

Rotator Cuff Repair Failure With and Without Arthroscopic Acromioplasty: Analysis of a National Medicare Database

John Mueller, Hasani Swindell¹, Hyunwoo Paco Kang, John T Heffernan¹, Bryan Michael Saltzman², Christopher S Ahmad³, William N Levine¹, Alexander Weber⁴, David Trofa

¹Columbia University, ²OrthoCarolina / Atrium Health Musculoskeletal Inst, ³Columbia University Medical Center, ⁴USC Department of Orthopaedic Surgery

INTRODUCTION:

The role of acromioplasty during rotator cuff repair (RCR) has evolved over time. Early principles resulting from Neer's theory of external impingement and the adoption of arthroscopic techniques led to a dramatic increase in the use of concomitant acromioplasty during RCR. However, more recent literature has debated the utility of acromioplasty during RCR. This investigation sought to use a large, nationwide database to compare the mid-term risk of RCR revision and any ipsilateral shoulder surgery on patients following an index RCR with or without acromioplasty. The authors hypothesized that acromioplasty would have no effect on the rates of RCR revision or subsequent surgery on the ipsilateral shoulder.

METHODS: The Medicare Standard Analytic File, which encompasses the entire Medicare billing and payment data, was queried between 2005-2014. Patients undergoing arthroscopic rotator cuff repair were identified and stratified based on whether ipsilateral acromioplasty was concurrently performed using Current Procedural Terminology codes. Groups were matched by age, gender, year of index procedure, and Elixhauser index at a 2:1 ratio. Primary endpoint was defined as undergoing a repeat ipsilateral shoulder surgery related to the rotator cuff at 5 years of follow up. Kaplan-Meier survival curves were constructed and the two groups were compared using the log-rank test.

RESULTS: After matching, 54,209 shoulders in the rotator cuff repair with acromioplasty group and 26,448 shoulders in the rotator cuff repair without acromioplasty group were identified. Shoulders undergoing concurrent acromioplasty at index rotator cuff repair had a significantly increased rate of repeat ipsilateral cuff repair at 5 years postoperatively (8.5% vs. 6.8%, p<0.001). Similarly, there was an increased rate of reoperation of all types to the ipsilateral shoulder in cases where concurrent acromioplasty was performed (9.6% vs. 9.1%, p<0.001).

DISCUSSION AND CONCLUSION: Using a large, national database, concurrent acromioplasty at the time of rotator cuff tear was found to be associated with both an increased rate of overall subsequent procedures and revision rotator cuff repair.

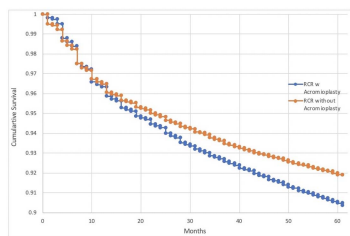


Figure 1. Kaplan-Meier curve depicting time to reoperation following arthroscopic rotator cuff repair procedure

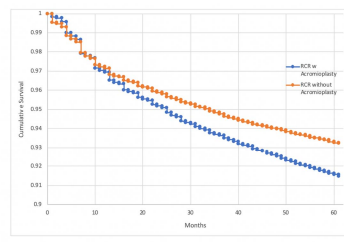


Figure 2. Kaplan-Meier curve depicting time to rotator cuff revision procedure (open and arthroscopic) following arthroscopic rotator cuff repair

