INTRODUCTION

Physical exam findings in the evaluation of hip pain, such as a decrease in internal rotation or an impingement sign, may be suggestive of femoracetabular impingement (FAI) or labral pathology. Practitioners commonly measure rotation of the hip in a supine or prone position, but these measurements may be different and the significance of the difference is unclear. Little is known about the differences in rotation of the hip in the two positions and their correlation with radiographic measures that are commonly used for FAI.

PURPOSE

The purpose of this study was to correlate rotational profile in the supine and prone position in adolescents who presented with hip pain with common radiographic measures.

METHODS

A retrospective review of standardized prospectively collected data of adolescent patients presenting to a single practice with a chief complaint of hip pain was performed.

• Patients were included if they had hip pain and rotational measurements made in both prone and supine positions.
• Patients were excluded if they did not have an adequate supine AP pelvis radiograph or a 45 degree Dunn view.

Radiographic measurements were performed by a single provider (Table 1). Statistical comparison was made between continuous and categorical data with a p value < 0.05 considered statistically significant. Based on the assumption a non-linear relationship between radiographic and clinical data, a Spearman’s correlation was performed.

Table 1: Radiographic measures performed on a supine AP pelvis and 45 degree Dunn view

<table>
<thead>
<tr>
<th>Variable</th>
<th>Measurement</th>
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<tbody>
<tr>
<td>Lateral Center Edge Angle (LCEA)</td>
<td>Presence of Acetabular Profunda</td>
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<tr>
<td>Acetabular Inclination (Tonnis Angle)</td>
<td>Presence of a Cross Over Sign</td>
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<tr>
<td>Head-Neck Offset Ratio</td>
<td>Cross Over Sign Location</td>
</tr>
<tr>
<td>Alpha Angle (AP Pelvis)</td>
<td>Presence of a Posterior Wall Sign</td>
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<tr>
<td>Alpha Angle (45 degree Dunn)</td>
<td>Presence of an Ischial Spine Sign</td>
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RESULTS

In a cohort of 43 hips, 30 bilateral hips in 15 subjects had appropriate radiographs available for review. There were 14 females and 1 male with an average age of 16.4 (range 14-20).
• 19 hips had an increase in internal rotation when examined in the prone vs supine position.
• A greater difference in internal rotation between supine and prone was associated with a larger head neck offset ratio.
• Increase in internal rotation (>10 degrees) in prone vs supine had a statistically higher head neck offset compared to those who did not.

• Hip patients who had a positive anterior impingement sign on physical exam had a higher mean alpha angle on the 45 degree Dunn view.

• Some patients had similar rotational profile when examined in the supine versus prone position; however, patients whose internal rotation decreased in the prone position compared to the supine position had a smaller head neck offset. Additionally, retroversion of the acetabulum (cross over sign) may present with decreased external rotation in both the supine and prone positions.

CONCLUSIONS

Some patients had a similar rotational profile when examined in the supine versus prone position; however, patients whose internal rotation decreased in the prone position compared to the supine position had a smaller head neck offset. Additionally, retroversion of the acetabulum (cross over sign) may present with decreased external rotation in both the supine and prone positions.

REFERENCES