Clinically Relevant Anatomy and Biomechanics of the Proximal Biceps

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KEYWORDS

• Biceps-labral complex • Proximal biceps • Bicipital tunnel

KEY POINTS

- The biceps-labral complex (BLC) represents the shared anatomic and clinical features of the biceps and labrum.
- The BLC has 3 clinically relevant zones: inside, junction, and bicipital tunnel.
- Embracing this more comprehensive understanding of the anatomy, pathoanatomy, and functional implications, clinicians can proceed with greater confidence and more accurately select patient-specific surgical techniques.

Video of an arthroscopic active compression test with arthroscope in the posterior viewing portal demonstrating incarceration of the long head of the biceps tendon between humeral head and glenoid accompanies this article at http://www.sportsmed.theclinics.com/

INTRODUCTION

The long head of the biceps tendon (LHBT) and the glenoid labrum have long been recognized as separate entities. This common misconception has been challenged by recent clinical and basic science efforts. Interpretation of the clinically relevant anatomy, pathoanatomy, and biomechanics of the proximal biceps, therefore, demands a more comprehensive understanding of the glenoid labrum, the intra-articular LHBT, its stabilizing pulley, and the bicipital tunnel. As such, the authors prefer the term biceps-labral complex (BLC) to describe relevant anatomy as it relates to the proximal biceps. To consider one without the others may lead to inaccurate diagnosis and inappropriate selection of surgical technique.

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The BLC has 3 clinically relevant zones: inside, junction, and tunnel.[1] Inside includes the superior labrum and the biceps anchor. Junction includes the intra-articular portion of the LHBT and its stabilizing pulley, which is visualized during standard glenohumeral arthroscopy. Bicipital tunnel represents the extra-articular LHBT from the articular margin through the subpectoral region and its fibro-osseous confinement termed the bicipital tunnel (**Fig. 1**).[1,2]

ANATOMY AND FUNCTION

Inside

Glenoid labrum

- The glenoid is a triangular collagenous structure[3] 4 to 6 mm wide and 4 mm thick[4] that is circumferentially connected to the glenoid and acts to deepen the shallow fossa without altering its radius of curvature. It is intimately associated with capsular ligaments.[5]
- Variations of normal anterior labral anatomy (sublabral foramen and Buford complex) must be differentiated from pathologic lesions at arthroscopy.[3,6–9]

Superior labrum

- Morphologic heterogeneity with regard to its attachment to the superior glenoid: In their classic evaluation of 42 shoulder specimens, Cooper and colleagues[3] reported that the morphology of the superior labrum was distinct from the inferior

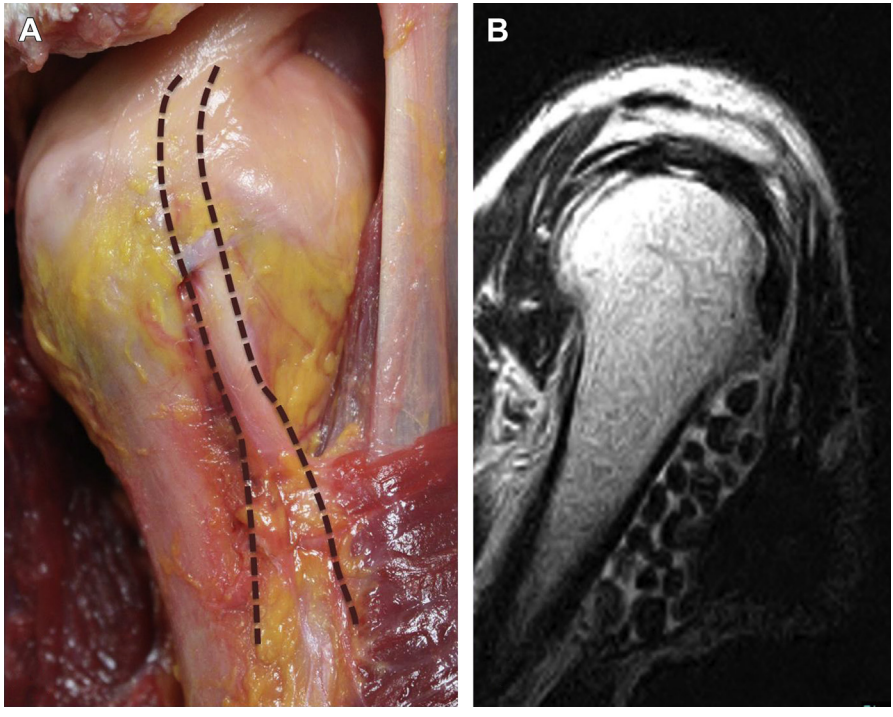

Fig. 1. (*A*) The bicipital tunnel is a closed space (*dashed line*) that extends from the articular margin through the subpectoral region where space-occupying lesions such as loose bodies (*B*) can aggregate and become symptomatic.