

# Which Is Better for Arthroscopic Tenodesis of the Long Head of the Biceps: Soft Tissue or Bony Interference Fixation?



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**Purpose:** To compare the outcome between arthroscopic soft tissue tenodesis (STT) at the rotator interval and bony interference fixation tenodesis (BIFT) at the distal bicipital groove for the long head of the biceps (LHB). **Methods:** Twenty-five shoulders that underwent arthroscopic STT of the LHB were compared with 28 shoulders that underwent arthroscopic BIFT using a 5.5-mm Bio-Tenodesis screw (Arthrex, Naples, FL). American Shoulder and Elbow Surgeons scores, Constant score, and elbow flexion strength index (EFSI) were checked preoperatively, postoperative 1 year and 2 years. Ultrasound imaging evaluation took place at 1 year and 2 years postoperatively as well. **Results:** The overall functional outcomes improved after surgery in both groups. The BIFT group showed a significant increase in EFSI (preop: 0.54, postoperative 2 years: 0.94) compared with that of the STT group (preop: 0.52, postoperative 2 years: 0.74) at postoperative 2 years ( $P = .006$ ). However, no significant difference was seen in the increase of American Shoulder and Elbow Surgeons scores and Constant scores between the two groups. At postoperative 2 years, ultrasound showed seven empty grooves in the STT group, but only two empty grooves in the BIFT group ( $P = .046$ ). **Conclusions:** Arthroscopic BIFT for the LHB showed better improvement in EFSI than arthroscopic STT. In addition, the STT group showed a higher failure rate than the BIFT group. **Level of Evidence:** Level III, retrospective comparative study.

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Arthroscopic long head of biceps (LHB) tenodesis techniques can generally be classified into soft tissue and bony fixation.<sup>1-5</sup> Soft tissue fixation includes intra-articular and extra-articular transtendon techniques.<sup>3,5</sup> Bony fixation techniques consist of osseous fixation using suture anchors or knotless anchors, and intraosseous fixation using biointerference screws.<sup>1,2,4,6-11</sup> When the LHB is torn more than 30%, shows subluxation or dislocation, or when a degenerative type 2 superior labrum anterior to posterior

(SLAP) lesion is present, a tenotomy or tenodesis is indicated.<sup>2,12</sup> For patients older than 65 years, a tenotomy is generally accepted; however, for patients younger than 65 years, a tenodesis is preferred because it can conserve the muscle length-tension relationship and decrease muscle atrophy and weakness during elbow flexion and supination, and prevent the occurrence of a Popeye deformity.<sup>2,4,13,14</sup>

There is one retrospective comparative study comparing arthroscopic soft tissue tenodesis (STT) and

