Updates to the AAOS Clinical Practice Guidelines for the Management of Rotator Cuff Tears

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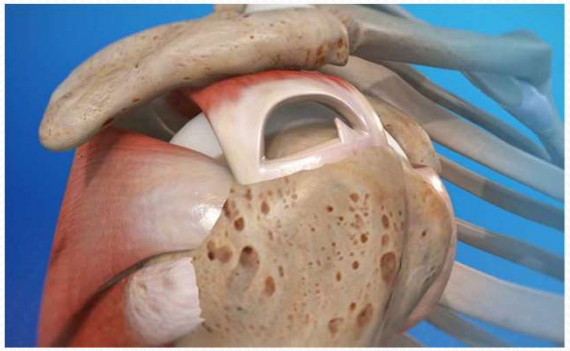
Work Related Injuries Workshop
March 25th & 26th, 2019

Disclosures

- **Scientific and Product Advisory Board**
  - DePuy Mitek Sports Medicine
- **Editorial Board Member**
  - American Journal of Sports Medicine
    - Electronic Media Board
  - Journal of Bone and Joint Surgery
    - CME Questions Board
  - Orthopedic Reviews
  - World Journal of Orthopaedic
  - Journal of Medical Insight (JOMI)
- **Equity**
  - Journal of Medical Insight (JOMI)
- Reviewer Panel
  - American Journal of Sports Medicine (AJSM)
  - Journal of Shoulder and Elbow Surgery (JSES)
  - OREF Grants Committee
  - Orthopedics
  - Journal of Orthopaedic Research (JOR)
  - Orthopedic Reviews
  - KSSTA
- AAOS Clinical Practice Committee
  - Rotator Cuff Management
- Research Funding
  - OREF

Epidemiology

- 4.5 Million Clinical Visits / Year
- Chronic Shoulder pain (2nd to knee pain)



- ~40,000 Rotator Cuff Surgeries
  - Total cost per year ~$3 Billion
    - United States Agency for Health Care Research
    - US Dept. of Public Health

Distribution by Age

Prevalence and risk factors of a rotator cuff tear in the general population

Atsushi Yamamoto, MD*, Kenji Takagishi, MD, PhD, Toshihisa Osawa, MD, PhD, Takashi Yanagawa, MD, PhD, Daisuke Nakajima, MD, Hitoshi Shitara, MD, Tsutomu Kobayashi, MD, PhD

Journal of Shoulder and Elbow Surgery
www.elsevier.com/locate/ymse

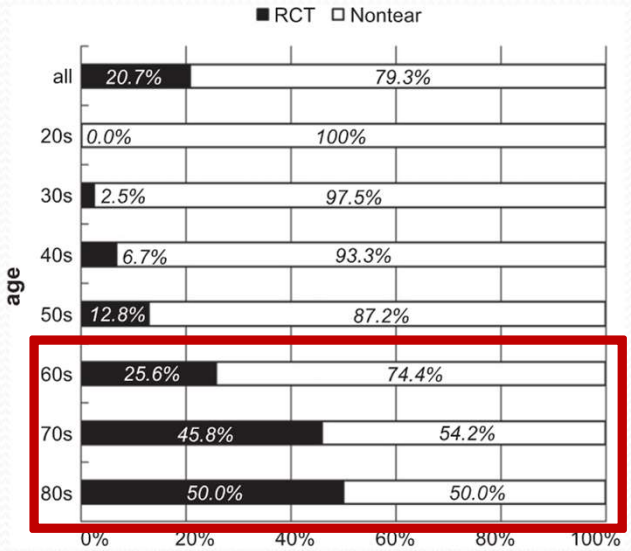


Figure 1 The percentage of the "RCT group" and "Nontear group" in each generation, the RCT group included of 20.7% of all subjects and the prevalence increased with age.

1/3 with symptoms
2/3 NO symptoms

A Prospective Evaluation of Survivorship of Asymptomatic Degenerative Rotator Cuff Tears

Jay D. Keener, MD, Leesa M. Galatz, MD, Sharlene A. Teefey, MD, William D. Middleton, MD, Karen Steger-May, BA, Georgia Stobbs-Cucchi, RN, Rebecca Patton, MA, and Ken Yamaguchi, MD

Investigation performed at the Shoulder and Elbow Service, Department of Orthopaedic Surgery, Washington University, St. Louis, Missouri

Results: Tear enlargement was seen in 49% of the shoulders, and the median time to enlargement was 2.8 years. The occurrence of tear-enlargement events was influenced by the severity of the final tear type, with enlargement of 61% of the full-thickness tears, 44% of the partial-thickness tears, and 14% of the controls ($p < 0.05$). Subject age and sex were not related to tear enlargement. One hundred subjects (46%) developed new pain. The final tear type was associated with a greater risk of pain development, with the new pain developing in 28% of the controls, 46% of the shoulders with a partial-thickness tear, and 50% of those with a full-thickness tear ($p < 0.05$). The presence of tear enlargement was associated with the onset of new pain ($p < 0.05$). Progressive degenerative changes of the supraspinatus muscle were associated with tear enlargement, with supraspinatus muscle degeneration increasing in 4% of the shoulders with a stable tear compared with 30% of the shoulders with tear enlargement ($p < 0.05$). Nine percent of the shoulders with a stable tear showed increased infraspinatus muscle degeneration compared with 28% of those in which the tear had enlarged ($p = 0.07$).

- Ultrasound Evaluation

National Trends in Rotator Cuff Repair

Alexis Chiang Colvin, MD, Natalia Egorova, PhD, MPH, Alicia K. Harrison, MD,
Alan Moskowitz, MD, and Evan L. Flatow, MD

