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From Imaging to Function: Contemporary Evidence-Based Management of Subacromial Pain and Rotator Cuff-Related Shoulder Disorders

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Review Article

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Abstract

Background: Subacromial pain syndrome (SAPS) and rotator cuff–related shoulder disorders are among the most common causes of shoulder pain. Historically, management was driven by structural abnormalities identified on imaging, but contemporary evidence supports a clinically led, function focused approach.

Methods: This narrative clinical review synthesizes current evidence from high-quality clinical practice guidelines, systematic reviews, and randomized controlled trials. Key themes include diagnostic reasoning, imaging indications, tear classification, rehabilitation strategies, injection therapy, surgical decision making, and de implementation of low value procedures.

Findings: Clinical assessment remains the cornerstone of diagnosis. Early imaging is discouraged in typical atraumatic presentations. Progressive exercise therapy is the most consistently supported intervention. Corticosteroid injections provide short term relief but do not modify disease progression. Arthroscopic subacromial decompression offers no clinically meaningful benefit over placebo surgery or structured rehabilitation. Rotator cuff repair is appropriate for selected patients, particularly those with traumatic onset, pseudoparesis, or persistent functional impairment despite conservative treatment.

Conclusion: A clinically led, stepped care pathway emphasizing rehabilitation first management, selective imaging, and individualized surgical referral / intervention aligns with contemporary evidence and reduces low value interventions.

Keywords: Subacromial Pain Syndrome; Rotator Cuff–related Shoulder Pain; Rotator Cuff Tear; Clinical Examination, Diagnostic Imaging; Exercise Therapy; Corticosteroid Injection; Subacromial Decompression; Rotator Cuff Repair

Introduction

Shoulder pain is among the most common musculoskeletal complaints in adults, with subacromial pain syndrome (SAPS) and rotator cuff–related shoulder disorders accounting for a substantial proportion of presentations in primary care, sports medicine, and orthopaedic practice [1]. In a systematic review of global epidemiology, the median point prevalence of shoulder pain was 16% (range 0.67–55.2%) across countries, with a primary-care prevalence of 1 to 4.8%, making shoulder pain the third most common musculoskeletal presentation after low back and knee pain [2]. Historically, SAPS was conceptualized through a mechanical impingement model in which the acromion and coracoacromial arch were believed to compress the rotator cuff during elevation. However, contemporary evidence

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challenges this model, demonstrating that pain arises from a multifactorial interaction involving tendon pathology, bursal inflammation, altered neuromuscular control, occupational load, and psychosocial contributors [3,4].

The terminology used to describe these conditions has evolved. SAPS is now considered a clinical umbrella term for non-traumatic pain originating from the subacromial region, whereas rotator cuff–related shoulder pain describes a broader symptom-based construct that may occur with or without a demonstrable tendon tear. These diagnostic labels reflect overlapping clinical entities rather than discrete anatomical pain generators [4,5]. Because structural abnormalities on imaging are highly prevalent in asymptomatic individuals, particularly with increasing age [6,7], diagnosis and management must be guided primarily by clinical assessment rather than imaging findings alone. Sanders et al. recently reported that the prevalence of rotator cuff abnormalities in asymptomatic shoulders varies widely (0%-100%) across imaging modalities and populations. Differences in prevalence between asymptomatic and symptomatic shoulders ranged from −7% to 26%, highlighting substantial variability and uncertainty in the relationship between imaging findings and symptoms [8].

This review synthesizes contemporary evidence published between 2023 and 2026, integrating clinical practice guidelines, randomized trials, meta-analyses, and long term follow up studies to provide a clinically actionable, evidence-based pathway for assessment, imaging, rehabilitation, injection therapy, surgical referral, and rotator cuff repair.

Methods

This narrative review followed a structured, evidence informed approach consistent with SANRA guidelines [9]. Searches were conducted in PubMed/MEDLINE, the Cochrane Library, supplemented by Google Scholar for English language clinical practice guidelines, systematic reviews, meta-analyses, randomized controlled trials, and long term follow up studies published between January 2023 and August 2026. Earlier landmark studies were included when they provided essential conceptual context or long-term comparative evidence [10-12].

