AAOS Clinical Practice Guideline Summary

Management of Rotator Cuff Injuries

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Abstract

Management of Rotator Cuff Injuries Clinical Practice Guideline is based on a systematic review of current scientific and clinical research. The purpose of this clinical practice guideline is to guide the clinician's ability to diagnose and treat rotator cuff tears in adults by providing evidence-based recommendations for key decisions that affect the management of patients with rotator cuff injuries. This guideline contains 33 recommendations, including both diagnosis and treatment. In addition, the work group highlighted the need for better research in the diagnosis and treatment of rotator cuff injuries.

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Dr. Weber or an immediate family member serves as a board member, owner, officer, or committee member of the American Academy of Orthopaedic Surgeons, the American Shoulder and Elbow Surgeons, the Arthroscopy Association of North America, the International Society of Arthroscopy, Knee Surgery, and Orthopaedic Sports Medicine. Neither Dr. Chahal nor any immediate family member has received anything of value from or has stock or stock options held in a commercial company or institution related directly or indirectly to the subject of this article.

This clinical practice guideline was approved by the American Academy of Orthopaedic Surgeons' Board of Directors on March 11, 2019.

The complete document, *Management of Rotator Cuff Injuries Clinical Practice Guideline*, includes all tables and figures and is available at www.aaos.org/rotatorcuffinjuriescpg.

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Burden of Disease

Shoulder disease is a major cause of musculoskeletal disability in the United States. Chronic shoulder pain has been estimated to affect approximately 8% of all American adults, second only to chronic knee pain in our society's burden of musculoskeletal disease.[1] Rotator cuff pathology is the leading cause of shoulder-related disability seen by orthopaedic surgeons, and surgical volume is on the rise.[1] One study, for example, notes a 141% increase in rotator cuff repairs from 1996 to 2006 in the United States.[2]

Societal costs of a medical condition include direct and indirect costs. Direct costs are those associated with diagnosis and treatment, whereas indirect costs include lost income due to inability to work or lower wages, missed workdays, and disability payments.[3] Approximately 250,000 rotator cuff repairs ($6,367 per medical patient) are done annually in the United States. Despite this high cost, rotator cuff repair creates an increase in quality-adjusted life-years for all patients, irrespective of age.[3,4] An estimated $3,442,750,000 lifetime societal saving per annum was noted for the 250,000 yearly rotator cuff repairs done in the United States.[3]

Etiology

Rotator cuff tears have two main causes: injury and degeneration. Acute tears are usually due to injury. This type of tear can occur in isolation or with other shoulder injuries, such as a broken collarbone or dislocated shoulder. Degenerative tears are more common and are the result of wearing down of the tendon that occurs slowly over time. This degeneration naturally occurs with age. Rotator cuff tears are more common in the dominant arm.[5]

Incidence and Prevalence

Approximately 4.5 million patient visits related to shoulder pain occur each year in the United States.[3] More than two-thirds of patients treated with rotator cuff repair are of working age. The prevalence of rotator cuff tears increases with age, with 54% of asymptomatic patients aged 60 years or older, having sustained

either a partial or complete rotator cuff tear (RCT) on magnetic resonance imaging.[6] Ultrasonography studies by Tempelhof et al[7] revealed that 13% of individuals in their fifth decade, 20% in their sixth decade, and 31% in their seventh decade of life have RCTs. From their study on 306 cadavers, Lohr and Uhthoff[8] noted a 19% and 32% prevalence of full-thickness and partial-thickness tears, respectively. Not all these tears are symptomatic.

Risk Factors

Because rotator cuff tears are largely caused by the normal wear and tear that goes along with aging, people older than 40 years are at greater risk.

People who do repetitive lifting or overhead activities are also at risk for rotator cuff tears. Athletes are especially vulnerable to overuse tears, particularly in the setting of repetitive microtrauma as observed in tennis players and baseball pitchers. Painters, carpenters, and others who do overhead work also have a greater chance for tears.

Although overuse tears caused by sports activity or overhead work also occur in younger people, most tears in young adults are caused by a traumatic injury, such as a fall or shoulder dislocation.[5]

Potential Benefits, Harms, and Contraindications

Risks associated with both surgical and nonsurgical management of rotator cuff tears. These include, but are not limited to infection, stiffness, bleeding, and neurologic injury for surgical management, and increased structural damage and functional limitations for nonsurgical management. Contraindications for surgical management vary widely based on the treatment and the patient.

