CQ HAND + UPPER LIMB
SPECIALIST ORTHOPAEDIC SURGEON

EVIDENCE SUMMARY

SLAP and Biceps Pathology

title: “SLAP and Biceps Pathology” slug: slap-biceps-pathology region: shoulder audience: patient mesh_terms: [“Shoulder Injuries”, “Tenodesis”, “Muscle, Skeletal”, “Tendons”, “Tenotomy”, “Shoulder Pain”, “Tendinopathy”, “Shoulder”] article_count: 308 model_used: Qwen3.6-35B-A3B-Q8_0.gguf generated_at: ‘2026-06-16T19:41:12+00:00’ key_articles: - title: “Is arthroscopic repair superior to biceps tenotomy and tenodesis for type II SLAP lesions? A meta-analysis of RCTs and observational studies” ref_num: 1 evidence_tier: paper evidence_level: 1 doi: 10.1186/s13018-019-1096-y year: 2019 - title: “A SLAP lesion associated with calcific tendinitis of the long head of the biceps brachii at its origin” ref_num: 2 evidence_tier: paper evidence_level: 4 doi: 10.1007/s00167-007-0323-y year: 2007 - title: “Clinical Outcomes After Biceps Tenodesis or Tenotomy Using Subpectoral Pain to Guide Management in Patients With Rotator Cuff Tears” ref_num: 3 evidence_tier: paper evidence_level: 3 doi: 10.1016/j.arthro.2019.02.017 year: 2019 - title: “Subpectoral Biceps Tenodesis for the Treatment of Type II and IV Superior Labral Anterior and Posterior Lesions” ref_num: 4 evidence_tier: paper evidence_level: 4 doi: 10.1177/0363546514540273 year: 2014 - title: “Proximal Biceps in Overhead Athletes” ref_num: 5 evidence_tier: paper evidence_level: 5 doi: 10.1016/j.csm.2015.08.009 year: 2016 - title: “Principles of the superior labrum and biceps complex: an expert consensus from the NEER Circle” ref_num: 6 evidence_tier: paper evidence_level: 5 doi: 10.1016/j.jse.2024.09.040 year: 2025 - title: “Surgical Treatment of Superior Labral/Biceps Pathology in the Overhead Thrower” ref_num: 7 evidence_tier: paper evidence_level: 5 doi: 10.5435/jaaos-d-21-01199 year: 2023 - title: “*Editorial Commentary:* Which to Fix—the Biceps or the Labrum? The Shoulder SLAP Tear Is Still Controversial” ref_num: 8 evidence_tier: paper evidence_level: 5 doi: 10.1016/j.arthro.2019.02.026 year: 2019 - title: “Outcomes of Primary Biceps Subpectoral Tenodesis in an Active Population: A Prospective Evaluation of 101 Patients” ref_num: 9 evidence_tier: paper evidence_level: 4 doi: 10.1016/j.arthro.2019.06.035 year: 2019 - title: “The Efficacy of Biceps Tenodesis in the Treatment of Failed Superior Labral Anterior Posterior Repairs” ref_num: 10 evidence_tier: paper evidence_level: 4 doi: 10.1177/0363546513520122 year: 2014 - title: “Rehabilitation of Biceps Tendon Disorders in Athletes” ref_num: 11 evidence_tier: paper doi: 10.1016/j.csm.2009.12.003 year: 2010 - title: “Understanding the Importance of the Teres Minor for Shoulder Function: Functional Anatomy and Pathology” ref_num: 12 evidence_tier: paper evidence_level: 5 doi: 10.5435/jaaos-d-15-00258 year: 2018 - title: “Surgical Trends in the Treatment of Superior Labrum Anterior and Posterior Lesions of the Shoulder” ref_num: 13 evidence_tier: paper evidence_level: 3 doi: 10.1177/0363546514534939 year: 2014 - title: “Subsequent Shoulder Surgery After Isolated Arthroscopic SLAP Repair” ref_num: 14 evidence_tier: paper evidence_level: 3 doi: 10.1016/j.arthro.2016.01.053 year: 2016 - title: “Subpectoral biceps tenodesis: a new technique using an all-suture anchor fixation” ref_num: 15