Search terms included: subacromial pain syndrome, rotator cuff–related shoulder pain, rotator cuff tear, clinical examination, diagnostic imaging, exercise therapy, corticosteroid injection, subacromial decompression, and rotator cuff repair. Reference lists were screened for additional studies. Studies were included if they addressed adult SAPS or rotator cuff disorders and provided clinically applicable evidence related to diagnostic accuracy, red flags, imaging indications, rehabilitation, injection therapy, decompression, or repair. Exclusion criteria included paediatric populations, postoperative rehabilitation studies, isolated instability, glenohumeral arthritis, adhesive capsulitis, and studies lacking clinically meaningful outcomes.

Findings were synthesized thematically, with greater weight assigned to contemporary multidisciplinary guidelines, high quality systematic reviews, adequately powered randomized trials, and long term follow up studies. As this was a narrative rather than a systematic review, no protocol was registered, study selection was not performed in duplicate, and no formal risk-of-bias instrument or quantitative pooling was applied; author clinical experience was incorporated as contextual interpretation rather than as primary evidence. As with any narrative review, the synthesis reflects the author's selection and weighting of the available evidence rather than a systematic, reproducible appraisal, and individual recommendations should still be adapted to comorbidity, access to rehabilitation, occupational demands, local expertise, and patient goals.

Artificial intelligence tools were used as complementary aids during manuscript preparation to improve language clarity and organisation. These tools were used solely to enhance readability; the author retains full responsibility for the scientific content, interpretation, and final version of the manuscript.

Results

Clinical Examination and Red Flags

A clinically led assessment remains the cornerstone of diagnosing SAPS and rotator cuff–related shoulder disorders. High quality guidelines emphasize that history and physical examination outperform early imaging in typical atraumatic presentations [4,5,13]. History should explore symptom onset, mechanism of injury, pain during elevation, night pain, occupational or sporting overhead load, prior injury, and psychosocial contributors such as fear avoidance or catastrophizing [3]. Traumatic onset, particularly in older adults, raises suspicion for a repairable full thickness tear [14].

Physical examination relies on clusters of tests rather than single manoeuvres. Lag signs have the highest specificity for full thickness tears [15]. Impingement tests demonstrate moderate sensitivity but poor specificity. Strength testing and active vs passive range of motion help differentiate pain limited movement from true weakness or pseudoparesis. Red flags requiring urgent imaging or referral, include acute trauma with pseudoparesis, suspected fracture or dislocation, infection, inflammatory arthropathy, progressive

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neurological deficit, referred pain, and systemic symptoms suggestive of malignancy.

In the absence of red flags, early imaging is discouraged [8,13]. Imaging: diagnostic value and indications. Ultrasound is reliable and cost effective for detecting rotator cuff tears, with diagnostic accuracy comparable to MRI when performed by experienced operators [16]. MRI provides comprehensive evaluation of tear size, retraction, muscle atrophy, fatty infiltration, and associated pathology, the key prognostic indicators for surgical repair [14,17]. Structural abnormalities are highly prevalent in asymptomatic individuals, reinforcing the need for clinical correlation [8]. Rotator cuff abnormalities on MRI become progressively more common with age, approaching near-universal prevalence beyond the fifth decade [6].

Imaging should be reserved for:

1. Suspected traumatic full thickness tear
2. Persistent symptoms after 6–12 weeks of rehabilitation
3. Diagnostic uncertainty
4. Preoperative planning
5. Early imaging does not improve outcomes and may increase patient fear, unnecessary referral, and overtreatment [10,12].

Rotator Cuff Tears: Imaging vs Surgical Indications

Imaging findings alone are insufficient to determine surgical need [8]. Imaging modalities provide high sensitivity and specificity for characterisation of full thickness rotator cuff tears, a key consideration for surgical repair [17]. Full-thickness tears occur in up to 30% of asymptomatic adults over 60 [8]. Distinguishing traumatic from degenerative tears is essential. Traumatic tears often benefit from early repair, especially when pseudoparesis or marked weakness is present [11]. Degenerative tears frequently respond to rehabilitation. Some patients never require surgery [3,4].

Surgical referral is appropriate when:

- Onset is traumatic with acute functional loss
- Pseudoparesis is present
- Weakness is marked and not explained by pain
- Structured rehabilitation has failed
- Functional demands are high
- Imaging suggests the tear is reparable

MRI features such as tear size, retraction, fatty infiltration, and chronicity strongly influence prognosis. Long term RCT evidence supports repair in selected patients [11].