Overview and Rationale

To address the healthcare concern created by the available literature regarding rotator cuff injuries, in 2017, the American Academy of Orthopaedic Surgeons (AAOS) leadership allocated resources to update the 2010 evidence-based, Clinical Practice Guideline (CPG), evaluating the management of rotator cuff injuries and complications. The AAOS, with input from representatives from the Arthroscopy Association of North America, the American Orthopaedic Society for Sports Medicine, the American Academy of Family Physicians, the American Physical Therapy Association, the American College of Sports Medicine, the American Society of Shoulder and Elbow Therapists, and the American Shoulder and Elbow Surgeons, recently published their CPG, *Management of Rotator Cuff Injuries*.[9] This CPG was approved by the AAOS Board of Directors in March 2019 and has been officially endorsed by the Arthroscopy Association of North America, the American Shoulder and Elbow Surgeons, the American Orthopaedic Society for Sports Medicine, and the American Society of Shoulder and Elbow Therapists. The purpose of this CPG is to diagnose and treat rotator cuff tears based on current best evidence.

The work group formulated preliminary recommendations, which were designed to be important and actionable interventions to create a clinically relevant document addressing the management of rotator cuff injuries across the episode of care. An extensive literature search was done to investigate these preliminary topics based on strict inclusion criteria designed to identify the best available evidence. The many citations were summarized, classified by patient outcomes, and graded by the strength of methodology, representing best available evidence to be used by the work group to formulate final evidence-based recommendations. The recommendations underwent a rigorous internal and external peer review process, resulting in the final approved CPG. The entire process adhered to the strict evidence-based CPG methodology developed by the AAOS under the guidance of an oversight chair. The scientific nature of this process is often misunderstood because it includes only primary research articles published in peer-reviewed journals that excludes all secondary research, including systematic and narrative reviews. However, research analysts comb through the bibliographies of relevant secondary research and any citations that meet the inclusion criteria are evaluated. In addition, registry data reports and conference abstracts do not meet the standard of articles published in a peer-reviewed journal; however, if articles based on the registry data or conference proceedings are published, they are then evaluated for inclusion as support for particular recommendations.

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Sometimes, retrospective series, small case series, and case reports are excluded either because of the inherent risk of bias or because higher quality of evidence is available to address the same question. A "best evidence synthesis" is used whereby only the best available evidence for any given outcome is applied to create the recommendation ratings as strong, moderate, or limited. The use of this best evidence protocol reduces the adverse or favorable effect of poorly designed studies on the final recommendation. A consensus recommendation can only be formulated by the work group if no supporting evidence is available.

In summary, the rotator cuff guideline involved reviewing more than 9,400 abstracts and more than 2,100 full-text articles to develop 33 recommendations supported by 213 research articles meeting stringent inclusion criteria. Each recommendation is based on a systematic review of the research-related topic, which resulted in 12 recommendations classified as strong, 9 as moderate, 5 as limited, and 7 as consensus. Strength of recommendation is assigned based on the quality of the supporting evidence.

Collectively, from these recommendations, a theme emerges. The first rotator cuff CPG published[10] was met with some controversy, with several subspecialty societies of the AAOS recommending that the AAOS refrain from publishing this guideline, citing the "lack of evidence, risk of misinterpretation, and potential for misuse."[11] Of 31 recommendations, 19 were determined to be inconclusive based on the strict criteria imposed and the available literature, 4 were of moderate grade, 6 were limited, and 2 were consensus statements. The inability of the CPG to support accepted approaches to treatment of rotator cuff injury with higher-level recommendations led to substantial confusion in the orthopaedic community, with one editorial stating "The CPG process as currently configured unnecessarily calls our treatments into question, notwithstanding the Clinical Practice Guideline Disclaimer."[11] Even the lead author of the 2010 CPG felt obligated to write an editorial regarding its conclusions,[12] although other members of the group were more favorably inclined.[13] The less rigorous Appropriate Use Criteria process was recommended to ameliorate some of these issues in rotator cuff injury,[14] which was published in 2013.[15]

In the years since this initial CPG was published, the quality of the literature in this arena has improved markedly. The CPG process has also changed. The "inconclusive" category has been removed. Each statement now starts with a description of the quality of evidence. In addition, expert opinion was now allowed in the absence of strong evidence, which was strictly forbidden in the first guideline. The current CPG now has 33 recommendations with 12 recommendations classified as strong, 9 as moderate, 5 as limited, and 7 as consensus, reflecting both the improvement in the literature and changes in the CPG process.