Investigation performed at the Mount Sinai School of Medicine, New York, NY

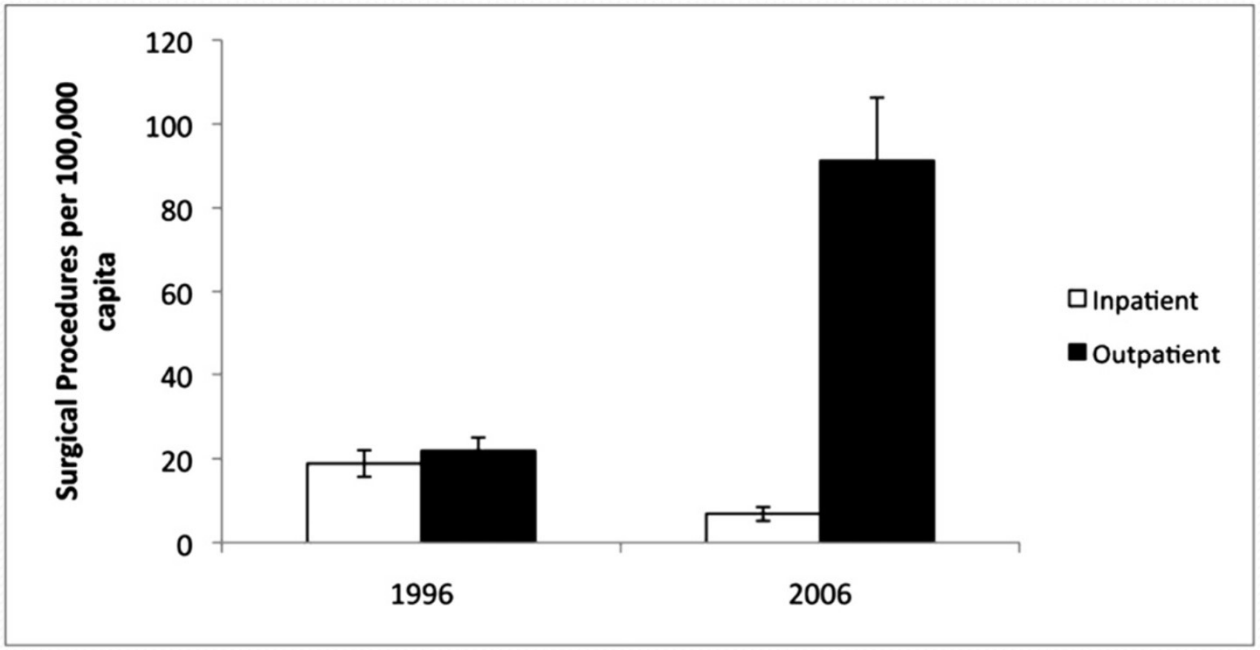


Fig. 2

Comparison of volume of inpatient versus outpatient rotator cuff repairs in 1996 and 2006.

National Trends in Surgical Treatment of Chronic Rotator Cuff Tears

Molly Vora, BS[1]; David C Sing, MD[1]; Emily J Curry, BA[2]; Robin Kamal, MD[3]; Xinning Li, MD[1]

[1]Boston University School of Medicine, Boston, MA
[2]Boston University School of Public Health, Boston, MA
[3]Stanford University Medical Center, Redwood City, CA

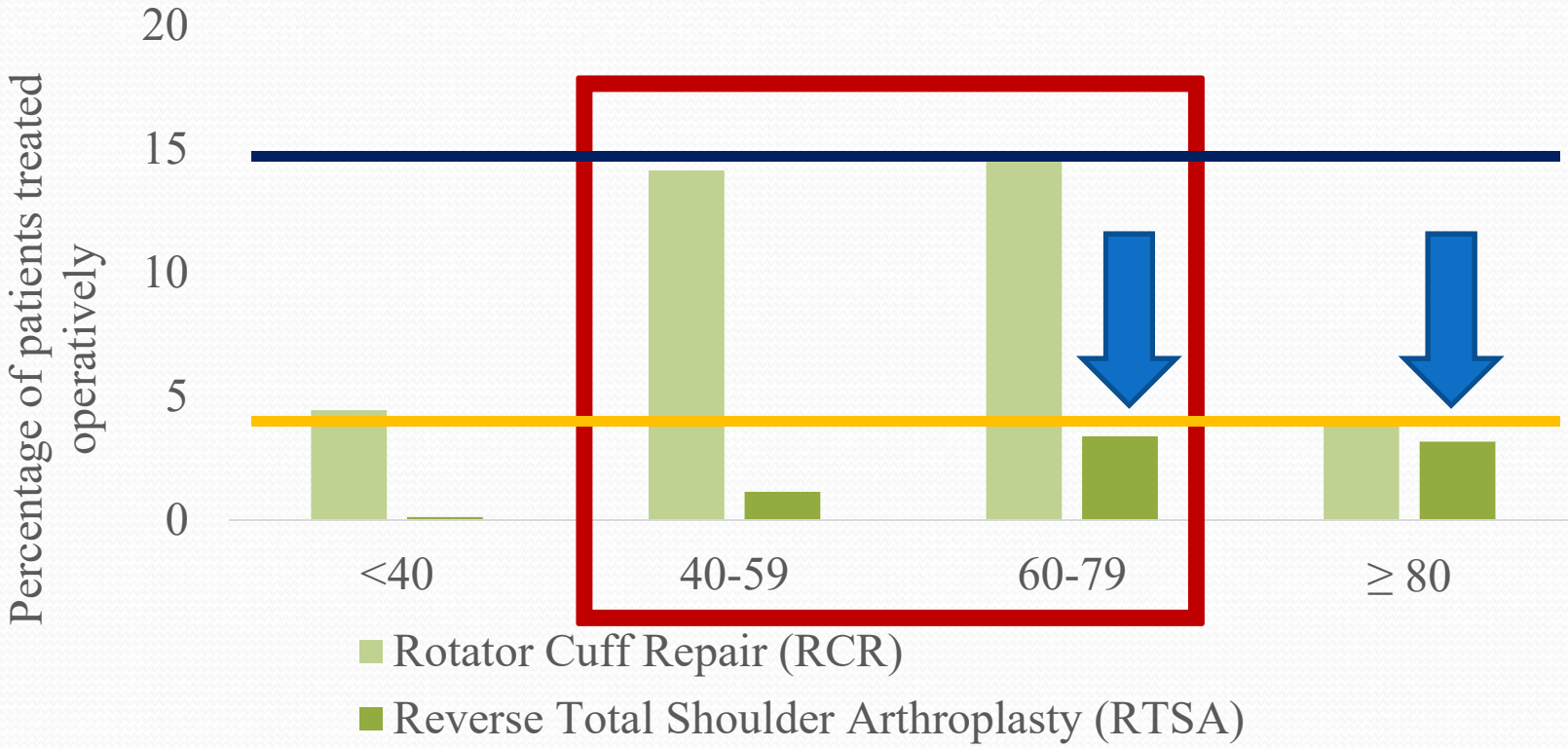
Under Review

Table 2. Chronic rotator cuff patients undergoing surgical treatment, 2007-2015

	Rotator Cuff Repair	Reverse Total Shoulder Arthroplasty
Total	53566	10944
Age: n (%)		
<40	879 (1.9)	21 (0.2)
40-60	6856 (14.6)	547 (5.0)
60-80	37062 (79.0)	8579 (79.6)
80+	2086 (4.4)	1635 (15.1)
Sex: n (%)		
Male	25668 (47.9)	6680 (61.0)
Female	27898 (52.1)	4264 (39.0)
Region: n (%)		
Midwest	13842 (25.8)	3254 (29.7)
Northeast	998 (1.9)	286 (2.6)
South	32847 (61.3)	6140 (56.1)
West	5879 (11.0)	1264 (11.5)
CCI: mean, SD	1.42 (2.05)	2.09 (2.49)

CCI: Charlson comorbidity index, 10-year survival rates.