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Overview

- Both arthroscopic repair and biceps tenotomy and tenodesis interventions had benefits in type II SLAP lesions [1].
- Biceps tenodesis is a safe, effective, and technically straightforward alternative to primary SLAP repair in patients with type II and IV SLAP tears [4].
- SLAP repairs are generally favored in younger, active patients [6].
- Treating the biceps is preferred in lower-demand patients aged >30 years [6].
- Biceps tenodesis has been increasingly used for the management of SLAP lesions [7].
- Recent studies report high rates of return to sport, high satisfaction, and good to excellent patient-reported outcomes with biceps tenodesis in carefully selected athletes [7].
- SLAP repair and biceps tenodesis both present viable treatment options but come with specific advantages and disadvantages [8].
- The decision between SLAP repair and biceps tenodesis is ultimately made individually with the patient [8].

- Primary subpectoral open biceps tenodesis for SLAP tears or pathology of the long head of the biceps tendon provides significant improvement in shoulder outcomes [9].
- Primary subpectoral open biceps tenodesis for SLAP tears or pathology of the long head of the biceps tendon provides a reliable return to activity level with low risk for complications [9].
- Biceps tenodesis is a predictable, safe, and effective treatment for failed arthroscopic SLAP tears at a minimum 2-year follow-up [10].
- Treatment of proximal biceps pathology is largely based on expert opinion and patient preferences rather than robust randomized evidence [20].
- Primary biceps tenodesis offers increased effectiveness when compared with both primary SLAP repair and nonoperative treatment [24].
- Primary biceps tenodesis has lower costs than primary SLAP repair [24].
- The indications and technique of biceps tenodesis in the elite pitcher still need to be defined [26].
- High-demand patients with biceps tendonitis in the setting of a SLAP lesion with labral instability who undergo combined tenodesis and labral repair have significantly worse outcomes than patients who undergo either isolated labral repair for type II SLAP tears or isolated biceps tenodesis for a SLAP tear and biceps tendonitis [44].

Anatomy & Pathophysiology

- Understanding the function and pathology surrounding the teres minor is paramount in comprehensive management of patients with shoulder pathology [12].
- In the context of rotator cuff disease, the etiology of anterior shoulder pain with macroscopic changes in the biceps tendon is related to the complex interaction of the tendon and surrounding soft tissues, rather than a single entity [17].
- Biomechanical studies indicate that the long head of the biceps contributes to stability of the glenohumeral joint in all directions [28].
- In vivo studies have not yet established the stabilizing effect of the long head of the biceps on the glenohumeral joint [28].
- The physiologic load required for the long head of the biceps to stabilize the glenohumeral joint remains unknown [28].
- The long head of the biceps has a pertinent biomechanical role in glenohumeral stability regardless of the condition of the superior labrum [32].
- Validity for strength testing of the serratus anterior muscle is optimal with subjects in a seated position and the shoulder flexed at 90° in the scapular plane [33].
- Treatment of scapular dyskinesis is directed at managing underlying causes and restoring normal scapular muscle activation patterns by kinetic chain–based rehabilitation protocols [35].
- Both proposed superior labral reconstruction techniques increased the force needed for humeral head superior migration in the setting of a labral tear [36].

- The long head of the biceps tendon serves as a source of local autograft with biological and biomechanical properties that aid outcomes of complex primary and revision shoulder surgery procedures [40].
- Potential prognostic variables associated with final subscapularis strength remain elusive [42].
- The ultimate load to failure and stiffness for unicortical button fixation and the compared method in proximal subpectoral biceps tenodesis were not different [43].

