>CT</td>
<td>57.5°</td>
<td>40.3°</td>
<td>0.01</td>
</tr>
</tbody>
</table>

Conclusions
- No significant differences between alpha angles for patients diagnosed with FAI.
- Differences in alpha angles were significant when comparing open and closed physes, except with MRI.
- Data collection is not complete.

Implications
- Although no significant difference was observed when comparing angles of patients with FAI, subjects with open versus closed physes showed significant differences, except in MRI.
- Differences in a few degrees can greatly impact treatment recommendations.
- It appears that the use of the physeal status may help dictate which imaging modality is most effective.

Disclosures/References
- No disclosures.