

Introduction

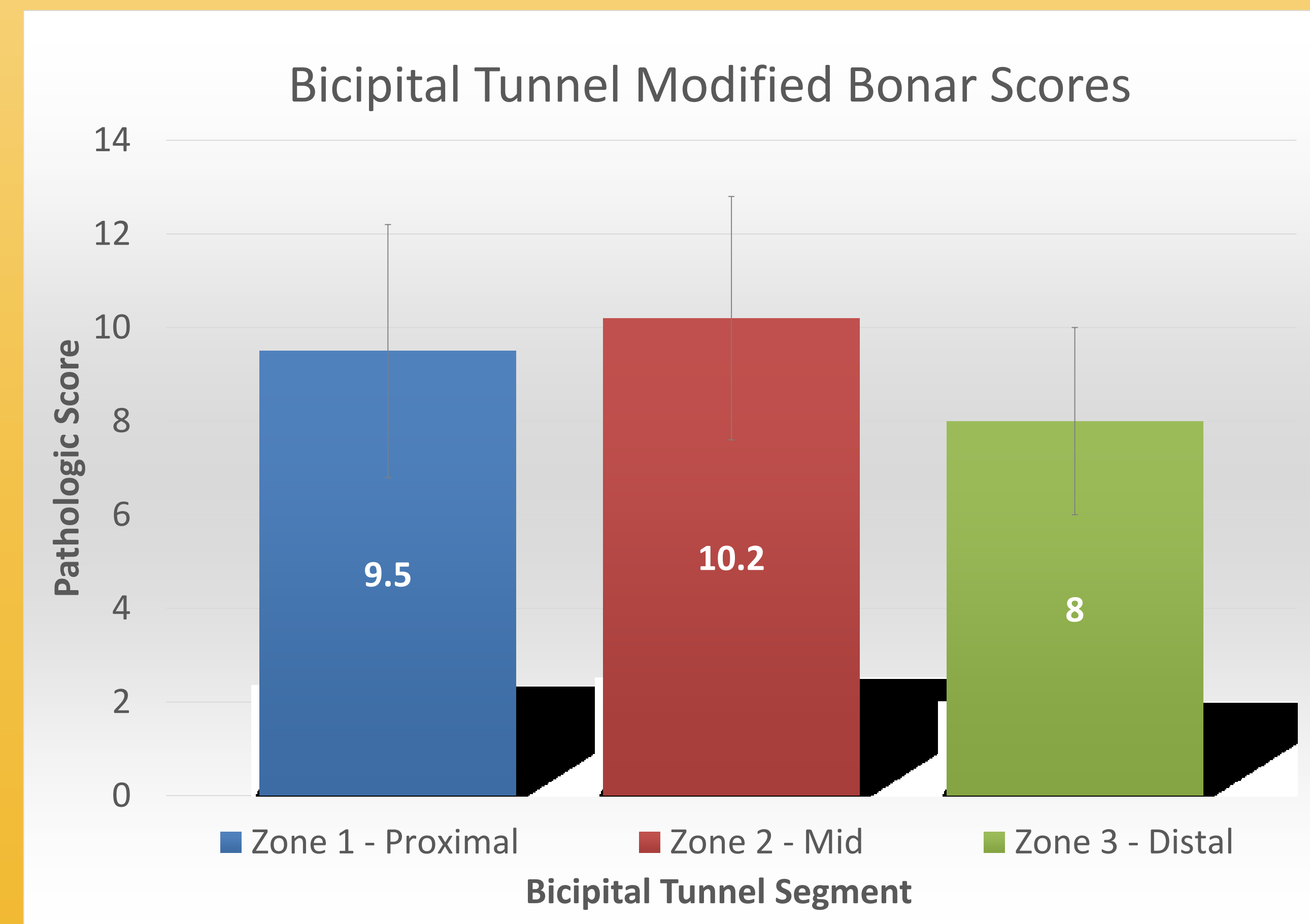
- The proximal aspect of the long head of the biceps brachii (LHBB) has long been implicated as a pain generator in the shoulder.
- Biceps tenodesis is one surgical treatment option for refractory biceps tendonitis.
- Anatomic locations of tenodesis and method of fixations with more distal, subpectoral 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 ($r = 0.1$).



Pathologic comparison	Correlation coefficient (r)	Correlation strength
Proximal segment vs. Mid segment	0.43	Moderately strong
Proximal segment vs. Distal segment	0.28	Weak
Mid segment vs. Distal segment	0.66	Moderately strong
Proximal segment vs. synovial tissue	0.08	Weak
Mid segment vs. synovial tissue	0.03	Weak
Distal segment vs. synovial tissue	0.1	Weak

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.