Classification

- Arthroscopic repair and biceps tenotomy/tenodesis both provide benefits for type II SLAP lesions [1].
- Calcific tendinitis of the long head of the biceps brachii at its origin may be associated with a concurrent SLAP lesion [2].
- A positive subpectoral biceps test is associated with gross pathologic changes of the biceps in 93% of patients [3].
- Biceps tenodesis is a safe, effective, and technically straightforward alternative to primary SLAP repair for type II and IV SLAP tears [4].
- Biceps tenodesis yields consistent and reliable results for operative treatment in overhead athletes, whereas return to play after SLAP repair can be unpredictable [5].
- SLAP repair and biceps tenodesis are both viable treatment options with specific advantages and disadvantages, with the decision made individually with the patient [8].
- Appropriate treatment for biceps pathology, whether conservative or surgical, should be based on established pathology [11].
- There is no single pattern of pain that distinguishes biceps conditions from other shoulder abnormalities [16].
- In the context of rotator cuff disease, the etiology of anterior shoulder pain with macroscopic changes in the biceps tendon is related to the complex interaction of the tendon and surrounding soft tissues rather than a single entity [17].
- Biceps tenodesis may be considered a valid primary or revision surgery for symptomatic type II SLAP tears due to no detrimental effect on glenohumeral stability [21].
- Biceps tenodesis remains a reliable treatment for pathologic abnormality of the long head of the biceps [50].

Clinical Presentation

- A positive subpectoral biceps test was associated with gross pathologic changes of the biceps in 93% of patients [3].
- There is no single pattern of pain that distinguishes biceps conditions from other shoulder abnormalities [16].

- In the context of rotator cuff disease, the etiology of anterior shoulder pain with macroscopic changes in the biceps tendon is related to the complex interaction of the tendon and surrounding soft tissues, rather than a single entity [17].
- Diagnosis of long head biceps tendon and subscapularis pathology in association with shoulder rotator cuff pathology can be challenging due to limitations in MRI and arthroscopic visualization [22].
- Surgeons should maintain a high level of suspicion and utilize specific techniques to prevent missing pathology when diagnosing long head biceps tendon and subscapularis pathology in association with shoulder rotator cuff pathology [22].
- The concomitant presence of SLAP and pulley lesions is significantly rare, occurring in only about 10% of all patients with SLAP and pulley lesions [25].
- If calcific tendinitis of the long head of the biceps brachii at its origin is suspected, it may be helpful to consider the presence of a concurrent SLAP lesion and its management [2].
- A 10.1% incidence of subsequent surgery after isolated SLAP repair was identified, often related to an additional diagnosis [14].
- Clinicians should consider other potential causes of shoulder pain when considering surgery for patients with SLAP lesions [14].

Investigations

- A positive subpectoral biceps test was associated with gross pathologic changes of the biceps in 93% of patients [3].
- There is no single pattern of pain that distinguishes biceps conditions from other shoulder abnormalities [16].
- Biceps tendon pain in the absence of tears is associated with microscopic changes consistent with tendinopathy, which are often missed by MRI [46].
- MRI and intraoperative assessment did not show significant structural abnormalities within the tendon despite significant histopathologic changes in patients with chronic long head biceps tendinopathy undergoing open subpectoral tenodesis [19].
- Most abnormal MRI findings were not different in frequency between symptomatic and asymptomatic shoulders [47].
- Bicipital groove morphology measured by MRI has no correlation to intra-articular biceps tendon pathology [48].
- Preoperative MRI scans of the shoulder interpreted by orthopaedic surgeons with a systematic approach resulted in improved accuracy in diagnosing subscapularis tendon tears compared with previous studies [51].
- Diagnosis of long head biceps tendon and subscapularis pathology in association with shoulder rotator cuff pathology can be challenging due to limitations in MRI and arthroscopic visualization [22].

- In approximately 80% of intra-articular biceps tears evaluated, a 'hidden lesion' was observed going beyond the bicipital groove and extending to the distal extra-articular portion [55].
- The myotendinous junction (MTJ) of the biceps begins further proximal than may be appreciated intraoperatively [56].
- If calcific tendinitis of the long head of the biceps brachii at its origin is suspected, it may be helpful to consider the presence of a concurrent SLAP lesion [2].
- Clinicians should consider other potential causes of shoulder pain when considering surgery for patients with SLAP lesions, as there is a 10.1% incidence of subsequent surgery after isolated SLAP repair often related to an additional diagnosis [14].