Perhaps of most interest are the recommendations covering surgical versus nonsurgical management of rotator cuff tears. The initial rotator cuff injury CPG recommendation—"Rotator cuff repair is an option for patients with chronic, symptomatic full-thickness tears"—allowed only a weak recommendation for repair based on the available literature.[10] The current CPG still has a strong recommendation for initial conservative management of chronic rotator cuff tears. Improvements in the literature have now allowed a strong recommendation for long-term surgical management: "Strong evidence supports that patient-reported outcomes (PROs) 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 nonsurgical management." In addition, "Moderate evidence supports that healed rotator cuff repairs show improved patient-reported and functional outcomes compared with physical therapy and unhealed rotator cuff repairs." The recommendations in the current CPG were based in part on an earlier level 1 study by Moosmayer et al.[16] Showing the difficulties of interpreting a shorter-term follow-up of rotator cuff surgery, a 10-year follow-up of the same series of patients published by the same lead author now shows clear superiority of surgical management of small to medium rotator cuff tears.[17]

Other controversial recommendations in the initial 2010 CPG have stood the test of time. The initial moderate strength recommendation for concomitant acromioplasty read, "Routine acromioplasty is not required at the time of rotator cuff repair."[10] In 2010, this recommendation met with considerable dissension.[11] Although the current CPG states: "Moderate strength evidence does not support the routine use of acromioplasty as a concomitant treatment compared with arthroscopic repair alone for patients with small- to medium-sized full-thickness rotator cuff tears," this recommendation is currently far less controversial than in 2010.

Assessing open versus arthroscopic treatment of rotator cuff tears was challenging in the 2010 CPG. This CPG had an inconclusive recommendation on this subject, stating "We cannot recommend for or against a specific technique (ie, arthroscopic, mini-open, or open repair) when surgery is indicated for full-thickness rotator cuff tears."[10] The addition of higher-level evidence resulted in a strong recommendation, stating "Strong evidence supports no difference in long-term

(>1 year) PROs or cuff healing rates between open and arthroscopic repairs; however, arthroscopic-only technique is associated with better short-term improvement in postoperative recovery of motion and decreased visual analog scores."

The subject of double-row repair in the 2010 CPG had so little high-level evidence that the issue was left to a future research recommendation.[10] The current CPG now states, "Strong evidence does not support double-row rotator cuff repair constructs on improving PROs compared with single-row vertical mattress repair constructs." Regarding retear rates, the current guideline states, "Strong evidence supports lower retear rates after double-row repair compared with 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 retear rates after double-row primary repair." These two strong recommendations should assist the surgeon in determining their preferred rotator cuff repair technique.

Overall, many factors have led to improvements in the current CPG. This CPG will be followed by an update of the 2013 Rotator Cuff Appropriate Use Criteria,[15] which will provide additional clarity through patient-specific treatment recommendations for the practicing orthopaedic surgeon. Translating these guidelines into definitive practice changes remains a goal of these guidelines in general.[18]

Future Research

Consideration for future research is provided for each recommendation within this document. High-quality studies comparing the outcomes of surgical and nonsurgical management of rotator cuff pathology of all types remain a major gap in knowledge. These need to continue out to 5 years to fully understand the efficacy of each treatment. Future studies should focus more on strengthening the literature for the association between RCTs and factors, such as diabetes mellitus, hypertension, cholesterol, smoking, and body mass index (BMI). Questions persist regarding the timing of physical therapy after surgery and the need for formal therapy versus a supervised home program. Although widely used in practice, the risks and benefits of corticosteroid injections in patients with rotator cuff tears remain unclear. The repair of high-grade partial rotator cuff tears has been widely adopted by the orthopaedic community, but minimal evidence exists to support this choice. The risk and expense of orthobiologics in rotator cuff surgery remains difficult to fully assess, although multiple high-quality studies are currently available. The use of either allograft or xenograft patches either to augment rotator cuff repair or as a superior capsular reconstruction requires additional high-quality studies to prove efficacy. Finally, given the opioid epidemic, high-quality studies of multimodal analgesia for rotator cuff surgery would seem to be a matter of public policy. Consideration for future research is provided for each recommendation within this document. High-strength, level 1 studies comparing the outcomes of surgical and nonsurgical management of rotator cuff pathology of all types remain a major gap in knowledge.