Figure 2



The percentage of patients who receive either a rotator cuff repair or reverse total shoulder arthroplasty after being diagnosed with a chronic rotator cuff tear. Patients in the 40-59 and 60-79 age cohort have the highest rate of operative treatment.

AAOS - Clinical Practice Guideline

- Developed in 2006
- Approved by the AAOS Board of Directors
  - Joshua Jacob, M.D.
- Provide evidence based guidelines
  - NOT consensus driven guidelines
- Pulmonary embolism prophylaxis after total hip/knee (first CPG)
  - Carpal tunnel
  - 2 to 4 per year
  - 20 plus CPG

AAOS CPG GOAL

- Develop Recommendations on Clinical Care
- Based on best available evidence
- Promote best practice and improve patient outcome

CPG Method

- 10 to 15 members - committee
- Experts
- Invited from National Organization
  - AAOS
  - ASES
  - AANA
  - AOSSM
  - ASSET and APTA
  - AMA
- Rec undergoes peer review
  - Board of Directors
  - Public
- Each CPG is Updated 5 to 8 years

Process

- 2 meetings in Chicago
- PICO question with committee
  - Patient population of interest, Intervention, Comparison of interest, and Outcome of interest
- 20 full time MPH analysts (AAOS)
- Literature review
- Studies and Results based on evidence

Work Group Defined Criteria

1. Study must be of an <*enter disease topic of interest*> injury or prevention thereof.
2. Study must be published in or after <work group selects date, not to precede 1966> for surgical treatment, rehabilitation, bracing, prevention and MRI
3. Study must be published in or after <*work group selects date, not to precede 1966*> for x rays and nonoperative treatment
4. Study must be published in or after <*work group selects date, not to precede 1966*> for all others non specified
5. Study should have 30 <*work group may choose to increase the sample size if justified*> or more patients per group
6. For surgical treatment a minimum of *N* days/months/year (refer to PICO questions for detailed follow up duration)
7. For nonoperative treatment a minimum of *N* days/months/year (refer to PICO questions for detailed follow up duration)
8. For prevention studies a minimum of *N* days/months/year (refer to PICO questions for detailed follow up duration)

JBJS Level of Evidence

EDITORIAL

INTRODUCING LEVELS OF EVIDENCE TO *THE JOURNAL*

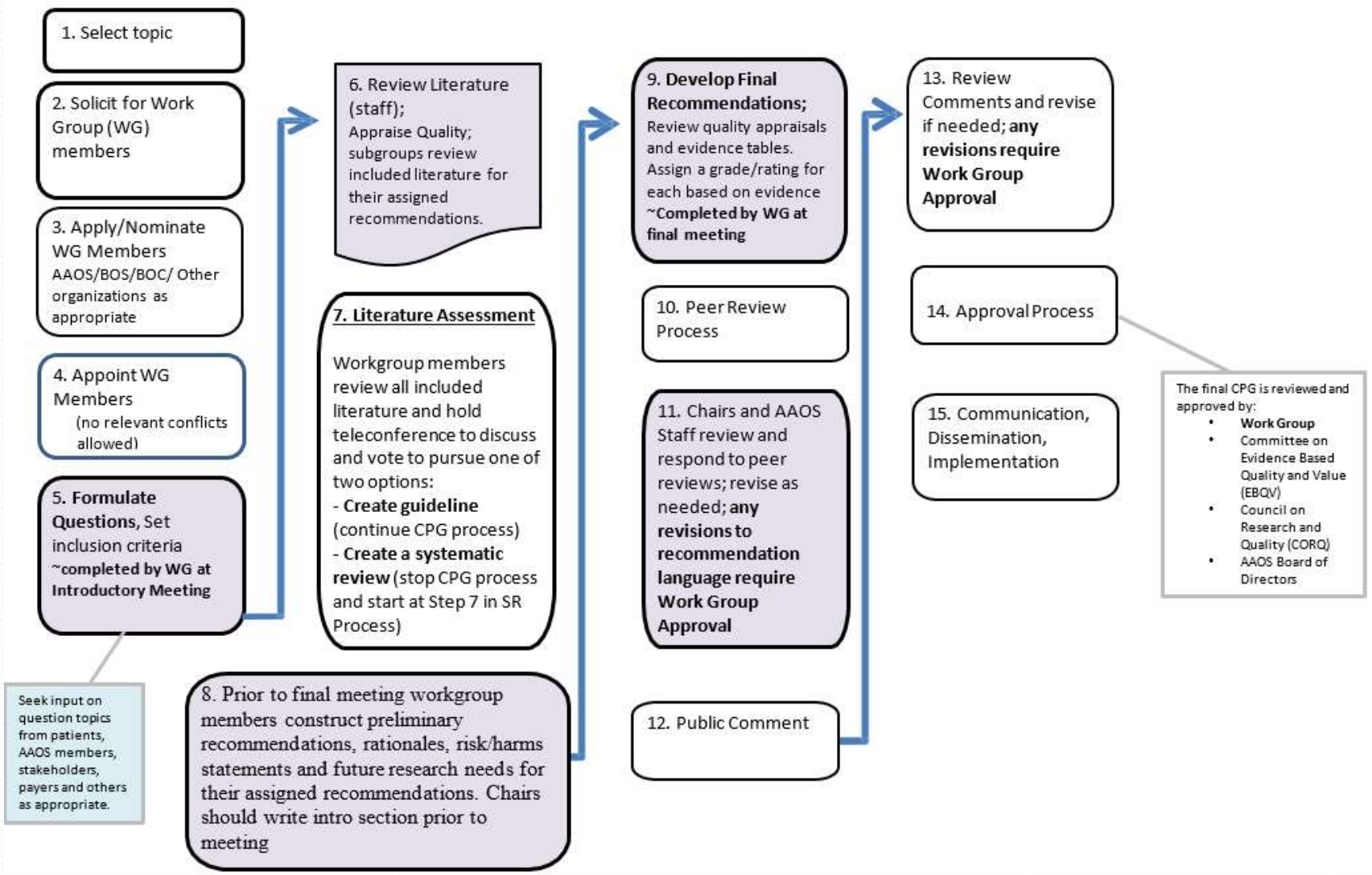
Levels of Evidence for Primary Research Question