Treatment

OPERATIVE MANAGEMENT: SLAP REPAIR VS. BICEPS TENODESIS/TENOTOMY

- Both arthroscopic repair and biceps tenotomy and tenodesis interventions had benefits in type II SLAP lesions [1].
- Biceps tenodesis is a safe, effective, and technically straightforward alternative to primary SLAP repair in patients with type II and IV SLAP tears [4].
- For operative treatment, biceps tenodesis has consistent and reliable results, whereas return to play after SLAP repair can be unpredictable [5].
- SLAP repairs are generally favored in younger, active patients, whereas treating the biceps is preferred in lower-demand patients aged >30 years [6].
- Biceps tenodesis has been increasingly used for the management of SLAP lesions, with recent studies reporting high rates of return to sport, high satisfaction, and good to excellent patient-reported outcomes in carefully selected athletes [7].
- SLAP repair and biceps tenodesis both present viable treatment options but come with specific advantages and disadvantages, with the decision ultimately made individually with the patient [8].
- Increased patient age correlates with the likelihood of treatment with biceps tenodesis or tenotomy versus SLAP repair [13].
- Primary biceps tenodesis offers increased effectiveness when compared with both primary SLAP repair and nonoperative treatment and lower costs than primary SLAP repair [24].
- The treatment option of biceps tenodesis is an appealing alternative to SLAP repair, but the indications and technique of biceps tenodesis in the elite pitcher still need to be defined [26].

BICEPS TENODESIS VS. TENOTOMY

- Treatment of proximal biceps pathology is largely based on expert opinion and patient preferences rather than robust randomized evidence [20].
- Patients undergoing treatment for LHBT or SLAP pathology with either biceps tenodesis or tenotomy can be expected to experience similar improvements in patient-reported and functional outcomes [23].

- Patient age should not be used as the sole criterion when deciding between biceps tenotomy and tenodesis [49].

SUBPECTORAL BICEPS TENODESIS OUTCOMES

- Primary subpectoral open biceps tenodesis for SLAP tears or pathology of the LHBT provides significant improvement in shoulder outcomes with a reliable return to activity level with low risk for complications [9].
- Short-term follow-up of 20 procedures has not shown any failure of fixation or residual biceps discomfort [15].
- Subpectoral biceps tenodesis utilizing a dual suture anchor technique is a treatment option for SLAP lesions, partial thickness tears, subluxation, and tenosynovitis of the long head of the biceps with high rates of postoperative patient satisfaction, a low failure rate, and improved outcome scores [31].
- Biceps tenodesis is a predictable, safe, and effective treatment for failed arthroscopic SLAP tears at a minimum 2-year follow-up [10].
- Although revision to subpectoral biceps tenodesis may be an effective strategy to address failed prior biceps surgery, the potential complication of persistent pain must be emphasized [54].

NONOPERATIVE MANAGEMENT

- Appropriate treatment for biceps pathology, whether conservative or surgical, should be based on established pathology [11].
- Diagnosis and nonoperative management of long head of biceps tendon disorders are categorized as inflammation, instability, and rupture, requiring specific protocols [41].

ASSOCIATED PATHOLOGY

- If calcific tendinitis of the long head of the biceps brachii at its origin is suspected, it may be helpful to consider the presence of a concurrent SLAP lesion and its management [2].

Complications

- A positive subpectoral biceps test was associated with gross pathologic changes of the biceps in 93% of patients [3].
- The incidence of subsequent surgery after isolated arthroscopic SLAP repair is 10.1% [14].
- Subsequent surgery after isolated SLAP repair is often related to an additional diagnosis [14].
- Risk factors for revision surgery after SLAP repair include age >40 years [18].
- Risk factors for revision surgery after SLAP repair include female sex [18].
- Risk factors for revision surgery after SLAP repair include obesity [18].
- Risk factors for revision surgery after SLAP repair include smoking [18].

