Introduction

- The proximal aspect of the long head of the biceps brachii (LHBB) has long been implicated as a pain generator in the shoulder.
- Biceps tenodesis is one surgical treatment option for refractory biceps tendonitis.
- Anatomic locations of tenodesis and method of fixations with more distal, subpectoral tenodesis techniques are gaining favor due to hypothesized advantages concerning the extra-articular environments.
- A recent study found that patients with chronic refractory biceps tendinitis had extra-articular lesions affecting the biceps tendon that remained hidden from view during standard diagnostic arthroscopy via the bicipital tunnel.
- The purpose of this study was to examine the tendinopathic changes in the intra-articular segment of long head of the biceps tendon as well as all three zones of the bicipital tunnel in a cohort of patients with chronic refractory biceps symptoms.

Methods

- With IRB approval, patients (n=16) with chronic refractory biceps tendinopathy were treated with open subpectoral biceps tenodesis.
- Pre-operative MRI was performed and the tendon was graded (i.e. normal tendon, increased signal, tendon splitting, incomplete/complete tear).
- Intra-operative anatomic findings were recorded.
- The removed portion of the biceps tendon was split into 3 segments; zone 1 (proximal): 0 - 3.5cm from the labral insertion, zone 2 (mid): 3.5- 6.5cm and zone 3 (distal): 6.5-9cm, and evaluated for histology.
- Tenosynovium adjacent to the tendon was assessed histologically. Inflammatory changes were graded using a modified Bonar score and tested for the presence of CD3 and CD79a cells.
- ANOVA and Pearson correlations were performed.

Results

- Pre-operative MRI demonstrated no significant differences in tendon appearance between Zones 1-3.
- Intra-operative findings included non-specific degenerative SLAP (Type 1) tear or mild/moderate bicep tenosynovitis in all cases.
- Significantly (p<0.048) more severe histopathology scores were noted for tendon in zones 1 (9.5+2.7) and 2 (10.2+2.6) compared to zone 3 (8.0+2.0) (p<.05).
- Inflammatory tenosynovium scores demonstrated weak correlation with tendon changes in zone 1 (r=0.08), zone 2 (r=0.03) or zone 3 (r=0.1).

Discussion

- In patients with chronic refractory proximal biceps tendinopathy undergoing open subpectoral tenodesis, MRI and intra-operative assessment did not demonstrate significant structural abnormalities despite severe histopathologic changes demonstrated in the proximal biceps.
- Severity of tendon histopathology was more pronounced in the proximal and mid portion of the tendon.
- Tenosynovium did not demonstrate inflammatory changes, suggesting a chronic etiology in this patient cohort.

Acknowledgements: Summer Research Fellowship, sponsored by MU School of Medicine Office of Research

<table>
<thead>
<tr>
<th>Pathologic comparison</th>
<th>Correlation coefficient (r)</th>
<th>Correlation strength</th>
</tr>
</thead>
<tbody>
<tr>
<td>Proximal segment vs. Mid segment</td>
<td>0.43</td>
<td>Moderately strong</td>
</tr>
<tr>
<td>Proximal segment vs. Distal segment</td>
<td>0.28</td>
<td>Weak</td>
</tr>
<tr>
<td>Mid segment vs. Distal segment</td>
<td>0.66</td>
<td>Moderately strong</td>
</tr>
<tr>
<td>Proximal segment vs. synovial tissue</td>
<td>0.08</td>
<td>Weak</td>
</tr>
<tr>
<td>Mid segment vs. synovial tissue</td>
<td>0.03</td>
<td>Weak</td>
</tr>
<tr>
<td>Distal segment vs. synovial tissue</td>
<td>0.1</td>
<td>Weak</td>
</tr>
</tbody>
</table>