	Types of Studies			
	Therapeutic Studies—Investigating the Results of Treatment	Prognostic Studies—Investigating the Outcome of Disease	Diagnostic Studies—Investigating a Diagnostic Test	Economic and Decision Analyses—Developing an Economic or Decision Model
Level I	1. Randomized controlled trial a. Significant difference b. No significant difference but narrow confidence intervals 2. Systematic review[2] of Level-I randomized controlled trials (studies were homogeneous)	1. Prospective study[1] 2. Systematic review[2] of Level-I studies	1. Testing of previously developed diagnostic criteria in series of consecutive patients (with universally applied reference "gold" standard) 2. Systematic review[2] of Level-I studies	1. Clinically sensible costs and alternatives; values obtained from many studies; multiway sensitivity analyses 2. Systematic review[2] of Level-I studies
Level II	1. Prospective cohort study[3] 2. Poor-quality randomized controlled trial (e.g., <80% follow-up) 3. Systematic review[2] a. Level-II studies b. nonhomogeneous Level-I studies	1. Retrospective study[4] 2. Study of untreated controls from a previous randomized controlled trial 3. Systematic review[2] of Level-II studies	1. Development of diagnostic criteria on basis of consecutive patients (with universally applied reference "gold" standard) 2. Systematic review[2] of Level-II studies	1. Clinically sensible costs and alternatives; values obtained from limited studies; multiway sensitivity analyses 2. Systematic review[2] of Level-II studies
Level III	1. Case-control study[5] 2. Retrospective cohort study[4] 3. Systematic review[2] of Level-III studies		1. Study of nonconsecutive patients (no consistently applied reference "gold" standard) 2. Systematic review[2] of Level-III studies	1. Limited alternatives and costs; poor estimates 2. Systematic review[2] of Level-III studies
Level IV	Case series (no, or historical, control group)	Case series	1. Case-control study 2. Poor reference standard	No sensitivity analyses
Level V	Expert opinion	Expert opinion	Expert opinion	Expert opinion

1. All patients were enrolled at the same point in their disease course (inception cohort) with ≥80% follow-up of enrolled patients.
2. A study of results from two or more previous studies.
3. Patients were compared with a control group of patients treated at the same time and institution.
4. The study was initiated after treatment was performed.
5. Patients with a particular outcome ("cases" with, for example, a failed total arthroplasty) were compared with those who did not have the outcome ("controls" with, for example, a total hip arthroplasty that did not fail).

Process

Clinical Practice Guideline Process Flowchart



Quality of Study

Research article

Open Access

Systems for grading the quality of evidence and the strength of recommendations I: Critical appraisal of existing approaches The GRADE Working Group

David Atkins[1], Martin Eccles[2], Signe Flottorp[3], Gordon H Guyatt[4], David Henry[5], Suzanne Hill[5], Alessandro Liberati[6], Dianne O'Connell[7], Andrew D Oxman[3], Bob Phillips[8], Holger Schünemann[4,9], Tessa Tan-Torres Edejer[10], Gunn E Vist*[3], John W Williams Jr[11] and The GRADE Working Group[3]

BMC Health Services Research

BioMed Central

AAOS CPG – Definition

Prognostic Study Design Quality Key

High Quality Study	<1 Flaw
Moderate Quality Study	□1 and <2 Flaws
Low Quality Study	□2 ανδ <3 Φλαωσ
Very Low Quality Study	□3 Φλαωσ

Randomized Study Design Quality Key

High Quality Study	<2 Flaw
Moderate Quality Study	□2 ανδ <4 Φλαωσ
Low Quality Study	□4 ανδ <6 Flaws
Very Low Quality Study	□6 Φλαωσ

Observational Study Design Quality Key

High Quality Study	<2 Flaw
Moderate Quality Study	□2 ανδ <4 Φλαωσ
Low Quality Study	□4 ανδ <6 Φλαωσ
Very Low Quality Study	□6 Φλαωσ

Table 1. GRADE certainty ratings

Certainty	What it means
Very low	The true effect is probably markedly different from the estimated effect
Low	The true effect might be markedly different from the estimated effect
Moderate	The authors believe that the true effect is probably close to the estimated effect
High	The authors have a lot of confidence that the true effect is similar to the estimated effect

Recommendations

AAOS Clinical Practice Guideline and Systematic Review Methodology

Table 1. Strength of Recommendation Descriptions

Strength	Overall Strength of Evidence	Description of Evidence Quality	Strength Visual
Strong	Strong	Evidence from two or more "High" quality studies with consistent findings for recommending for or against the intervention.	
Moderate	Moderate	Evidence from two or more "Moderate" quality studies with consistent findings, or evidence from a single "High" quality study for recommending for or against the intervention.	
Limited	Low Strength Evidence or Conflicting Evidence	Evidence from one or more "Low" quality studies with consistent findings **or** evidence from a single "Moderate" quality study recommending for against the intervention or diagnostic or the evidence is insufficient or conflicting and does not allow a recommendation for or against the intervention.	
Consensus*	No Evidence	There is no supporting evidence. In the absence of reliable evidence, the guideline work group is making a recommendation based on their clinical opinion. Consensus statements are published in a separate, complimentary document.	