- Risk factors for revision surgery after SLAP repair include diagnosis of biceps tendinitis or long head of the biceps tearing [18].
- Short-term follow-up of 20 procedures using an all-suture anchor fixation for subpectoral biceps tenodesis has not shown any failure of fixation [15].
- Short-term follow-up of 20 procedures using an all-suture anchor fixation for subpectoral biceps tenodesis has not shown any residual biceps discomfort [15].
- In patients with chronic long head biceps tendinopathy undergoing open subpectoral tenodesis, MRI and intraoperative assessment did not show significant structural abnormalities within the tendon despite significant histopathologic changes [19].

Recovery

- Arthroscopic repair and biceps tenotomy/tenodesis both provide benefits for type II SLAP lesions [1].
- Biceps tenodesis is a safe, effective, and technically straightforward alternative to primary SLAP repair for type II and IV SLAP tears [4].
- Biceps tenodesis yields consistent and reliable results for operative treatment in overhead athletes, whereas return to play after SLAP repair can be unpredictable [5].
- Biceps tenodesis is increasingly used for SLAP lesions, with recent studies reporting high rates of return to sport, high satisfaction, and good to excellent patient-reported outcomes in carefully selected athletes [7].
- SLAP repair and biceps tenodesis are both viable treatment options with specific advantages and disadvantages, with the decision made individually with the patient [8].
- Primary subpectoral open biceps tenodesis for SLAP tears or long head of the biceps pathology provides significant improvement in shoulder outcomes, reliable return to activity level, and low risk for complications [9].
- Biceps tenodesis is a predictable, safe, and effective treatment for failed arthroscopic SLAP tears at a minimum 2-year follow-up [10].
- Increased patient age correlates with the likelihood of treatment with biceps tenodesis or tenotomy versus SLAP repair [13].
- There is a 10.1% incidence of subsequent surgery after isolated SLAP repair, often related to an additional diagnosis [14].
- Short-term follow-up of 20 procedures using an all-suture anchor fixation for subpectoral biceps tenodesis showed no failure of fixation or residual biceps discomfort [15].
- Risk factors for revision surgery after SLAP repair include age >40 years, female sex, obesity, smoking, and diagnosis of biceps tendinitis or long head of the biceps tearing [18].
- Biceps tenodesis may be considered a valid primary or revision surgery for symptomatic type II SLAP tears due to no detrimental effect on glenohumeral stability [21].
- Superior clinical outcomes are seen in nonsmokers, those with only 1 tendon affected, and those who undergo tenotomy instead of tenodesis for a damaged long head of biceps tendon [58].

