Rotator Cuff Tear: Comparison of Postoperative Outcomes between the Mini-Open Approach, Arthroscopic Approach, and Conservative Measures

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Background

Injuries to the rotator cuff affect 30% of adults over age 60, making it the most common tendon related injury. Micro-trauma to the shoulder over time leads to degenerative tears, typically affecting the older population. Macro-trauma typically causes large acute tears in younger patients[1].

Purpose:

The goal of this research is to be able to educate medical providers with the current research to provide patient's guidance on how to approach their rotator cuff tear. Medical decision making can be overwhelming for patients, so providers need to be able to walk them through each of their options while weighing the benefits and risks of each. Physician assistants need to understand the differences between conservative measures and surgical treatment to be able to confidently provide the patient with the information they need to choose the option that best works for them.

PICOT

In people 18 years old and up with a diagnosed rotator cuff tear, what is the effect of choosing arthroscopic repair surgery vs open repair surgery vs conservative management when comparing postoperative complications, function, and pain within a 5-year time frame?

Design & Methods

Keywords: Rotator cuff, mini-open repair, arthroscopic repair, conservative treatment, pain, function

Inclusion: Clinically diagnosed rotator cuff tear, at least 18 years of age, studies published no earlier than 2018, full text available, and studies written in English.

Exclusion: No follow up appointments by patient, patients less than 18 years of age, undiagnosed rotator cuff tears, article not in full text, articles not written in English, and conditions interfering with recovery including degenerative arthritis, rheumatoid arthritis, adhesive capsulitis, shoulder fracture, past shoulder surgery.

Summary of Evidence Search:

Table 1: Summary of Evidence Search

Database	Yielded	Reviewed	Included in Analysis
PubMed	2,604	12	1
Google Scholar	14,302	34	3
Valpo Summons	694	6	1
Total:	17,600	52	5

Synthesis of Evidence:

Table 2: Types of Articles

Type	Total
Systematic Reviews/ Meta Analysis	3
Cross Sectional Case Control	1
Meta Analysis	1

Results:

CMS Scoring:

The Constant-Murley score evaluates pain, activities of daily living, range of motion, and strength. Pain and activities of daily living are subjective scores, while range of motion and strength are objective scores[2].

Surgical vs Conservative:

One year follow up post CMS scores were statistically significant with better results in the surgical group compared to the conservative group. No statistical significance at at the two year follow up. VAS pain scores were statistically significant showing better results in the surgical group at the one-year appointment. There was no two year follow up VAS scores[3].

No results in this study were clinically significant, however some were noted to have importance. At the one year follow up VAS scores showed higher pain levels in the nonsurgical group, with a 9% improvement in the surgical group. Mean function scores were 6% improved in the surgical group at one year. Participant rated global success scores were 7% improved in the surgical group. Health related quality of life scores were 1% improved in the nonsurgical group[4].

Arthroscopic vs Mini-Open:

There was a statistically significant result showing improved velocity of movement in the upper trapezius muscles in patients who received the arthroscopic repair. The data overall did not show any clinical significance. The CMS, DASH, and VAS scores were not found to be clinically significant[5].

This study showed no overall statistical significance in terms of function and pain. Specific individual values were found to be significant. At the one year follow up range of motion scores were improved in the arthroscopic repair group[6].

VAS pain scores were improved at the 6 month follow up in the arthroscopic repair group. DASH scores at the 3 month follow up were significant for increased functional impairment in the mini-open repair group. CMS scores at the 1 month follow up showed better function in the arthroscopic repair group. All other postoperative periods and scores were not found to be clinically significant. There was a significantly higher retear rate in the arthroscopic repair group[7].

Abbreviation Key:

- CMS: Constant Murley-Score
- VAS: Visual Analog Scale
- DASH: Disability of the arm, shoulder, and hand

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Discussion:

Overall, the scores related to pain were not found to be clinically significant when comparing conservative against surgical management and when comparing the arthroscopic approach to the mini-open approach. However, results were suggestive of lower pain in the surgical group compared to nonsurgical group[3,4].

Function scores were found to be clinically significant showing improvement in the surgical group at the one year follow up[3].Other sources were not clinically significant, however supported these statistics[4]. When comparing the two surgical groups, individual scores supported arthroscopic repair in terms of function[5,6,7].

Patient satisfaction was rated higher in the surgical group compared to the conservative group, however not clinically significant[4]. Increased postoperative complications were reported in the arthroscopic repair group, with a higher retear rate then the mini-open group[7].

Limitations/Further study:

Major limitations included a lack of information on the extent of the rotator cuff injuries included in each study. Other limitations included difficulty determining rehabilitation compliance, inconsistent follow up time comparisons, and differences in surgical repair types.

Future research is needed to confirm these findings. Future studies comparing arthroscopic repair against the mini-open repair should include all aspects of pain, function, complications, and patient satisfaction at one month, six-month, one year, and five year follow ups. There was inconsistent collection of data within the studies. Larger population sizes would be beneficial to further identify trends in the data.

Conclusion:

There is no definitive conclusion on which treatment option is better for rotator cuff repairs. All three treatment modalities provide an improvement in symptoms. Further research is needed to support the significant findings identified in the results. Further studies comparing conservative against surgical management should be more specific on the conservative measures used, the frequency, and duration and distinguish between which surgical approach was used.

References:

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