CPT Code	Procedure Name	With Acromioplasty (N, %)	No acromioplasty (N, %)
CPT 29026	Arthroscopy, shoulder, surgical, decompression of subacromial space with partial acromioplasty with or without concomitant release	4333 (28.6)	977 (39.6)
CPT 29025	Arthroscopy, shoulder, diagnostic, with or without capsular biopsy (separate)	41 (0.25)	26 (0.13)
CPT 29028	Arthroscopy, shoulder, surgical, capsulorrhaphy	41 (0.25)	29 (0.15)
CPT 29087	Arthroscopy, shoulder, surgical, repair of SLAP lesion	21 (1.47)	76 (3.3)
CPT 29019	Arthroscopy, shoulder, surgical, with removal of loose body or foreign body	21 (1.47)	108 (4.2)
CPT 29020	Arthroscopy, shoulder, surgical, (revision/redo, partial)	35 (0.37)	49 (1.9)
CPT 29021	Arthroscopy, shoulder, surgical, (revision/redo, complete)	14 (0.49)	23 (0.3)
CPT 29022	Arthroscopy, shoulder, surgical, (revision/redo, frozen)	407 (2.9)	351 (13.4)
CPT 29023	Arthroscopy, shoulder, surgical, (revision/redo, extensive)	1064 (7.2)	376 (14.7)
CPT 29024	Arthroscopy, shoulder, surgical, distal clavicle resection including distal clavicle surface (Modified procedure)	1798 (11.3)	330 (12.7)
CPT 29025	Arthroscopy, shoulder, surgical, with lysis and excision of adhesions, with or without manipulation	297 (1.9)	123 (4.7)
CPT 29027	Arthroscopy, shoulder, surgical, with rotator cuff repair	4839 (32.3)	1750 (68.1)
CPT 29028	Arthroscopy, shoulder, surgical, (revision/redo)	322 (2.1)	180 (7.0)
CPT 29029	Arthroscopy, (revision/redo, partial)	31 (0.2)	41 (1.6)
CPT 29030	Arthroscopy, (revision/redo, complete)	14 (0.09)	23 (0.1)
CPT 29031	Arthroscopy, (revision/redo, extensive)	40 (0.28)	35 (1.3)
CPT 29032	Arthroscopy, (revision/redo, frozen)	40 (0.28)	35 (1.3)
CPT 29033	Arthroscopy, (revision/redo, complete)	14 (0.09)	23 (0.1)
CPT 29034	Arthroscopy, (revision/redo, extensive)	40 (0.28)	35 (1.3)
CPT 29035	Arthroscopy, (revision/redo, frozen)	40 (0.28)	35 (1.3)
CPT 29036	Arthroscopy, (revision/redo, complete)	14 (0.09)	23 (0.1)
CPT 29037	Arthroscopy, (revision/redo, extensive)	40 (0.28)	35 (1.3)
CPT 29038	Arthroscopy, (revision/redo, frozen)	40 (0.28)	35 (1.3)
CPT 29039	Arthroscopy, (revision/redo, complete)	14 (0.09)	23 (0.1)
CPT 29040	Arthroscopy, (revision/redo, extensive)	40 (0.28)	35 (1.3)
CPT 29041	Arthroscopy, (revision/redo, frozen)	40 (0.28)	35 (1.3)
CPT 29042	Arthroscopy, (revision/redo, complete)	14 (0.09)	23 (0.1)
CPT 29043	Arthroscopy, (revision/redo, extensive)	40 (0.28)	35 (1.3)
CPT 29044	Arthroscopy, (revision/redo, frozen)	40 (0.28)	35 (1.3)
CPT 29045	Arthroscopy, (revision/redo, complete)	14 (0.09)	23 (0.1)
CPT 29046	Arthroscopy, (revision/redo, extensive)	40 (0.28)	35 (1.3)
CPT 29047	Arthroscopy, (revision/redo, frozen)	40 (0.28)	35 (1.3)
CPT 29048	Arthroscopy, (revision/redo, complete)	14 (0.09)	23 (0.1)