Key Evidence

- [L1] Both arthroscopic repair and biceps tenotomy and tenodesis interventions had benefits in type II SLAP lesions. (10.1186/s13018-019-1096-y)
- [L4] The authors conclude that if calcific tendinitis of the long head of the biceps brachii at its origin is suspected, it may be helpful to consider the presence of a concurrent SLAP lesion and its management. (10.1007/s00167-007-0323-y)
- [L3] A positive subpectoral biceps test was associated with gross pathologic changes of the biceps in 93% of patients. (10.1016/j.arthro.2019.02.017)
- [L4] Based on these results, biceps tenodesis is a safe, effective, and technically straightforward alternative to primary SLAP repair in patients with type II and IV SLAP tears. (10.1177/0363546514540273)
- [L5] For operative treatment, biceps tenodesis has consistent and reliable results, whereas return to play after SLAP repair can be unpredictable. (10.1016/j.csm.2015.08.009)
- [L5] SLAP repairs are generally favored in younger, active patients, whereas treating the biceps is preferred in lower-demand patients aged >30 years. (10.1016/j.jse.2024.09.040)
- [L5] Biceps tenodesis has been increasingly used for the management of SLAP lesions, with recent studies reporting high rates of return to sport, high satisfaction, and good to excellent patient-reported outcomes in carefully selected athletes. (10.5435/jaaos-d-21-01199)
- [L5] SLAP repair and biceps tenodesis both present viable treatment options but come with specific advantages and disadvantages, with the decision ultimately made individually with the patient. (10.1016/j.arthro.2019.02.026)
- [L4] Primary subpectoral open biceps tenodesis for SLAP tears or pathology of the LHBT provides significant improvement in shoulder outcomes with a reliable return to activity level with low risk for complications. (10.1016/j.arthro.2019.06.035)
- [L4] Biceps tenodesis is a predictable, safe, and effective treatment for failed arthroscopic SLAP tears at a minimum 2-year follow-up. (10.1177/0363546513520122)
- [Paper] The article outlines that appropriate treatment for biceps pathology, whether conservative or surgical, should be based on established pathology. (10.1016/j.csm.2009.12.003)
- [L5] Understanding the function and pathology surrounding the teres minor is paramount in comprehensive management of the patient with shoulder pathology. (10.5435/jaaos-d-15-00258)
- [L3] Increased patient age correlates with the likelihood of treatment with biceps tenodesis or tenotomy versus SLAP repair. (10.1177/0363546514534939)
- [L3] We identified a 10.1% incidence of subsequent surgery after isolated SLAP repair, often related to an additional diagnosis, suggesting that clinicians should consider other potential causes of shoulder pain when considering surgery for patients with SLAP lesions. (10.1016/j.arthro.2016.01.053)
- [L5] Short-term follow-up of 20 procedures has not shown any failure of fixation or residual biceps discomfort. (10.1007/s00167-014-3348-z)

- [L5] There is no single pattern of pain that distinguishes biceps conditions from other shoulder abnormalities. (10.1016/j.csm.2015.08.004)
- [L4] In the context of rotator cuff disease, the etiology of anterior shoulder pain with macroscopic changes in the biceps tendon is related to the complex interaction of the tendon and surrounding soft tissues, rather than a single entity. (10.1016/j.jse.2008.05.044)
- [L3] Risk factors for revision surgery after SLAP repair include age >40 years, female sex, obesity, smoking, and diagnosis of biceps tendinitis or long head of the biceps tearing. (10.1177/0363546517691950)
- [L4] In patients with chronic long head biceps tendinopathy who underwent open subpectoral tenodesis, MRI and intraoperative assessment did not show significant structural abnormalities within the tendon despite significant histopathologic changes. (10.1016/j.arthro.2018.01.021)
- [L5] Treatment of proximal biceps pathology is largely based on expert opinion and patient preferences rather than robust randomized evidence. (10.1097/corr.0000000000002448)
- [L5] Biceps tenodesis may be considered a valid primary or revision surgery for patients suffering from symptomatic type II SLAP tears due to no detrimental effect on glenohumeral stability. (10.1016/j.jse.2013.07.036)
- [L5] Diagnosis of long head biceps tendon and subscapularis pathology in association with shoulder rotator cuff pathology can be challenging due to limitations in MRI and arthroscopic visualization; surgeons should maintain a high level of suspicion and utilize specific techniques to prevent missing pathology. (10.1016/j.arthro.2017.09.005)
- [L1] Patients undergoing treatment for LHBT or SLAP pathology with either biceps tenodesis or tenotomy can be expected to experience similar improvements in patient-reported and functional outcomes. (10.1016/j.jse.2020.11.012)
- [L3] Primary biceps tenodesis offers increased effectiveness when compared with both primary SLAP repair and nonoperative treatment and lower costs than primary SLAP repair. (10.1016/j.arthro.2018.01.029)
- [L4] The concomitant presence of SLAP and pulley lesions is significantly rare, occurring in only about 10% of all patients with SLAP and pulley lesions. (10.1016/j.arthro.2011.01.005)
- [L5] The treatment option of biceps tenodesis is an appealing alternative to SLAP repair, but the indications and technique of biceps tenodesis in the elite pitcher still need to be defined. (10.1016/j.arthro.2018.01.001)
- [L5] Biomechanical studies indicate that the long head of the biceps contributes to stability of the glenohumeral joint in all directions, though in vivo studies have yet to establish this stabilizing effect and the physiologic load required remains unknown. (10.1016/j.arthro.2010.10.014)
- [L4] Subpectoral biceps tenodesis utilizing a dual suture anchor technique is a treatment option for SLAP lesions, partial thickness tears, subluxation, and tenosynovitis of the long head of the biceps with high rates of postoperative patient satisfaction, a low failure rate, and improved outcome scores. (10.1007/s00402-017-2810-z)
- [L5] The long head of the biceps has a pertinent biomechanical role in glenohumeral stability regardless of the condition of the superior labrum. (10.1016/j.arthro.2025.05.022)