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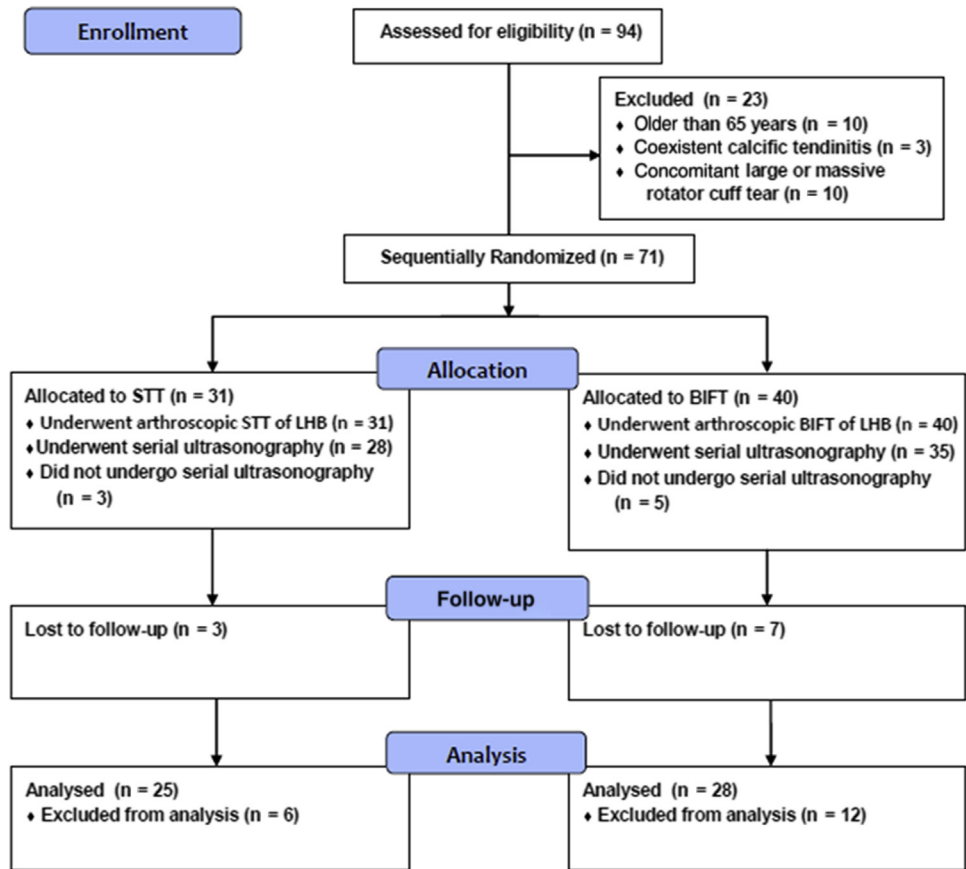
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**Fig 1.** Flowchart of patient enrollment. (BIFT, bony interference tenodesis; LHB, long head of biceps; STT, soft tissue tenodesis.)

bony fixation with an anchor for the LHB, reporting that bony fixation using an anchor showed better clinical and structural results than soft tissue fixation.<sup>4</sup> However, there has been no comparative study of arthroscopic STT versus bony interference fixation tenodesis (BIFT) using a biointerference screw for the LHB. Therefore, the purpose of this study was to compare the outcome between arthroscopic STT at the rotator interval and BIFT at the distal bicipital groove for the LHB. We hypothesized that arthroscopic BIFT for the LHB would provide a better outcome in elbow flexion power, cosmetic aspects, and functional scores.

## Methods

All procedures described in this study were approved by the Institutional Review Board of the author's hospital, and all patients gave written informed consent to participate in the study. Between March 2006 and April 2010, 42 cases of arthroscopic STT of the LHB were performed, followed by 52 cases of arthroscopic BIFT until July 2011. The indication of tenodesis of the LHB applied for this study was a tear of the LHB more than 30%, subluxation or dislocation of LHB, or degenerative type 2 SLAP.<sup>2,4</sup>

In this study, the inclusion criteria were patients (1) who had preoperative MRI available in the database

for retrospective review and (2) who underwent arthroscopic STT or BIFT of the LHB. The exclusion criteria were patients (1) who were older than 65 years, (2) who had a concomitant large or massive rotator cuff tear, (3) who had a follow-up period of less than 24 months, (4) who had coexistent calcific tendinitis, (5) who refused routine ultrasound follow-up, (6) who had a history of shoulder operation, and (7) who had a concomitant nerve injury around the shoulder. The rotator cuff tear was classified by size: smaller than 1 cm was defined as small, a tear 1 to 3 cm as medium, a tear 3 to 5 cm as large, and a tear larger than 5 cm as massive.<sup>3,15</sup> Furthermore, a massive tear was defined as a detachment of at least two tendons in their entirety. Of the 42 patients treated with arthroscopic STT, 5 were excluded because of their age, 2 because of coexistent calcific tendinitis, 4 because of concomitant large or massive rotator cuff tear, 3 because of follow-up loss, and 3 because of refusal for ultrasound follow-up. Of the 52 patients who underwent arthroscopic BIFT, 5 were excluded because of their age, 1 because of coexistent calcific tendinitis, 6 because of concomitant large or massive rotator cuff tear, 7 because of follow-up loss, and 5 because of refusal for ultrasound follow-up. The remaining 25 patients treated with arthroscopic STT

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