Management: Conservative and Surgical Interventions

Non operative management is first line for SAPS and atraumatic rotator cuff–related pain [4,13]. Education, load modification, and progressive exercise therapy form the foundation of care. Psychosocial contributors should be addressed early. Exercise therapy consistently improves pain, strength, and disability. No single protocol is universally superior; individualized programs outperform standardized ones [1,18,19]. NSAIDs provide short term relief but should be used cautiously. Corticosteroid injections offer short term benefit but do not modify disease progression and should be used selectively, they are useful in providing pain relief during rehabilitation especially in cases of severe acute pain [20]. Manual therapy may provide short term benefit but does not outperform active rehabilitation [21]. Arthroscopic subacromial decompression offers no clinically meaningful benefit over placebo surgery or exercise therapy [10,12,22]. Rotator cuff repair is appropriate for selected patients, particularly those with traumatic tears, pseudoparesis, or persistent functional impairment [11].

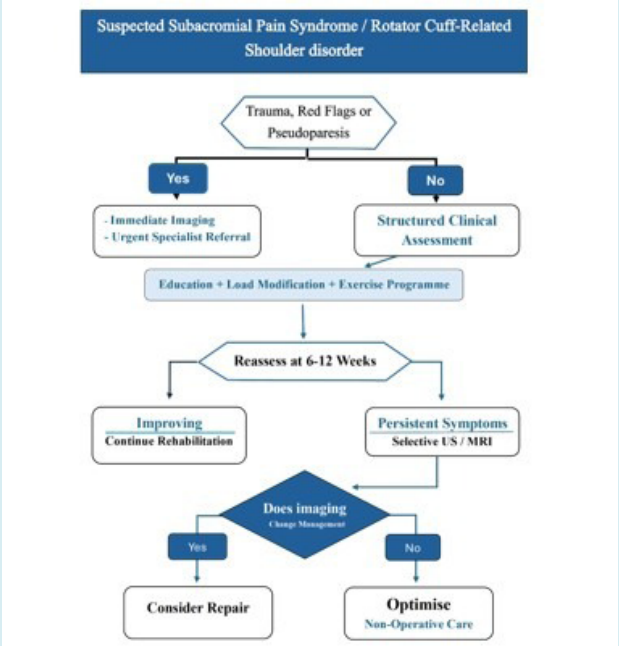


Figure 1: Clinical Decision-Making Algorithm for the Management of Subacromial Pain Syndrome

Figure 1: Clinical Decision-Making Algorithm for the Management of Subacromial Pain Syndrome.

Figure 1 presents the clinical decision algorithm developed during this study to guide the assessment and management of patients with suspected subacromial pain syndrome. The algorithm integrates early identification of red flags, a structured conservative treatment pathway, and

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selective use of imaging when symptoms persist. Its purpose is to standardise decision making and support consistent non operative management. In the author's experience, this streamlined approach improves clarity and reduces unnecessary imaging utilisation.

Discussion

Evidence supports a shift from lesion centred to function centred management. Imaging findings alone do not reliably identify the pain generator and in our opinion, it should not dictate treatment [10,12]. Clinical assessment should guide management, reducing unnecessary imaging and low value interventions. Typical atraumatic presentations respond well to conservative care, even when imaging reveals structural abnormalities [3,4]. Corticosteroid injections provide short term symptom control but do not alter disease progression [20]. The addition of local anaesthetic to subacromial corticosteroid injection provides brief analgesia that may transiently improve active range of motion and allow early participation in physiotherapy, particularly in pain inhibited shoulders. However, this effect is short lived and does not enhance medium- or long-term outcomes compared with corticosteroid alone. Exercise therapy remains the most consistently supported intervention [18]. Manual therapy offers short-term benefit without demonstrated long-term superiority overactive rehabilitation alone [21].

Placebo-controlled trials show no benefit of arthroscopic decompression over diagnostic arthroscopy or exercise therapy, challenging the mechanical impingement model and supporting de-implementation of this low-value procedure for typical SAPS [10,12,22]. Rotator cuff repair remains appropriate for selected patients, particularly those with traumatic tears or persistent functional deficits, and long-term randomised trials evidence suggests that outcomes may increasingly favour primary repair in appropriately selected small to medium-size tears [11].