- [L4] Validity for strength testing of the serratus anterior muscle is optimal with subjects in a seated position and the shoulder flexed at 90° in the scapular plane. (10.1186/s12891-019-2741-7)
- [L5] Treatment is directed at managing underlying causes and restoring normal scapular muscle activation patterns by kinetic chain–based rehabilitation protocols. (10.5435/00124635-200303000-00008)
- [L5] Both proposed superior labral reconstruction techniques increased the force needed for humeral head superior migration in the setting of a labral tear. (10.1016/j.arthro.2018.08.049)
- [L5] This review examines the role of the LHBT as a source of local autograft, with biological and biomechanical properties, in aiding outcomes of complex primary and revision shoulder surgery procedures. (10.1016/j.jse.2023.04.009)
- [L5] Diagnosis and nonoperative management of long head of biceps tendon disorders are categorized as inflammation, instability, and rupture, requiring specific protocols. (10.1016/j.csm.2015.08.006)
- [L4] Potential prognostic variables associated with final subscapularis strength remain elusive. (10.1016/j.jse.2014.06.042)
- [L5] The ultimate load to failure and stiffness for the two methods were not different. (10.1007/s00167-013-2775-6)
- [L3] High-demand patients with biceps tendonitis in the setting of a SLAP lesion with labral instability who undergo combined tenodesis and labral repair have significantly worse outcomes than patients who undergo either isolated labral repair for type II SLAP tears or isolated biceps tenodesis for a SLAP tear and biceps tendonitis. (10.1007/s00167-015-3774-6)
- [L5] Biceps tendon pain in the absence of tears is associated with microscopic changes consistent with tendinopathy, which are often missed by MRI. (10.1016/j.csm.2015.08.002)
- [L3] Most abnormal MRI findings were not different in frequency between symptomatic and asymptomatic shoulders. (10.1016/j.jse.2019.04.001)
- [L1] We do not find any value in bicipital groove morphology measured by MRI as a predictor of biceps tendon or rotator cuff pathology at the time of surgery. (10.1016/j.jse.2010.04.044)
- [L4] Patient age should not be used as the sole criterion when deciding between biceps tenotomy and tenodesis. (10.1016/j.arthro.2016.04.022)
- [L3] Biceps tenodesis remains a reliable treatment for pathologic abnormality of the long head of the biceps. (10.1177/0363546515570024)
- [L3] Preoperative MRI scans of the shoulder interpreted by orthopaedic surgeons with the described systematic approach resulted in improved accuracy in diagnosing subscapularis tendon tears compared with previous studies. (10.1016/j.arthro.2012.04.142)
- [L4] Although this may be an effective strategy to address failed prior biceps surgery, the potential complication of persistent pain must be emphasized. (10.1177/0363546519892922)
- [L4] In approximately 80% of the intra-articular biceps tears evaluated in this study, a 'hidden lesion' was observed going beyond the bicipital groove and extending to the distal extra-articular portion. (10.1177/0363546514554193)

- [L5] The MTJ of the biceps begins further proximal than may be appreciated intraoperatively. (10.1177/0363546513482297)
- [L4] Superior clinical outcomes are seen in nonsmokers, those with only 1 tendon affected, and those who undergo tenotomy instead of tenodesis for a damaged long head of biceps tendon. (10.1016/j.jse.2019.12.011)

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