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Current Approaches in the Treatment of Rotator Cuff Tendinopathies

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In recent years, the priority of conservative methods in the treatment of rotator cuff tendinopathy has increased. In the first stage, the aim is to control pain and reduce inflammation. For this purpose, nonsteroidal anti-inflammatory drugs and/or corticosteroid injections can be used. In addition, physical therapy and rehabilitation programmes may also be effective in reducing pain, increasing muscle strength and improving range of motion.

However, surgical intervention should be considered in cases where symptoms persist or progress despite conservative treatment. Surgical treatment of rotator cuff tendinopathy may vary depending on the type of lesion, age of the patient, activity level and other factors. Surgical options include subacromial decompression, techniques to promote tumour growth and regeneration, laser therapy and collagen matrix implantation.

In conclusion, current approaches to the treatment of rotator cuff tendinopathy focus on alleviating patients' symptoms, restoring functionality and reducing the need for surgical intervention. Conservative treatment options can increase the chances of success when used in combination with pain control and physical therapy. Surgical options should be considered in more advanced cases, but should be applied depending on patient characteristics and severity of the lesion.

Keywords: Rotator cuff tear, surgical treatment, conservative treatment

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Introduction

Shoulder pathologies are increasing rapidly. Especially in United States, there are 4.5 million medical visits for shoulder diseases each year, and approximately 70% of these visits are due to rotator cuff tear. While RC tear can sometimes be asymptomatic, some patients complain about joint pain, muscle weakness significant dysfunction , and great expense in activities of daily living (1). Every year, approximately 65% of RC repairs are performed in patients under 65 years of age(2). RC tears are classified as partial or full thickness tears according to the severity of tendon fiber disruption and communication between the subacromial and glenohumeral spaces (3). Treatment method of RC tears is variable, optimal treatment for partial and full thickness RC tears remains unclear because both conservative treatment and surgical treatment have strengths and weaknesses (4). Despite the high number of procedures performed around the world, RC surgery's structural failure rate is very high, and that ratio is ranging from 16% to 94% (5,6). Moreover, it is unclear whether tendon therapy will prevent progression of muscle atrophy and degeneration (5).Surgical treatment of RC tears is a well documanted treatment option for young people who have acute sympthomatic partial and full thickness tears and severe dysfunction (7). Along with that, conservative treatment is generally preffered in patients with degenerative condition of the tendons or tendon tears less than 50% of the overall tendon thickness (8-11).

However, patients may become prone to permanent and inversible tissue degeneration during conservative treatment. The duration of non-surgical treatments is one of the most challenging factors of conservative approach. That kind of treatment should be adapted to the patient's characteristics in terms of clinical and structural outcomes, lifestyle, level of functional impairment, and compliance with physical sessions (12). With this, the success of the surgical treatment depends on the size of the tear, quality of the tendon, stage of regression, pattern of the tear, and the surgeon's experience (13). That shows, some structural and contextual factors can contribute either conservative or surgical treatments success, this explains the significant heterogeneity and complexity of comparison (14-16).

Only a few randomized controlled trial have been done to compare the effects of conservative and surgical management. Some of these randomized controlled trial provided short-term (≤1 year) folow-up results. Along with that, others reported the results two years later after intervation, and only one study presented results at 5 and 10 years follow-up.

In previous meta-analyses, conservative and surgical RC treatments were compared based on short-term follow-up results (20 22). The results indicated that there is limited evidence for the superiority of surgical treatment over conservative treatment and that medium-term follow-up (1 <years ≤3) and long-term follow-up (years >3) are required. To date, meta-analyses for long-term follow-up are not available to our knowledge. RC tears are one of the most common disabling

musculoskeletal disorders with a high prevalence and appropriate treatment is still controversial (23,24).

According to the American Academy of Orthopedic Surgeons (AAOS) guidelines, surgical RC repair is a viable option for patients with chronic symptomatic full-thickness RC tears. However, the quality of evidence is not convincing. On the other hand, there are deficiencies in the evidence supporting conservative treatment, and therefore, no definite conclusion can be reached with the AAOS recommendations (25). In the recent literature, there are four studies comparing the surgical and conservative treatment of RC tears. There is a meta-analysis and these analyzes included studies from June 2015, October 2016, March 2018 to August 2020 (20-22,26).

Two of these compared the surgical and conservative management of full-thickness RC tears (20,21), and the third added the assessment of subacromial decompression in the management of chronic/degenerative RC tears. However, all previous meta-analyses have limited the comparison between surgery and conservative management to short-term follow-up (≤ 1 year). In addition, they did not take into account the rate of retear in the surgical group (22). In the last meta-analysis by Longo et al., they compared conservative and surgical management in terms of Constant-Murley score (CMS) and Visual pain score at 12 and 24 months follow-up in patients with RC tear. While there were no significant differences in CMS between the surgical treatment group and the conservative group, it was reported that there was a significant improvement in the VAS score in patients who underwent surgical repair in one-year follow-up (26). In another study, Kukkonen et al. In their randomized controlled study comparing surgical and conservative treatment methods of small non-traumatic supraspinatus tears in individuals over 55 years of age, they reported that surgical treatment was not superior to conservative treatment in their 5-year follow-up results (27).

However, a continuous development and transformation is observed in conservative and surgical methods. Metcalfe et al. Comparing biceps tenotomy vs. arthroscopic debridement of the subacromial space (debridement group only) with the same procedure but InSpace balloon placement (debridement group with device) in 24 UK hospitals, including patients with irreparable rotator cuff tears that do not resolve with conservative treatment and requiring surgical treatment. In a double-blind, group sequential, adaptive randomized controlled study, arthroscopic debridement alone was found to be superior to arthroscopic debridement with the InSpace device, based on the Oxford Shoulder Score 12 months after surgery. They reported that they do not recommend the use of this device in this population (28). On the other hand, Tiryaki et al. reported that the deltoid-focused structured rehabilitation program combined with electromyographic biofeedback could be used to increase shoulder flexion strength and patient satisfaction in the conservative treatment of massive rotator cuff tear (29).

In recent years, regenerative therapies have received increasing attention as an alternative approach to the treatment of these tears. These initiatives aim to stimulate the natural healing of the tendon by activating the body's own healing potential. Partial thickness rotator cuff injuries (PTRCI) occur after a

combination of degenerative, overload and microtrauma processes. An external source of collagen and platelet-rich plasma (PRP) can potentially counteract the deterioration of degenerative tendinopathy. Godev et al. In their study comparing the efficacy of PRP with collagen, PRP alone, and collagen alone in the treatment of PTRCI, they reported that the combined treatment of collagen and PRP was not more effective than monotherapies in reducing pain and anxiety/depression symptoms or improving mobility, self-care, and usual activities (30). In conclusion, rotator cuff tendinopathy and cuff tears are difficult to treat, mainly because of the poor regenerative potential of tendons associated with aging. Many other factors that contribute to treatment failure have been identified, such as overload during the rehabilitation process, medications (eg, quinolones), alcohol intake, smoking, and corticosteroids (31). It is necessary to personalize the treatment decision of the patient and to examine the multidisciplinary methods.

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