Important uncertainties remain, including optimal exercise dosing and progression, reliable predictors of rehabilitation failure, the long-term risk–benefit balance of repeated corticosteroid injection, thresholds for interval imaging, and the optimal timing of repair across different tear phenotypes [3,4,18-20]. This review offers a clinically actionable synthesis rather than a restatement of individual trial results: it integrates the most recent long-term surgical evidence with current guideline recommendations into a single function-centred, stepped-care pathway [11,22]. Its distinguishing contribution is a shift in decision logic from "does imaging show a lesion? "to" does clinical assessment justify changing management?", translated into explicit referral triggers and practice points that a clinician can apply directly, while also explicitly naming arthroscopic decompression as a candidate for de-implementation based on placebo-controlled evidence.

Key Practice Points

- Avoid early imaging in typical atraumatic SAPS.
- Base diagnosis on clinical assessment, not imaging alone.
- Use education, load modification, and individualized exercise as first line treatment.
- Use corticosteroid injections only for short term symptom relief.
- Do not offer routine subacromial decompression.
- Provide early specialist assessment for traumatic tears or pseudoparesis.
- Individualize decisions regarding rotator cuff repair.

Conclusion

A clinically led, stepped care pathway remains the most effective approach for managing SAPS and rotator cuff–related shoulder disorders. Most atraumatic presentations respond well to education, load modification, and progressive exercise, with imaging and injections used only when they meaningfully influence care. Routine decompression offers no added value, while rotator cuff repair should be reserved for selected patients with traumatic onset, marked weakness, or persistent functional limitation despite rehabilitation. This evidence-based framework reduces low value interventions and ensures timely access to appropriate surgical care.

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Conflict of Interests

The author declares that there is no conflict of interest.

Informed Consent

Not applicable. This narrative review did not involve new patient data or identifiable patient information.

Ethical Approval

Not applicable. This review used only previously published, publicly available data; no new human or animal research was conducted.

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Contributorship: The author is the sole contributor to this manuscript, including conception, literature search, analysis, drafting, and approval of the final version.

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References

1. Zhong Z, Zang W, Tang Z, Pan Q, Yang Z, et al. (2024) Effect of scapular stabilization exercises on subacromial pain (impingement) syndrome: a systematic review and meta-analysis of randomized controlled trials. Front Neurol 15: 1357763 https://doi.org/10.3389/fneur.2024.1357763.

2. Lucas J, Doorn PV, Hegedus E, Lewis J, Windt DVD (2022) A systematic review of the global prevalence and incidence of shoulder pain. BMC Musculoskelet Disord 23(1): 1073. https://doi.org/10.1186/s12891-022-05973-8.

3. Powell JK, Lewis J, Schram B, Hing W (2024) Is exercise therapy the right treatment for rotator cuff-related shoulder pain? Uncertainties, theory, and practice. Musculoskeletal Care 22(2): e1879. https://doi.org/10.1002/msc.1879.

4. Desmeules F, Roy J, Lafrance S, Charron M, Dubé MO, et al. (2025) Rotator Cuff Tendinopathy Diagnosis, Nonsurgical Medical Care, and Rehabilitation: A Clinical Practice Guideline. Journal of Orthopaedic and Sports Physical Therapy 55(4): 235-274.https://doi.org/10.2519/jospt.2025.13182.

5. Heerspink FOL, Veen EJD, Dorrestijn O, Visser CPR, Leijs MJC, et al. (2026) Update of guideline for diagnosis and treatment of subacromial pain syndrome: a multidisciplinary review by the Dutch Orthopaedic Association Part 1: preventive measures, diagnostics, and non-surgical treatment of subacromial pain syndrome. Acta Orthopaedica 97: 91-98. https://doi.org/10.2340/17453674.2026.45365.

6. Ibounig T, Järvinen TLN, Raatikainen S, Härkänen T, Sillanpää N, et al. (2026) Incidental Rotator Cuff Abnormalities on Magnetic Resonance Imaging. JAMA Internal Medicine 186(4): 406-414. https://doi.org/10.1001/jamainternmed.2025.7903.

7. Sosa AEA, Castro M, Pichardo NNA, Alfaro MP, Navarro MJM (2026) Diagnosis and Treatment of Rotator Cuff Syndrome: A Narrative Review. Cureus18(3): e105550. https://doi.org/10.7759/cureus.105550.

8. Sanders S, Ibounig T, Haas R, Jones M, Ramo L, et al. (2025) Rotator Cuff Imaging Abnormalities in Asymptomatic Shoulders: A Systematic Review. Journal of Orthopaedic & Sports Physical Therapy 55(12): 1-16. https://doi.org/10.2519/jospt.2025.13611.

