Editorial

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Long head biceps tendon as a graft material

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The long head tendon of the biceps brachii (LHBT) is an interesting anatomical structure. There have been numerous controversies regarding its role within the joint, its pathophysiology, and its influence on surrounding anatomical structures [1-5]. First, it is a common source of shoulder pain, especially when it is involved with rotator cuff pathology [6-8]. Approximately 70% of pathologic LHBTs are involved with rotator cuff tears [9-11]. In addition, with it being described as a sentinel sign, the relationship between the LHBT and subscapularis is well known [12-16]. Often, the instability of an LHBT is caused by a subscapularis tear, and kinking of displaced LHBTs may further deteriorate a torn subscapularis.

Another debate concerns its role within the glenohumeral joint. The LHBT has a role as a stabilizer of the humeral head, especially in an external rotation position. Meanwhile, numerous studies have revealed similar results between tenotomy and tenodesis of LHBTs, and these results have raised doubts on the actual role of the LHBT as a head stabilizer and the necessity of unconditional preservation of the LHBT by tenodesis. These points have contributed to the justification of prophylactic tenotomy as a means of eliminating pain, especially with age [17,18]. No definite deterioration of elbow function was exhibited with tenotomy, and cosmetic deformation was almost the only issue [6,17,19]. Since sacrifice of the LHBT is clinically acceptable and exhibited better results in the aspect of pain relief, clinical practice has begun to use the LHBT beyond simple tenotomy.

The first studies regarding the utilization of LHBT introduced the procedure as biceps augmentation for the treatment of large rotator cuff tear [20,21]. Tenotomized LHBT was interposed to bridge the gap in partial repair of massive rotator cuff tears, and this technique exhibited promising repair integrity. The subsequent clinical result by Park et al. [22] supported the clinical value of the augmentation technique. The next techniques that utilized LHBT for the treatment of large cuff tear were a biceps rerouting technique and anterior cable reconstruction [23-26]. Even though these techniques have similarities with utilizing LHBTs to supplement torn rotator cuffs that cannot be fully repaired, the concepts of the techniques are different from one another. While biceps augmentation focuses on the coverage of the footprint and bridging the gap, the main target of biceps rerouting is stabilizing the humeral head [27]. In addition, the technique of anterior cable reconstruction is very similar to that of biceps rerouting, but the focus is anatomical restoration of L-shaped tears of the supraspinatus rather than stability of the humeral head [28]. Despite the increasing number of cases utilizing LHBTs for the treatment of rotator cuff tears, detection of underlying LHBT pathology and lack of known prognostic factors remain as challenges. Stability of an LHBT cannot be guaranteed, especially with larger-sized cuff tears.

In this study, serum high-sensitivity C-reactive protein (hs-CRP) was proposed as a reliable predictor for pathologic LHBT. Specifically, hs-CRP higher than 1 mg/L reflected the presence of grade II LHBT tear and may aid surgeons in deciding whether certain LHBTs are suitable for in situ graft material. Serum hs-

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CRP is a biomarker of low-grade inflammation and is used to identify various cardiovascular and inflammatory processes in clinical care and epidemiologic studies. The biggest issue with this marker is its low specificity. Practically, hs-CRP is convenient as a screening device and as a reaction parameter of infective condition rather than as a diagnostic tool. Since the specificity is low, objectivity is insufficient to reflect the condition of a specific disease.

Since various repair options using the LHBT have recently been proposed along with the increase in clinical reports, it is important to accurately determine the condition of an LHBT before it is utilized as a graft. The authors have conducted various statistical analyses to increase the objectivity of the results and to reduce the risk of multicollinearity and heteroscedasticity. In addition, the objectivity of the result revealed with hs-CRP is supported by the significant association of other factors such as subscapularis tears, thyroid problems, or conditions of torn supraspinatus with LHBTs. However, we cannot overlook the importance of imaging modalities on interpreting the condition of LHBTs, especially in terms of diagnostic specificity. The validity of various imaging modalities and classifications has been verified and validated through several studies with high clinical reliability [29-31].

Constructional demolition of an LHBT used as a graft for a repaired rotator cuff can lead to worse results by affecting a relatively well-preserved partially repaired cuff tendon. Considering the lack of parameters that can reflect the preoperative conditions of LHBTs, the levels of preoperative hs-CRP that are capable of reflecting the condition of LHBTs would contribute to the surgeon's decision on whether to utilize LHBTs with cuff repairs.

NOTES

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Conflict of interest

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