Recommendations

This summary of recommendations of the AAOS *Management of Rotator Cuff Injuries Clinical Practice Guideline* contains a list of evidence-based treatment recommendations. Discussions of how each recommendation was developed and the complete evidence report are contained in the full guideline at www.aaos.org/rotatorcuffinjuriescpg. Readers are urged to consult the full guideline for the comprehensive evaluation of the available scientific studies. The recommendations were established using methods of evidence-based medicine that rigorously control for bias, enhance transparency, and promote reproducibility.

The summary of recommendations is not intended to stand alone. Medical care should be based on evidence, a physician's expert judgment, and the patient's circumstances, values, preferences, and rights. For treatment procedures to provide benefit, mutual collaboration with shared decision making between patient and physician/allied healthcare provider is essential.

A strong recommendation means that the quality of the supporting evidence is high. A moderate recommendation means that the benefits exceed the potential harm (or that the potential harm clearly exceeds the benefits in the case of a negative recommendation), but the quality/applicability of the supporting evidence is not as strong. A limited recommendation means that there is a lack of compelling evidence that has resulted in an unclear balance between benefits and potential harms. A consensus recommendation means that expert opinion supports the guideline recommendation, although empirical evidence is not available that meets the inclusion criteria of the guideline's systematic review.

Strength of Recommendation Descriptions

Management of Small to Medium Tears

Strong evidence supports that both physical therapy and surgical

Strength	Overall Strength of Evidence	Description of Evidence Strength	Strength Visual
Strong	Strong	Evidence from two or more "high" strength studies with consistent findings for recommending for or against the intervention.	★★★★
Moderate	Moderate	Evidence from two or more "moderate" strength 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 two or more "low" strength studies with consistent findings or evidence from a single study for recommending for or against the intervention or diagnostic test or the evidence is insufficient or conflicting and does not allow a recommendation for or against the intervention.	★★☆☆
Consensus	No evidence	No supporting evidence is available. In the absence of reliable evidence, the work group is making a recommendation based on their clinical opinion. Consensus recommendations can only be created when not establishing a recommendation could have catastrophic consequences.	★☆☆☆

management resulted in a notable improvement in PROs for patients with symptomatic small to medium full-thickness rotator cuff tears.

Strength of Recommendation: Strong ★★★★

Implication: Practitioners should follow a strong recommendation, unless a clear and compelling rationale for an alternative approach is present.

Long-Term Nonsurgical Management

Strong evidence supports that PROs 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 nonsurgical management.

Strength of Recommendation: Strong ★★★★

Implication: Practitioners should follow a strong recommendation, unless a clear and compelling rationale for an alternative approach is present.

Surgical Management

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

Strength of Recommendation: Moderate ★★★☆

Implication: Practitioners should generally follow a moderate recommendation but remain alert to new information and be sensitive to patient preferences.

Acromioplasty and Rotator Cuff Repair

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

Strength of Recommendation: Moderate ★★★☆

Implication: Practitioners should generally follow a moderate recommendation but remain alert to new information and be sensitive to patient preferences.

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 ★★★☆

Implication: Practitioners should generally follow a moderate recommendation but remain alert to new information and be sensitive to patient preferences.

Diagnosis (Clinical Examination)

Strong evidence supports that clinical examination can be useful to diagnose or stratify patients with rotator cuff tears; however, a combination of tests will increase diagnostic accuracy.

Strength of Recommendation: Strong★★★★
Implication: Practitioners should follow a strong recommendation, unless a clear and compelling rationale for an alternative approach is present.

Diagnosis (Imaging)

Strong evidence supports that magnetic resonance imaging, magnetic resonance angiography, and ultrasonography are useful adjuncts to a clinical examination for identifying rotator cuff tears.

Strength of Recommendation: Strong★★★★
Implication: Practitioners should follow a strong recommendation, unless a clear and compelling rationale for an alternative approach is present.

Post-op Mobilization Timing

Strong evidence suggests similar postoperative clinical and PROs 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★★★★
Implication: Practitioners should follow a strong recommendation, unless a clear and compelling rationale for an alternative approach is present.