9. Baethge C, Goldbeck-Wood S, Mertens S (2019) SANRA—a scale for the quality assessment of narrative review articles. Res Integr Peer Rev 4: 5. https://doi.org/10.1186/s41073-019-0064-8.

10. Beard DJ, Rees JL, Cook JA, Rombach I, Cooper C, et al. (2018) Arthroscopic subacromial decompression for subacromial shoulder pain (CSAW): a multicentre, pragmatic, parallel group, placebo-controlled, three-group, randomised surgical trial. The Lancet 391(10118): 329-338. https://doi.org/10.1016/s0140-6736(17)32457-1.

11. Moosmayer S, Lund G, Seljom US, Haldorsen B, Svege IC, et al. (2024) Fifteen-Year Results of a Comparative Analysis of Tendon Repair Versus Physiotherapy for Small-to-Medium-Sized Rotator Cuff Tears. JBJS 106(19): 1785-1796. https://doi.org/10.2106/jbjs.24.00065.

12. Paavola M, Malmivaara A, Taimela S, Kanto K, Inkinen J, et al. (2018) Subacromial decompression versus diagnostic arthroscopy for shoulder impingement: randomised, placebo surgery controlled clinical trial. BMJ 362: k2860. https://doi.org/10.1136/bmj.k2860.

13. American Academy of Orthopaedic Surgeons (2019) Management of rotator cuff injuries: evidence-based clinical practice guideline.

14. Radhakrishnan R, Goh JOS, Tan AHC (2024) Partial-thickness rotator cuff tears: a review of current literature on evaluation and management. Clin Shoulder Elb 27(1): 79-87. https://doi.org/10.5397/cise.2022.01417.

15. Zhao Q, Palani P, Kassab NS, Terzic M, Olejnik M, et al. (2024) Evidence-based approach to the shoulder examination for subacromial bursitis and rotator cuff tears: a systematic review and meta-analysis. BMC Musculoskelet Disord 25(1): 1028. https://doi.org/10.1186/s12891-024-08144-z.

16. Hekmatnia F, Soufi GJ, Zarei AP, Shafieioun S, Hekmatnia A, et al. (2026) Diagnostic accuracy of ultrasound compared to magnetic resonance imaging for rotator cuff tears: a systematic review. Int J Burns Trauma 16(2): 33-44. https://doi.org/10.62347/VJLM3737.

17. Roy JS, Braën C, Leblond J, Desmeules F, Dionne CE, et al. (2015) Diagnostic accuracy of ultrasonography, MRI and MR arthrography in the characterisation of rotator cuff disorders: a systematic review and meta-analysis. British Journal of Sports Medicine 49(20): 1316-1328. https://doi.org/10.1136/bjsports-2014-094148.

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18. Lafrance S, Charron M, Dubé MO, Desmeules F, Roy JS, et al. (2024) The Efficacy of Exercise Therapy for Rotator Cuff–Related Shoulder Pain According to the FITT Principle: A Systematic Review with Meta-analyses. Journal of Orthopaedic and Sports Physical Therapy 54(8): 499-512. https://doi.org/10.2519/jospt.2024.12453.

19. Wu D, Wen Z, Ke H, Zhang J, Zhong S, et al. (2025) Specific modes of exercise to improve rotator cuff-related shoulder pain: systematic review and meta-analysis. Front Bioeng Biotechnol 13: 1560597. https://doi.org/10.3389/fbioe.2025.1560597.

20. Lazzarini SG, Buraschi R, Pollet J, Bettariga F, Pancera S, et al. (2025) Effectiveness of Additional or Standalone Corticosteroid Injections Compared to Physical Therapist Interventions in Rotator Cuff Tendinopathy: A Systematic Review and Meta-Analysis of Randomized Controlled Trials. Physical Therapy 105(3): pzaf006. https://doi.org/10.1093/ptj/pzaf006.

21. Liu S, Chen L, Shi Q, Fang Y, Da W, et al. (2024) Efficacy of manual therapy on shoulder pain and function in patients with rotator cuff injury: A systematic review and meta analysis. Biomedical Reports 20(6): 89. https://doi.org/10.3892/br.2024.1778.

22. Kanto K, Bäck M, Ibounig T, Björkenheim R, Malmivaara A, et al. (2025) Arthroscopic subacromial decompression versus placebo surgery for subacromial pain syndrome: 10-year follow-up of the FIMPACT randomised, placebo surgery-controlled trial. BMJ 391: e086201. https://doi.org/10.1136/bmj-2025-086201.

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