Major Issues

- All Retrospective Level IV evidence excluded
- Most Level III Excluded

- 2019 AAOS CPG Recommendations
- Based on mostly Level I and II Studies

AAOS CPG
Management of Cuff Tears - 2009

AAOS
American Academy of Orthopaedic Surgeons

American Academy of Orthopaedic Surgeons
Clinical Practice Guideline on

Optimizing the Management of Rotator Cuff Problems

Robert A. Pedowitz, MD, PhD
Ken Yamaguchi, MD
Christopher S. Ahmad, MD
Robert T. Burks, MD
Evan L. Flatow, MD
Andrew Green, MD
Janet L. Wies, MPH
Justin St. Andre, MA
Kevin Boyer
Joseph P. Iannotti, MD, PhD
Bruce S. Miller, MD, MS
Robert Tashjian, MD
William C. Watters, III, MD
Kristy Weber, MD
Charles M. Turkelson, PhD
Laura Raymond, MA
Patrick Sluka, MPH
Richard McGowan, MLS

Recommendation	Strength of recommendation
1. In the absence of reliable evidence, it is the opinion of the work group that surgery not be performed for asymptomatic, full thickness rotator cuff tears.	Consensus
2. Rotator cuff repair is an option for patients with chronic, symptomatic full thickness tears.	Weak
3. a. We cannot recommend for or against exercise programs (supervised or unsupervised) for patients with rotator cuff tears.	Inconclusive
b. We cannot recommend for or against subacromial injections for patients with rotator cuff tears.	Inconclusive
c. We cannot recommend for or against the use of nonsteroidal anti-inflammatory drugs (NSAIDs), activity modification, ice, heat, iontophoresis, massage, Transcutaneous Electrical Nerve Stimulation (TENS), Pulsed Electromagnetic Field (PEMF), or phonophoresis (ultrasound) for nonoperative management of rotator cuff tears.	Inconclusive
4. a. We suggest that patients who have rotator cuff-related symptoms in the absence of a full thickness tear be initially treated non-surgically using exercise and/or NSAIDs.	Moderate
b. We cannot recommend for or against subacromial corticosteroid injection or PEMF in the treatment of rotator cuff-related symptoms in the absence of a full thickness tear.	Inconclusive
c. We cannot recommend for or against the use of iontophoresis, phonophoresis, TENS, ice, heat, massage, or activity modification for patients who have rotator cuff related symptoms in the absence of a full thickness tear.	Inconclusive
5. Early surgical repair after acute injury is an option for patients with a rotator cuff tear.	Weak
6. We cannot recommend for or against the use of perioperative subacromial corticosteroid injections or non-steroidal anti-inflammatory medications in patients undergoing rotator cuff surgery.	Inconclusive
7. a. It is an option for physicians to advise patients that the following factors correlate with less favorable outcomes after rotator cuff surgery:	
Increasing age	Weak
MRI Tear Characteristics	Weak
Worker's Compensation Status	Moderate
b. We cannot recommend for or against advising patients in regard to the following factors related to rotator cuff surgery:	
Diabetes	Inconclusive
Comorbidities (multiple)	Inconclusive
Smoking	Inconclusive
Prior shoulder infection	Inconclusive
Cervical disease (neck pain and myelopathy)	Inconclusive
8. We suggest that routine acromioplasty is not required at the time of rotator cuff repair.	Moderate
9. It is an option to perform partial rotator cuff repair, debridement, or muscle transfers for patients with irreparable rotator cuff tears when surgery is indicated.	Weak
10. a. It is an option for surgeons to attempt to achieve tendon to bone healing of the cuff in all patients undergoing rotator cuff repair.	Weak
b. We cannot recommend for or against the preferential use of suture anchors versus bone tunnels for repair of full thickness rotator cuff tears.	Inconclusive
c. We cannot recommend for or against a specific technique (arthroscopic, mini-open or open repair) when surgery is indicated for full thickness rotator cuff tears.	Inconclusive
11. a. We suggest surgeons not use a non-crosslinked, porcine small intestine submucosal xenograft patch to treat patients with rotator cuff tears.	Moderate
b. We cannot recommend for or against the use of soft tissue allografts or other xenografts to treat patients with rotator cuff tears.	Inconclusive
12. In the absence of reliable evidence, it is the opinion of the work group that local cold therapy is beneficial to relieve pain after rotator cuff surgery.	Consensus
13. a. We cannot recommend for or against the preferential use of an abduction pillow versus a standard sling after rotator cuff repair.	Inconclusive
b. We cannot recommend for or against a specific time frame of shoulder immobilization without range of motion exercises after rotator cuff repair.	Inconclusive
c. We cannot recommend for or against a specific time interval prior to initiation of active resistance exercises after rotator cuff repair.	Inconclusive
d. We cannot recommend for or against home-based exercise programs versus facility-based rehabilitation after rotator cuff surgery.	Inconclusive
14. We cannot recommend for or against the use of an indwelling subacromial infusion catheter for pain management after rotator cuff repair.	Inconclusive

Note: This summary does not contain rationales that explain how and why these recommendations were developed nor does it contain the evidence supporting these recommendations. All readers of this summary are strongly urged to consult the full guideline and evidence report for this information. We are confident that those who read the full guideline and evidence report will see that the recommendations were developed using systematic evidence-based processes designed to combat bias, enhance transparency, and promote reproducibility. This summary of recommendations is not intended to stand alone.

Figure 1: Optimizing the Management of Rotator Cuff Problems clinical practice guideline recommendations. (Reprinted with permission. © American Academy of Orthopaedic Surgeons.)

Treatment of Chronic Rotator Cuff Tears

Rotator cuff repair is an option for patients with chronic, symptomatic full thickness tears.

★★☆☆ LIMITED EVIDENCE

Asymptomatic Rotator Cuff Tears

In the absence of reliable evidence, it is the opinion of the work group that surgery not be performed for asymptomatic, full thickness rotator cuff tears.

★☆☆☆ CONSENSUS

Surgical treatment after Acute Injury

Early surgical repair after acute injury is an option for patients with a rotator cuff tear.

★★☆☆ LIMITED EVIDENCE

Surgical Technique of Cuff Repair

We cannot recommend for or against a specific technique (arthroscopic, mini-open or open repair) when surgery is indicated for full thickness rotator cuff tears.

INCONCLUSIVE

Arthroscopy
The Journal of Arthroscopic and Related Surgery
AANA | ARTHROSCOPY ASSOCIATION OF NORTH AMERICA

AAOS Rotator Cuff Clinical Practice Guideline Misses the Mark

James H. Lubowitz, M.D. (Assistant Editor-in-Chief)
Louis F. McIntyre, M.D. (AANA Health Policy and Practice Committee Chair)

tions are based on rigorous scientific analysis. The CPG process as currently configured unnecessarily calls our treatments into question, notwithstanding the Clinical Practice Guideline Disclaimer.[1]

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adequate evidence to set standards of practice. Yet significant high-level evidence does not exist. Our rationales for treatment rest on a wealth of lower level evidence that demonstrate the efficacy of our treatments for rotator cuff repair. The dilemma is to pro-

Commentary & Perspective

Does Every Question Need a Level-I Answer? Pragmatic and Ethical Considerations of Clinical Practice Guidelines

Commentary on an article by Robert A. Pedowitz, MD, PhD, et al.: "American Academy of Orthopaedic Surgeons Clinical Practice Guideline on Optimizing the Management of Rotator Cuff Problems"

In summary, stakeholders must be careful about the use, and the potential abuse, of clinical practice guidelines. These are serious and laudable efforts, but like all research, there are substantial limitations. A guideline does not replace expert surgical judgment. Lack of Level-I evidence does not mean that treatments are ineffective, irrational, or unsafe. It simply means that an RCT has not been published. For some clinical questions, Level-I investigation is *not* the best answer.

