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Rehabilitation Following Arthroscopic Rotator Cuff Repair's Clinical Impact

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Abstract

Introduction: For patients undergoing rotator cuff repair, a well-planned rehabilitation routine is equally important to complete tendon healing and optimal shoulder functional outcome as the size/location of the rip, surgical technique, and fixation modalities (RCR). The order in which rehabilitation should proceed is still up for discussion.

Purpose: This meta-objective analysis's is to compare the outcomes of a post-operative aggressive treatment and a conventional rehabilitation protocol. Methods: We looked through the databases of PubMed, Ovid MEDLINE, CINAHL, the Cochrane Library, and CEPS. Six publications that matched our selection criteria were ultimately included.

Results: The intensive postoperative rehabilitation approach improves ROM and shoulder function more than the conventional protocol, but it also carries a higher risk of the rotator cuff tendon failing to repair or rupturing again.

Conclusion: Despite the fact that patients with RCR benefit from the rigorous postoperative rehabilitation routine, additional research on the variables impacting the risk of tendon un-healing/re-tearing is needed. These elements must be taken into account while designing a post-operative programme for RCR patients.

Keywords: Rotator cuff repair • Rehabilitation • Aggressive • Range of motion • Function

Introduction

With a prevalence of 13% in adults 50 years and older and a prevalence of 50% at the age of 80, rotator cuff tears are a prevalent cause of shoulder pain and dysfunction. Patients with minor incomplete rips may receive non-operative care. Surgical repair of the rotator cuff is advised when nonsurgical treatments have failed. The surgical method has a drawback in that different tendon to bone healing capacities exist. In young participants with non-retracted tears, the rate of subsequent tears following repair ranged from 16 percent to 94 percent. The importance and difficulty of providing the best possible rehabilitation after rotator cuff surgery have increased due to the quick development of surgical procedures such open repair, mini-open repair, and arthroscopic repair. The size and location of the rupture, the surgical approach and fixation techniques, as well as a well-planned rehabilitation routine, are crucial elements for optimal tendon healing and a positive functional outcome for the shoulder [1,2].

The length of immobilisation, passive versus active motion, and vigorous post-operative treatment are still up for debate when it comes to postoperative rehabilitation programmes. Early use of passive or active range-of-motion exercises, higher dose of a rehabilitation protocol, expedited or intensive rehabilitation protocols, or integrated pre-operative rehabilitation are all examples of aggressive rehabilitation protocols. To avoid postoperative stiffness, it is advised to move passively as soon as possible following surgery.

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Early continuous passive motion following repair led to a faster recovery in range of motion (ROM) and pain alleviation, as shown by Raab et al. in 1996. However, according to other writers, tendon healing may be aided by immobilisation for 4 to 6 weeks following rotator cuff repair. Early motion following repair also hampered rotator cuff healing, leading to greater rates of unhealed injuries and even rotator cuff retearing. However, a recent study demonstrated no adverse effects from early vigorous motion in the fourth postoperative week. The likelihood of an early or aggressive post-operative treatment strategy has recently enhanced because to advancements in surgical procedures [2-4].

Methods

Independently, two physical therapists carried out the initial review. Searches were conducted in a number of databases, including PubMed, Ovid MEDLINE, CINAHL, Cochrane Library, and Chinese electronic periodical service (CEPS). Additionally, a manual search of the publications' references was done. Initially, the phrase "rotator cuff repair" was used to search PubMed. The words "aggressive," "early," "progressive," or "accelerated," all of which relate to the meaning of the word "aggressive," and "physical therapy," "rehabilitation," "exercise," or "motion," all of which relate to the meaning of the word "intervention," were used with that statement. Then, the same procedure was followed for the other databases. All searches were restricted to human research [3,5].

Studies that met the following requirements and were published between 2000 and December 2012 were included: (1) They compared the outcomes of an aggressive post-operative rehabilitation protocol with those of a conventional protocol in randomised controlled trials. (2) The study subjects had rotator cuff repairs. (3) The studies used at least one of the following outcome measures: pain, shoulder range of motion, shoulder function, or status of anatomic structure of the rotator cuff tendon. (4) The studies were published in English with the full text. Studies were disregarded if at least one of the following conditions existed in the participants: cervical radiculopathy, autoimmune illness, or metastatic disease; or if the studies lacked the mean, standard deviations, or 95 percent confidence interval for any of these conditions [6-8].

Methodological quality evaluation

Two physical therapists each scored each article included in the study using the Physiotherapy Evidence Database (PEDro) scale. The PEDro is frequently used to evaluate the effectiveness of intervention-type randomised controlled trials with sufficient reliability and validity. It consists of 11 questions, each of which receives a yes or no response and awards one point. The maximum score is 10 points because the first question, which is meant to assess the internal validity, is not factored towards the final score. Only when the information is specifically presented in the studies do evaluators respond in the affirmative. The ranges listed below were utilised to categorise the methodological quality: Scores between 9 and 10 indicated outstanding study, 6 to 8 indicated good study, 4 to 5 indicated fair study, and less than 4 indicated bad study [9].

Discussion

Six RCTs that examined the outcomes of aggressive rehabilitation programmes with conventional rehabilitation protocols in patients following rotator cuff restoration were included in this meta-analysis. The outcomes of overall ROM at 6 months and 1 year after repair revealed that the aggressive rehabilitation approach was first superior to the conventional treatment, and that it also resulted in a larger recovery in shoulder function. Previous research has shown that postoperative shoulder stiffness, the most common consequence following arthroscopic rotator cuff repair, is associated with lower quality of life, higher discomfort, and worse shoulder function. The development of soft tissue rigidity, tightness, and adhesion is also associated with adhesive capsulitis, pseudotenodesis of the deltoid, and complex regional pain syndrome. After surgery, early motion can help prevent stiffness caused by immobilisation.

Although intensive rehabilitation following surgery has many benefits, it should be emphasised that this protocol may carry higher risks of rotator cuff un-healing and retear rate than the conventional approach. The disparities between the two methods in our review were almost considerable. Immobilization decreases tendon load-to-failure/stiffness and promotes better tendon to bone repair, according to a number of animal model studies. With smaller biomechanical stresses, overactivity can cause inflammation and boost the formation of scar tissue. Therefore, a number of studies suggested that delaying early motion would be advantageous in an effort to safeguard repaired tendons.

There are a few restrictions with our analysis. First, only four studies at most could be pooled to examine each outcome because there were so few articles with varying outcome measures and time points of follow-up. Second, the software was unable to calculate the results of some research because the data did not fit normal distributions. Third, all of the articles were only of fair quality in terms of methodology. This might compromise the accuracy of our analysis [8-10].

Conclusion

According to this meta-analysis, the rigorous postoperative rehabilitation regimen results in better improvements in range of motion (ROM) and shoulder function than the conventional protocol, but it also carries a higher risk of the rotator cuff tendon failing to repair or rupturing again. The various aspects that affect the rehabilitation protocol must be carefully taken into account when designing any post-operative programme for patients who have had rotator cuff repairs.

Acknowledgement

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Conflict of Interest

None.

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