

Editorial Commentary: Classic Arthroscopic Anterolateral Acromioplasty Does Not Translate to Clinically Meaningful Differences in Lateral Acromial Overcoverage



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Abstract: Despite its time-honored tradition, the classic Neer acromioplasty has come under increased scrutiny in the recent literature, particularly when performed in the absence of rotator cuff repair. The American Medical Association Current Procedural Terminology Committee has transitioned the acromioplasty procedure, and definition of the related Current Procedural Terminology code 29827, to a procedure that is “added-on” to shoulder arthroscopy. Several authors have sought to investigate the true value of arthroscopic subacromial decompression for extrinsic sources of impingement. Common indications for acromioplasty include bursal-sided tears, prominent type III hooked acromial morphology, calcified coracoacromial ligament, and severe rotator cuff tendinopathy. However, the classic arthroscopic acromioplasty may not meaningfully address lateral outlet impingement and acromial overcoverage, as measured by an elevated critical shoulder angle or acromial index, thereby leading to persistent abduction impingement and mechanical abrasion. In these cases, lateral acromial resection of up 5 to 10 mm may be preferentially considered to decrease the pathologic critical shoulder angle ($>35^\circ$) and reduce the risk of primary or secondary rotator cuff tendon failure.

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“Every hospital should follow every patient it treats long enough to determine whether the treatment has been successful, and then to inquire ‘if not, why not’ with a view to preventing similar failures in the future.”
—Ernest Codman, M.D.

The concept of the acromioplasty was initially described as early as 1934 by Dr. Codman, and it was later popularized by Neer.¹ In the 1980s, arthroscopic subacromial decompression emerged as common surgical practice for the treatment of subacromial impingement, in which a subacromial bursectomy, coracoacromial ligament release, and anterior–inferior

acromioplasty were performed.^{2,3} Its origins were rooted in the concept that painful rotator cuff disease stemmed from structural, or extrinsic, sources of impingement, such as a calcified coracoacromial ligament or prominent acromial morphology.⁴ While early dogma anointed the classic subacromial decompression as the panacea for degenerative rotator cuff pathology and/or symptomatic tears, later evidence-based literature cast doubt on the meaningful benefits that anterior–lateral acromioplasty provides.^{5–9} Despite the practical merits of subacromial decompression, including better visualization, decreased mechanical abrasion, and potential recruitment of autologous growth factors,¹⁰ overuse and/or unscrupulous use for patients with undifferentiated shoulder pain led to its designation as an add-on procedural code only in 2012.

In the interim, several authors have shifted focus to the potential pathologic role of lateral acromial overcoverage in the development of rotator cuff tears.^{11–17} As a measure of this, the critical shoulder angle (CSA) has been suggested as a potential contributory factor in the development of atraumatic rotator cuff tears.^{11–14} With technical modifications to the surgical technique, selected cadaveric studies and clinical series have

The author reports the following potential conflicts of interest or sources of funding: personal fees and other from Arthrex, other from Smith & Nephew, personal fees from DePuy Mitek/Johnson & Johnson, other from Vivorte, other from Kaliber AI, other from Sparta Bioscience, personal fees and other from Arthroscopy, personal fees and other from FH Ortho, and personal fees from Vericeil, outside the submitted work. Full ICMJE author disclosure forms are available for this article online, as [supplementary material](#).

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0749-8063/22989/\$36.00

<https://doi.org/10.1016/j.arthro.2022.08.006>

demonstrated the ability to modify lateral acromial overcoverage,^{18,19} which may be of significant benefit in high-risk individuals with a CSA $>35^\circ$.

In their study "Anterolateral Acromioplasty Does Not Change the Critical Shoulder Angle and Acromion Index in a Clinically Relevant Amount,"²⁰ Thiesemann, Kirchner, Fal, Albers, and Kircher sought to explore whether the currently accepted standard of anterior–lateral acromioplasty, as described by Ellman³ and Caspari and Thal,² can achieve measurable differences in acromial overcoverage while also restoring a flat acromial morphology. In this large-scale radiographic series of 435 patients undergoing primary arthroscopic management with subacromial decompression by a single, senior surgeon, the authors disclosed no significant differences in either the beta angle, which is a reliable measure of glenoid inclination, or the CSA. However, when analyzing for differences in high-risk patients with a CSA $>35^\circ$, the investigators disclosed a small statistically significant, but not clinically meaningful, difference of 0.58° . Furthermore, acromioplasty failed to restore CSA to normal levels, with the average postoperative values reported as 38.04° . In analyzing the other radiographic variables, the differences between the pre- and postoperative acromioclavicular difference (1.45 mm), acromial index (0.01°), lateral acromial angle (0.68°), frontal supraspinatus outlet angle (3.18°), and Aoki angle (2.52°) achieved small, yet statistically significant differences in this series.

The authors have been careful stewards of their data and performed their radiographic assessments with the utmost precision, achieving good-to-excellent inter- and intraobserver reliability on most measures. Similarly, the strengths of this study include its single-surgeon design, consistent surgical technique, and standardized radiographic imaging with strict criteria to reduce radiographic malrotation.²¹ As a result, only 61.5% of 707 eligible patients were available for assessment, leading to the potential for bias, and statistical power was weak for specific subgroup analysis.

Yet, the current study follows closely with those previous publications reporting little-to-no change in the CSA with standard anterolateral acromioplasty.²² While increased depth of resection might potentiate the relative differences in acromial measurements with traditional acromioplasty, it is evident that this time-honored technique does not consistently modulate lateral overcoverage. Despite these limitations, I must admit that I *still* perform routine anterolateral acromioplasty alongside most cases of rotator cuff repair, and I advocate strongly for its use in cases with type III acromion, severe tendinopathy, and atraumatic bursal-sided supraspinatus tears. However, in select cases with lateral outlet impingement, I will preferentially consider adjunctive lateral acromial resection, especially for individuals with CSA >35 – 38° . Lateral acromioplasty can

safely decompress up to 5 to 10 mm of bone while preserving the deltoid attachment, limiting surgical-site morbidity, and at least potentially, minimizing risk of secondary retear after primary rotator cuff repair.^{18,19} As with many aspects of open and arthroscopic shoulder surgery, preoperative templating and intraoperative fluoroscopy may assist with the extent and angle of resection during the early learning curve.²³

While some might herald this as the death knell of Neer's acromioplasty, we must be vigilant to analyze and separately correct for both anterolateral *and* lateral outlet impingement in the subacromial space. These entities may coexist or be mutually exclusive, and their contributing roles in secondary rotator cuff tear formation remain to be conclusively determined. Despite this lack of consensus, the acromioplasty is *not* an experimental procedure, and we must employ greater advocacy efforts to safeguard its use for individual patients with demonstrated need, particularly in an era of reduced reimbursement and third-party denials.²⁴

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