Robert A. Pedowitz, MD, PhD†*
David Geffen School of Medicine,
University of California, Los Angeles,
Los Angeles, California

Commentary & Perspective

Quality Guidelines Need Evidence, Not Opinion

Commentary on an article by Robert A. Pedowitz, MD, PhD, et al.: "American Academy of Orthopaedic Surgeons Clinical Practice Guideline on Optimizing the Management of Rotator Cuff Problems"

James O. Sanders, MD, David S. Jevsevar, MD, MBA, Michael J. Goldberg, MD, and Kristy L. Weber, MD

Dr. Pedowitz has described some of the issues of the AAOS evidence-based clinical practice guidelines (CPGs) that have concerned a number of Academy members and deserve some clarification.

Third, and most importantly for many of the concerns about the AAOS CPGs, is the problem of lack of evidence. The AAOS guidelines constitute a thorough review of the literature on a topic from the questions generated by the guidelines Work Group. The guidelines simply state the evidence. Expert opinion and retrospective case series cannot be included for the reasons mentioned above. However, lack of evidence for a treatment does not necessarily mean that the treatment does not work. Ultimately, only evidence that a treatment does not work means that it does not work. The inconclusive recommendations cry for high-quality AAOS CPG process. Patients want to know that we will make them better, and only better evidence will provide us the assurance that we can do so.

*James O. Sanders, MD, Vice Chair AAOS GOC**
*David S. Jevsevar, MD, MBA, Chair AAOS EBPC**
*Michael J. Goldberg, MD, Chair AAOS GOC**
*Kristy L. Weber, MD, Chair AAOS Council on Research and Quality**
AAOS Guidelines Oversight Committee (GOC)
and Evidence-Based Practice Committee (EBPC)

MANAGEMENT OF ROTATOR CUFF INJURIES
CLINICAL PRACTICE GUIDELINE

March 11, 2019

DEVELOPMENT GROUP ROSTER

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Adopted by the American Academy of Orthopaedic Surgeons Board of Directors

March 11, 2019

AAOS Clinical Practice Guidelines Section Leader
Gregory A. Brown, MD, PhD

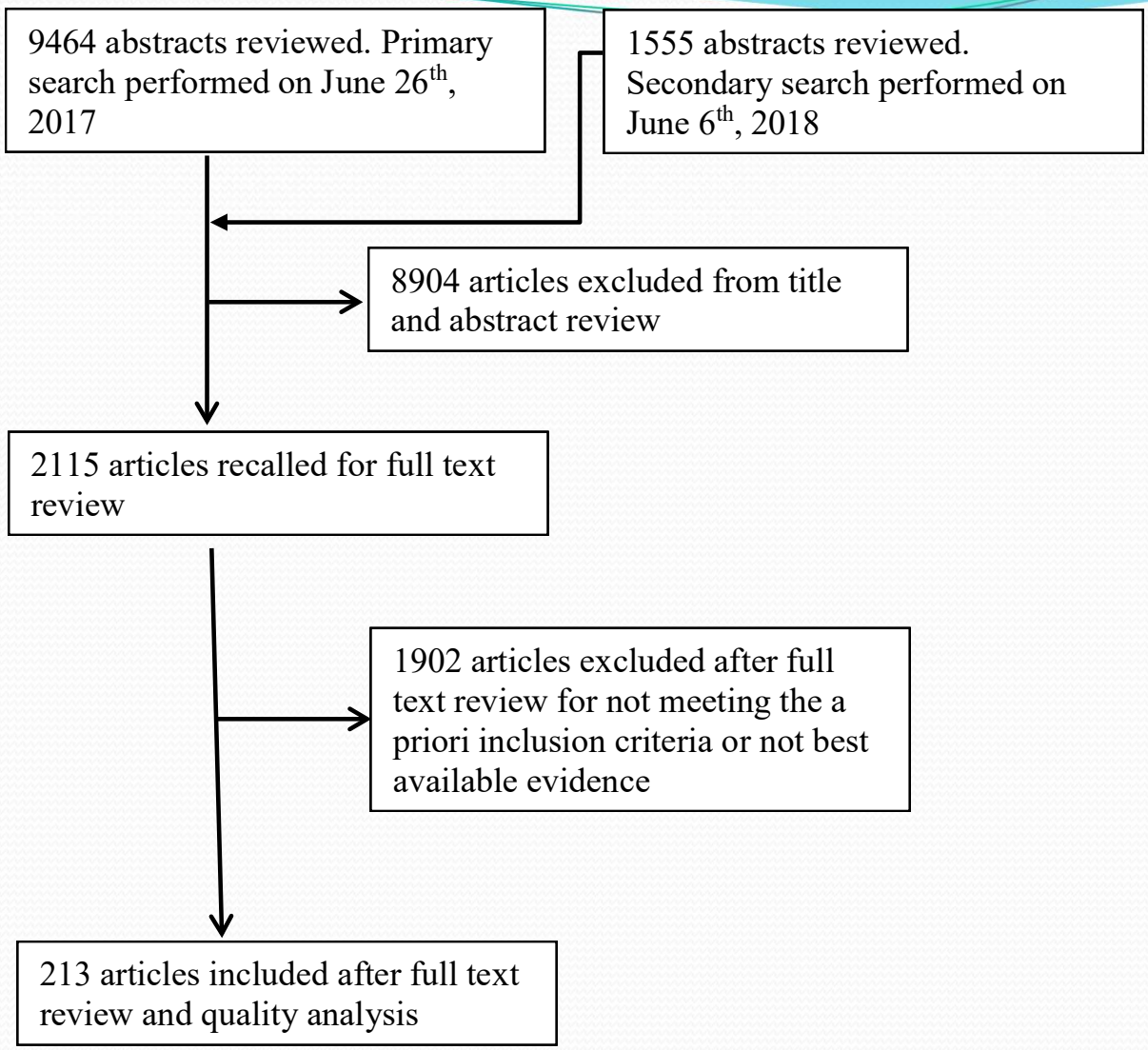
AAOS Committee on Evidence-Based Quality and Value Chair
Kevin G. Shea, MD