Corticosteroid Injections for Rotator Cuff Tears

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

Strength of Recommendation: Moderate★★★☆
Implication: Practitioners should generally follow a moderate recommendation but remain alert to new information and be sensitive to patient preferences.

Hyaluronic Acid Injections for Rotator Cuff Tears

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

Strength of Recommendation: Limited★★☆☆
Implication: Practitioners should feel little constraint in following a recommendation labeled as limited, exercise clinical judgment, and be alert for emerging evidence that clarifies or helps to determine the balance between benefits and potential harms. Patient preference should have a substantial influencing role.

Platelet-Rich Plasma Injection in Partial-Thickness Tears

Limited evidence does not support the routine use of platelet-rich plasma (PRP) for the treatment of rotator cuff tendinopathy or partial tears.

Strength of Recommendation: Limited★★☆☆
Implication: Practitioners should feel little constraint in following a recommendation labeled as limited, exercise clinical judgment, and be alert for emerging evidence that clarifies or helps to determine the balance between benefits and potential harms. Patient preference should have a substantial influencing role.

High-Grade Partial-Thickness Rotator Cuff Tears

Strong evidence supports the use of either conversion to full-thickness or transtendinous/in situ repair in patients who failed conservative management with high-grade partial-thickness rotator cuff tears.

Strength of Recommendation: Strong★★★★
Implication: Practitioners should follow a strong recommendation, unless a clear and compelling rationale for an alternative approach is present.

Prognostic Factors (Age)

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

Strength of Recommendation: Strong★★★★
Implication: Practitioners should follow a strong recommendation, unless a clear and compelling rationale for an alternative approach is present.

Prognostic Factors (Higher Body Mass Index)

Moderate evidence supports that higher BMI is correlated with higher retear rates after rotator cuff repair surgery; however, strong evidence supports that no correlation exists between higher BMI and worse PROs after rotator cuff repair.

Strength of Recommendation: Moderate★★★☆
Implication: Practitioners should generally follow a moderate recommendation but remain alert to new information and be sensitive to patient preferences.

Prognostic Factors (Worker's Compensation)

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

Strength of Recommendation: Strong★★★★
Implication: Practitioners should follow a strong recommendation, unless a clear and compelling rationale for an alternative approach is present.

Prognostic Factors (Comorbidities)

Moderate evidence supports the association of poorer PROs in patients with comorbidities.

Strength of Recommendation: Moderate★★★☆
Implication: Practitioners should generally follow a moderate recommendation but remain alert to new information and be sensitive to patient preferences.

Prognostic Factors (Diabetes)

Moderate evidence suggests that patients with diabetes will have higher retear rates and poorer quality of life and PRO scores after rotator cuff repair.

Strength of Recommendation: Moderate★★★☆
Implication: Practitioners should generally follow a moderate recommendation but remain alert to new information and be sensitive to patient preferences.

Prognostic Factors (Patient Expectations)

Moderate evidence correlates higher preoperative patient expectations for surgery with higher PROs after rotator cuff repair.

Strength of Recommendation: Moderate★★★☆
Implication: Practitioners should generally follow a moderate recommendation but remain alert to new information and be sensitive to patient preferences.

Biological Augmentation With Platelet-derived Products

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

Strength of Recommendation: Strong★★★★
Implication: Practitioners should follow a strong recommendation, unless a clear and compelling rationale for an alternative approach is present.

Single-Row Versus Double-Row Repair

Strong evidence does not support double-row rotator cuff repair constructs on improving PROs compared with single-row vertical mattress repair constructs.

Strength of Recommendation: Strong★★★★
Implication: Practitioners should follow a strong recommendation, unless a clear and compelling rationale for an alternative approach is present.

Single-Row Versus Double-Row Repair Retears

Strong evidence supports lower retear rates after double-row repair compared with 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 retear rates after double-row primary repair.

Strength of Recommendation: Strong★★★★
Implication: Practitioners should follow a strong recommendation, unless a clear and compelling rationale for an alternative approach is present.

Marrow Stimulation

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

Strength of Recommendation: Limited★★☆☆
Implication: Practitioners should feel little constraint in following a recommendation labeled as limited, exercise clinical judgment, and be alert for emerging evidence that clarifies or helps to determine the balance between benefits and potential harms. Patient preference should have a substantial influencing role.