CPT 29049	Arthroscopy, (revision/redo, extensive)	40 (0.28)	35 (1.3)
CPT 29050	Arthroscopy, (revision/redo, frozen)	40 (0.28)	35 (1.3)
CPT 29051	Arthroscopy, (revision/redo, complete)	14 (0.09)	23 (0.1)
CPT 29052	Arthroscopy, (revision/redo, extensive)	40 (0.28)	35 (1.3)
CPT 29053	Arthroscopy, (revision/redo, frozen)	40 (0.28)	35 (1.3)
CPT 29054	Arthroscopy, (revision/redo, complete)	14 (0.09)	23 (0.1)
CPT 29055	Arthroscopy, (revision/redo, extensive)	40 (0.28)	35 (1.3)
CPT 29056	Arthroscopy, (revision/redo, frozen)	40 (0.28)	35 (1.3)
CPT 29057	Arthroscopy, (revision/redo, complete)	14 (0.09)	23 (0.1)
CPT 29058	Arthroscopy, (revision/redo, extensive)	40 (0.28)	35 (1.3)
CPT 29059	Arthroscopy, (revision/redo, frozen)	40 (0.28)	35 (1.3)
CPT 29060	Arthroscopy, (revision/redo, complete)	14 (0.09)	23 (0.1)
CPT 29061	Arthroscopy, (revision/redo, extensive)	40 (0.28)	35 (1.3)
CPT 29062	Arthroscopy, (revision/redo, frozen)	40 (0.28)	35 (1.3)
CPT 29063	Arthroscopy, (revision/redo, complete)	14 (0.09)	23 (0.1)
CPT 29064	Arthroscopy, (revision/redo, extensive)	40 (0.28)	35 (1.3)
CPT 29065	Arthroscopy, (revision/redo, frozen)	40 (0.28)	35 (1.3)
CPT 29066	Arthroscopy, (revision/redo, complete)	14 (0.09)	23 (0.1)
CPT 29067	Arthroscopy, (revision/redo, extensive)	40 (0.28)	35 (1.3)
CPT 29068	Arthroscopy, (revision/redo, frozen)	40 (0.28)	35 (1.3)
CPT 29069	Arthroscopy, (revision/redo, complete)	14 (0.09)	23 (0.1)
CPT 29070	Arthroscopy, (revision/redo, extensive)	40 (0.28)	35 (1.3)
CPT 29071	Arthroscopy, (revision/redo, frozen)	40 (0.28)	35 (1.3)
CPT 29072	Arthroscopy, (revision/redo, complete)	14 (0.09)	23 (0.1)
CPT 29073	Arthroscopy, (revision/redo, extensive)	40 (0.28)	35 (1.3)
CPT 29074	Arthroscopy, (revision/redo, frozen)	40 (0.28)	35 (1.3)
CPT 29075	Arthroscopy, (revision/redo, complete)	14 (0.09)	23 (0.1)
CPT 29076	Arthroscopy, (revision/redo, extensive)	40 (0.28)	35 (1.3)
CPT 29077	Arthroscopy, (revision/redo, frozen)	40 (0.28)	35 (1.3)
CPT 29078	Arthroscopy, (revision/redo, complete)	14 (0.09)	23 (0.1)
CPT 29079	Arthroscopy, (revision/redo, extensive)	40 (0.28)	35 (1.3)
CPT 29080	Arthroscopy, (revision/redo, frozen)	40 (0.28)	35 (1.3)
CPT 29081	Arthroscopy, (revision/redo, complete)	14 (0.09)	23 (0.1)
CPT 29082	Arthroscopy, (revision/redo, extensive)	40 (0.28)	35 (1.3)
CPT 29083	Arthroscopy, (revision/redo, frozen)	40 (0.28)	35 (1.3)
CPT 29084	Arthroscopy, (revision/redo, complete)	14 (0.09)	23 (0.1)
CPT 29085	Arthroscopy, (revision/redo, extensive)	40 (0.28)	35 (1.3)
CPT 29086	Arthroscopy, (revision/redo, frozen)	40 (0.28)	35 (1.3)
CPT 29087	Arthroscopy, (revision/redo, complete)	14 (0.09)	23 (0.1)
CPT 29088	Arthroscopy, (revision/redo, extensive)	40 (0.28)	35 (1.3)
CPT 29089	Arthroscopy, (revision/redo, frozen)	40 (0.28)	35 (1.3)
CPT 29090	Arthroscopy, (revision/redo, complete)	14 (0.09)	23 (0.1)