AAOS Council on Research and Quality Chair
Robert H. Quinn, MD

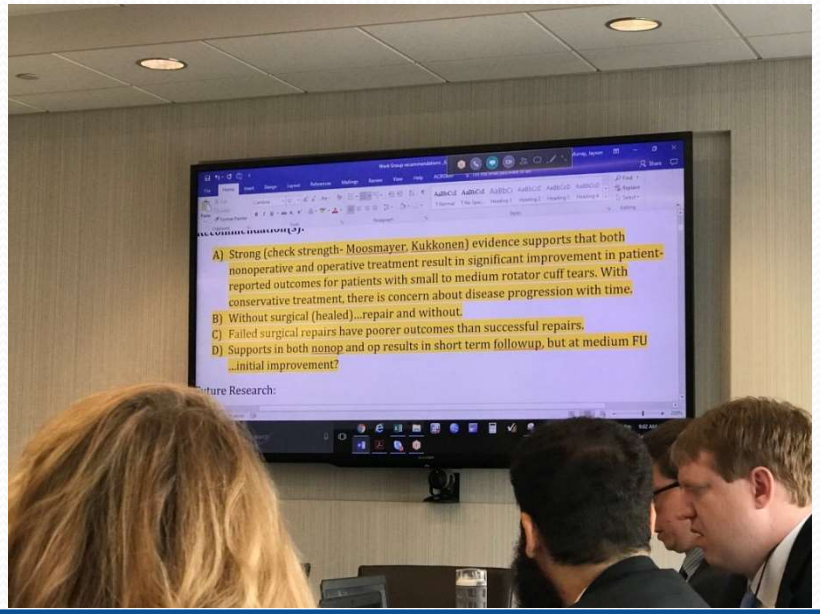
2019 Update to the AAOS CPG

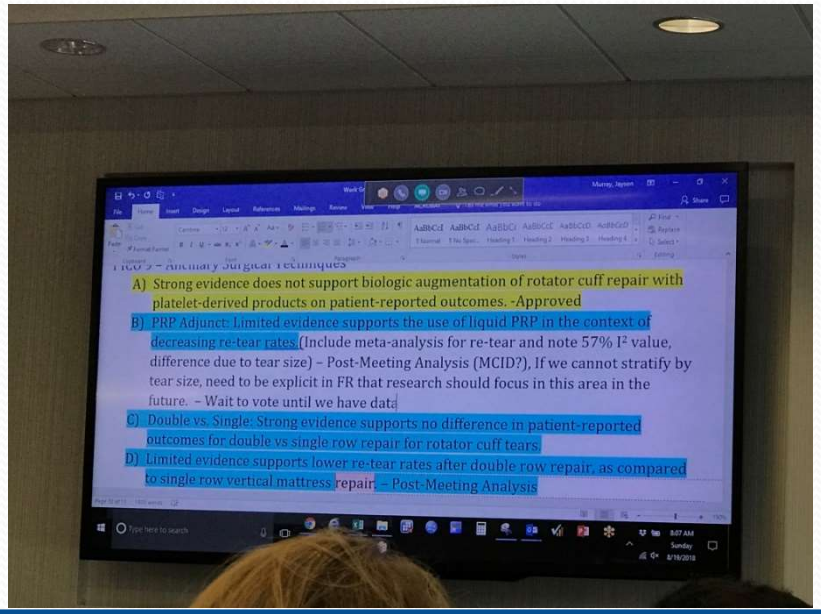
- First Meeting in July 2017
  - New PICO questions
- One year of Systematic review
  - 20 MPH at the AAOS headquarters
- Using available high quality evidence
  - New Recommendations

STUDY ATTRITION FLOWCHART




Xinning Li, MD
American Academy of Orthopaedic
AAOS
RC CPG Final Meeting


A) Strong (check strength- Moosmayer, Kukkonen) evidence supports that both nonoperative and operative treatment result in significant improvement in patient-reported outcomes for patients with small to medium rotator cuff tears. With conservative treatment, there is concern about disease progression with time.
B) Without surgical (healed)...repair and without.
C) Failed surgical repairs have poorer outcomes than successful repairs.
D) Supports in both nonop and op results in short term followup, but at medium FU ...initial improvement?


A) Strong evidence does not support biologic augmentation of rotator cuff repair with platelet-derived products on patient-reported outcomes. -Approved
B) PRP Adjunct: Limited evidence supports the use of liquid PRP in the context of decreasing re-tear rates. (Include meta-analysis for re-tear and note 57% I² value, difference due to tear size) – Post-Meeting Analysis (MCID?), If we cannot stratify by tear size, need to be explicit in FR that research should focus in this area in the future. – Wait to vote until we have data
C) Double vs. Single: Strong evidence supports no difference in patient-reported outcomes for double vs single row repair for rotator cuff tears.
D) Limited evidence supports lower re-tear rates after double row repair, as compared to single row vertical mattress repair – Post-Meeting Analysis

MANAGEMENT OF SMALL TO MEDIUM TEARS

Strong evidence supports that both physical therapy and operative treatment result in significant improvement in patient-reported outcomes for patients with symptomatic small to medium full-thickness rotator cuff tears.

Strength of Recommendation: Strong 

LONG TERM NON-OPERATIVE MANAGEMENT

Strong evidence supports that patient reported outcomes (PRO) improve with physical therapy in symptomatic patients with full thickness rotator cuff tears. However, the rotator cuff tear size, muscle atrophy, and fatty infiltration may progress over 5 to 10 years with non operative management.

Strength of Recommendation: Strong 

OPERATIVE MANAGEMENT

Moderate evidence supports that healed rotator cuff repairs show improved patient reported and functional outcomes compared to physical therapy and unhealed rotator cuff repairs.

Strength of Recommendation: Moderate 

ACROMIOPLASTY & ROTATOR CUFF REPAIR

Moderate strength evidence does not support the routine use of acromioplasty as a concomitant treatment as compared to arthroscopic repair alone for patients with small to medium sized full-thickness rotator cuff tears.