Dermal Allografts

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

Strength of Recommendation: Limited★★☆☆
Implication: Practitioners should feel little constraint in following a recommendation labeled as limited, exercise clinical judgment, and be alert for emerging evidence that clarifies or helps to determine the balance between benefits and potential harms. Patient preference should have a substantial influencing role.

Xenografts

Limited evidence does not support the use of xenografts to augment the repair of large and massive rotator cuff tears.

Strength of Recommendation: Limited★★☆☆

Implication: Practitioners should feel little constraint in following a recommendation labeled as limited, exercise clinical judgment, and be alert for emerging evidence that clarifies or helps to determine the balance between benefits and potential harms. Patient preference should have a substantial influencing role.

Open Versus Arthroscopic Repair

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

Strength of Recommendation: Strong★★★★

Implication: Practitioners should follow a strong recommendation, unless a clear and compelling rationale for an alternative approach is present.

Postoperative Pain Management

Moderate evidence supports the use of multimodal programs or nonopioid individual modalities to provide added benefit for postoperative pain management after rotator cuff repair.

Strength of Recommendation: Moderate★★★☆

Implication: Practitioners should generally follow a moderate recommendation but remain alert to new information and be sensitive to patient preferences.

Supervised Exercise Versus Unsupervised Exercise

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

Strength of Recommendation: Consensus★☆☆☆

Implication: In the absence of reliable evidence, practitioners should remain alert to new information, as emerging studies may change this recommendation. Practitioners should weigh this recommendation with their clinical expertise and be sensitive to patient preferences.

Multiple Steroid Injections for Rotator Cuff Tears

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

Strength of Recommendation: Consensus★☆☆☆

Implication: In the absence of reliable evidence, practitioners should remain alert to new information, as emerging studies may change this recommendation. Practitioners should weigh this recommendation with their clinical expertise and be sensitive to patient preferences.

Platelet-Rich Plasma Injections in Full-Thickness Tears

In the absence of reliable evidence, the consensus of the work group is that we do not recommend the routine use of PRP in the nonsurgical management of full-thickness rotator cuff tears.

Strength of Recommendation: Consensus★☆☆☆

Implication: In the absence of reliable evidence, practitioners should remain alert to new information, as emerging studies may change this recommendation. Practitioners should weigh this recommendation with their clinical expertise and be sensitive to patient preferences.

Partial Rotator Cuff Tear

In the absence of reliable evidence, the work group is unable to define a preference for the choice of débridement versus repair of high-grade partial-thickness cuff tears that have failed physical therapy; however, repair of high-grade partial tears could improve outcomes.

Strength of Recommendation: Consensus★☆☆☆

Implication: In the absence of reliable evidence, practitioners should remain alert to new information, as emerging studies may change this recommendation. Practitioners should weigh this recommendation with their clinical expertise and be sensitive to patient preferences.

Unrepairable Tears Without Arthropathy (Biological Procedures)

In the absence of reliable evidence, the opinion of the work group is that physical therapy, biceps tenotomy/tenodesis, partial repair, tendon transfer, superior capsular reconstruction, arthroscopic débridement, or allograft augmentation (nonporcine) can improve PROs.

Strength of Recommendation: Consensus★☆☆☆

Implication: In the absence of reliable evidence, practitioners should remain alert to new information, as emerging

studies may change this recommendation. Practitioners should weigh this recommendation with their clinical expertise and be sensitive to patient preferences.

Massive, Unrepairable Rotator Cuff Tear (Reverse Arthroplasty)

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

Strength of Recommendation: Consensus

Implication: In the absence of reliable evidence, practitioners should remain alert to new information, as emerging studies may change this recommendation. Practitioners should weigh this recommendation with their clinical expertise and be sensitive to patient preferences.

Unrepairable Tears with Arthroplasty

In the absence of reliable evidence, the opinion of the work group is that after failure of conservative treatment, reverse shoulder arthroplasty for unrepairable tears with glenohumeral joint arthritis can improve PROs.

Strength of Recommendation: Consensus

Implication: In the absence of reliable evidence, practitioners should remain alert to new information, as emerging studies may change this recommendation. Practitioners should weigh this recommendation with their clinical expertise and be sensitive to patient preferences.

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References printed in **bold type** are those published within the past 5 years.

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