CPT 29091	Arthroscopy, (revision/redo, extensive)	40 (0.28)	35 (1.3)
CPT 29092	Arthroscopy, (revision/redo, frozen)	40 (0.28)	35 (1.3)
CPT 29093	Arthroscopy, (revision/redo, complete)	14 (0.09)	23 (0.1)
CPT 29094	Arthroscopy, (revision/redo, extensive)	40 (0.28)	35 (1.3)
CPT 29095	Arthroscopy, (revision/redo, frozen)	40 (0.28)	35 (1.3)
CPT 29096	Arthroscopy, (revision/redo, complete)	14 (0.09)	23 (0.1)
CPT 29097	Arthroscopy, (revision/redo, extensive)	40 (0.28)	35 (1.3)
CPT 29098	Arthroscopy, (revision/redo, frozen)	40 (0.28)	35 (1.3)
CPT 29099	Arthroscopy, (revision/redo, complete)	14 (0.09)	23 (0.1)
CPT 29100	Arthroscopy, (revision/redo, extensive)	40 (0.28)	35 (1.3)
CPT 29101	Arthroscopy, (revision/redo, frozen)	40 (0.28)	35 (1.3)
CPT 29102	Arthroscopy, (revision/redo, complete)	14 (0.09)	23 (0.1)
CPT 29103	Arthroscopy, (revision/redo, extensive)	40 (0.28)	35 (1.3)
CPT 29104	Arthroscopy, (revision/redo, frozen)	40 (0.28)	35 (1.3)
CPT 29105	Arthroscopy, (revision/redo, complete)	14 (0.09)	23 (0.1)
CPT 29106	Arthroscopy, (revision/redo, extensive)	40 (0.28)	35 (1.3)
CPT 29107	Arthroscopy, (revision/redo, frozen)	40 (0.28)	35 (1.3)
CPT 29108	Arthroscopy, (revision/redo, complete)	14 (0.09)	23 (0.1)
CPT 29109	Arthroscopy, (revision/redo, extensive)	40 (0.28)	35 (1.3)
CPT 29110	Arthroscopy, (revision/redo, frozen)	40 (0.28)	35 (1.3)
CPT 29111	Arthroscopy, (revision/redo, complete)	14 (0.09)	23 (0.1)
CPT 29112	Arthroscopy, (revision/redo, extensive)	40 (0.28)	35 (1.3)
CPT 29113	Arthroscopy, (revision/redo, frozen)	40 (0.28)	35 (1.3)
CPT 29114	Arthroscopy, (revision/redo, complete)	14 (0.09)	23 (0.1)
CPT 29115	Arthroscopy, (revision/redo, extensive)	40 (0.28)	35 (1.3)
CPT 29116	Arthroscopy, (revision/redo, frozen)	40 (0.28)	35 (1.3)
CPT 29117	Arthroscopy, (revision/redo, complete)	14 (0.09)	23 (0.1)
CPT 29118	Arthroscopy, (revision/redo, extensive)	40 (0.28)	35 (1.3)
CPT 29119	Arthroscopy, (revision/redo, frozen)	40 (0.28)	35 (1.3)
CPT 29120	Arthroscopy, (revision/redo, complete)	14 (0.09)	23 (0.1)
CPT 29121	Arthroscopy, (revision/redo, extensive)	40 (0.28)	35 (1.3)
CPT 29122	Arthroscopy, (revision/redo, frozen)	40 (0.28)	35 (1.3)
CPT 29123	Arthroscopy, (revision/redo, complete)	14 (0.09)	23 (0.1)
CPT 29124	Arthroscopy, (revision/redo, extensive)	40 (0.28)	35 (1.3)
CPT 29125	Arthroscopy, (revision/redo, frozen)	40 (0.28)	35 (1.3)
CPT 29126	Arthroscopy, (revision/redo, complete)	14 (0.09)	23 (0.1)
CPT 29127	Arthroscopy, (revision/redo, extensive)	40 (0.28)	35 (1.3)
CPT 29128	Arthroscopy, (revision/redo, frozen)	40 (0.28)	35 (1.3)
CPT 29129	Arthroscopy, (revision/redo, complete)	14 (0.09)	23 (0.1)
CPT 29130	Arthroscopy, (revision/redo, extensive)	40 (0.28)	35 (1.3)

Table 1. Revision Procedures following Index Rotator Cuff Repair