Strength of Recommendation: Moderate 

DISTAL CLAVICLE RESECTION

Moderate strength evidence supports the use of distal clavicle resection as a concomitant treatment to arthroscopic repair for patients with full-thickness rotator cuff tears and symptomatic acromioclavicular joints.

Strength of Recommendation: Moderate 

POST-OP MOBILIZATION TIMING

Strong evidence suggests similar postoperative clinical and patient-reported outcomes for small to medium sized full-thickness rotator cuff tears between early mobilization and delayed mobilization up to 8 weeks for patients who have undergone arthroscopic rotator cuff repair.

Strength of Recommendation: Strong 

CORTICOSTEROID INJECTIONS FOR ROTATOR CUFF TEARS

Moderate evidence supports the use of a single injection of corticosteroids with local anesthetic for short-term improvement in both pain and function for patients with shoulder pain.

Strength of Recommendation: Moderate 

Description: Evidence from two or more "Moderate" quality studies with consistent findings, or evidence from a single "High" quality study for recommending for or against the intervention.

HYALURONIC ACID INJECTIONS FOR ROTATOR CUFF TEARS

Limited evidence supports the use of hyaluronic acid injections in the non-operative management of patients with rotator cuff pathology.

Strength of Recommendation: Limited 

PLATELET RICH PLASMA (PRP) INJECTION IN PARTIAL-THICKNESS TEARS

Limited evidence does not support the routine use of platelet rich plasma for the treatment of rotator cuff tendonopathy or partial tears.

Strength of Recommendation: Limited 

PROGNOSTIC FACTORS (AGE)

Strong evidence supports that older age is associated with higher failure rates and poorer patient reported outcomes after rotator cuff repair.

Strength of Recommendation: Strong 

PROGNOSTIC FACTORS (HIGHER BMI)

Moderate evidence supports that higher BMI is correlated with higher re-tear rates after rotator cuff repair surgery; however, strong evidence supports that there is no correlation between higher BMI and worse patient-reported outcomes following rotator cuff repair.

Strength of Recommendation: Moderate 

PROGNOSTIC FACTORS (WORKER'S COMPENSATION)

Strong evidence supports the presence of a worker's compensation claim is associated with poorer patient reported outcomes after rotator cuff repair.

Strength of Recommendation: Strong 

PROGNOSTIC FACTORS (DIABETES)

Moderate evidence suggests that patients with diabetes will have higher re-tear rates and poorer quality of life and patient reported outcome scores after rotator cuff repair.

Strength of Recommendation: Moderate 

BIOLOGICAL AUGMENTATION WITH PLATELET DERIVED PRODUCTS

Strong evidence does not support biological augmentation of rotator cuff repair with platelet-derived products on improving patient reported outcomes; however, limited evidence supports the use of liquid platelet rich plasma in the context of decreasing re-tear rates.

Strength of Recommendation: Strong ★★★★

SINGLE-ROW VS DOUBLE-ROW REPAIR

Strong evidence does not support double row rotator cuff repair constructs on improving patient-reported outcomes compared to single row vertical mattress repair constructs.

Strength of Recommendation: Strong ★★★★

SINGLE-ROW VS DOUBLE-ROW REPAIR RE-TEARS

Strong evidence supports lower re-tear rates after double row repair compared to single row vertical mattress repair when evaluating for both partial and full thickness retears after primary repair; however, when evaluating the data for only full thickness retears, limited evidence does not support lower re-tear rates after double row primary repair.

Strength of Recommendation: Strong ★★★★

MARROW STIMULATION

Limited evidence suggests that marrow stimulation at the time of rotator cuff repair does not improve patient-reported outcomes; however, this technique may decrease re-tear rates in patients with larger tear sizes.

Strength of Recommendation: Limited 

DERMAL ALLOGRAFTS

Limited evidence supports the use of dermal allografts to augment the repair of large and massive rotator cuff tears to improve patient reported outcomes.

Strength of Recommendation: Limited 

OPEN VS ARTHROSCOPIC REPAIR

Strong evidence supports no difference in long-term (> 1 year) patient-reported outcomes or cuff healing rates between open and arthroscopic repairs; however, arthroscopic-only technique is associated with better short-term improvement in post operative recovery of motion and decreased visual analog score (VAS) scores.

Strength of Recommendation: Strong 

POSTOPERATIVE PAIN MANAGEMENT

Moderate strength evidence supports the use of multimodal programs or non-opioid individual modalities to provide added benefit for postoperative pain management following rotator cuff repair.

Strength of Recommendation: Moderate 

SUMMARY OF CONSENSUS STATEMENTS

There is no or conflicting supporting evidence. In the absence of reliable evidence, the systematic literature review development group is making a recommendation based on their clinical opinion.

Strength of Recommendation: Consensus

SUPERVISED EXERCISE VS UNSUPERVISED EXERCISE

In the absence of reliable evidence, it is the opinion of the work group that supervised physical therapy is more appropriate than unsupervised home exercise for some patients following rotator cuff repair.

MULTIPLE STEROID INJECTIONS FOR ROTATOR CUFF TEARS

In the absence of reliable evidence, it is the opinion of the work group that multiple steroid injections may compromise the integrity of the rotator cuff, which may affect attempts at subsequent repair.

PLATELET RICH PLASMA (PRP) INJECTION IN FULL-THICKNESS TEARS

In the absence of reliable evidence, it is the consensus of the work group that we do not recommend the routine use of platelet rich plasma in the non-operative management of full-thickness rotator cuff tears.

UNREPAIRABLE TEARS WITHOUT ARTHROPATHY (BIOLOGIC PROCEDURES)

In the absence of reliable evidence, it is the opinion of the work group that physical therapy, biceps tenotomy/tenodesis, partial repair, tendon transfer, superior capsular reconstruction, arthroscopic debridement, or allograft augmentation (non-porcine) can improve patient reported outcomes.

MASSIVE, UNREPAIRABLE ROTATOR CUFF TEAR (REVERSE ARTHROPLASTY)

In the absence of reliable evidence, it is the opinion of the work group that in patients with massive, unrepairable rotator cuff tears and pseudoparalysis who have failed other treatments, reverse arthroplasty can improve patient reported outcomes.

UNREPAIRABLE TEARS WITH ARTHROPATHY

In the absence of reliable evidence, it is the opinion of the workgroup that after failure of conservative treatment, reverse shoulder arthroplasty for unrepairable tears with glenohumeral joint arthritis can improve patient reported outcomes.

THANKS