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Narrative Review

Should the Surgical Intervention of The Hands and Wrists of Patients with Rheumatoid Arthritis be Early?

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Abstract

Aim: Few studies have been published about early surgical treatment of Rheumatoid Arthritis (RA). This article has aimed to describe the main procedures that may be performed in the hands of subjects at early stages of this disease.
Methods: This research was a narrative review seeking comparative works in the Medline, LILACs and EMBASE databases.
Results: The publications showed good results associated with wrist synovectomy. There was a reduction in pain, greater patient satisfaction, and stabilization of the Larsen score. Synovectomy was indicated in these studies as an alternative procedure after three to four months of unsatisfactory clinical therapy. Another possibility of approaching these patients is the repair or transfer of ruptured tendons. Most studies have described this procedure in patients already with deformities secondary to RA and not in the initial phase of the disease. In this group of patients, the authors observed that the highest number of ruptures was associated with worse surgical outcomes. In most studies about wrists, radiolunate and RA were performed at more advanced stages, such as Larsen 3, and, even performed late, a clinical and radiological improvement was observed.
Conclusion: In this review, no studies with a high level of scientific evidence, testing early surgical interventions on the hands and wrists of patients with RA were found. Synovectomy, soft tissue repair, and arthrodesis are suggested as procedures that can be performed earlier than usual.

Keywords: Arthritis, Rheumatoid, Synovectomy, Arthrodesis, Tendon Transfer, Early Diagnosis, Adult

Introduction

Rheumatoid Arthritis (RA) is an autoimmune systemic connective tissue disease which causes predominant changes in particular, periarticular and tendon structures. This condition exists in 1% of the world's population, affects hands and wrists involved in 70% of the cases, and causes significant impairment of their quality of life.[1] Clinical treatment with conventional, targeted and biological disease-modifying antirheumatic drugs is the main treatment of this disease, with good results for symptom remission and prevention of evolution of deformities.[1] However, there is evidence that up to 41% of patients may experience new exacerbations despite the use of these drugs.[2]

The definition of early rheumatoid arthritis is controversial and is based on studies evaluating associations between the duration of complaints and inflammatory markers or ultrasound changes.[3] Very early rheumatoid arthritis is diagnosed when the individual has less than three months of illness, a period considered as optimal for the beginning of drug treatment.[4,5] Early rheumatoid arthritis comprises a disease duration of six months.[5] Bone erosions are the main lesions of the first stages of the disease and precede the reduction of joint space, being one of the main outcomes progression evaluated in studies with RA.[6] Even with optimal clinical treatments, studies show the progression of joint injuries from 15% to 38% of subjects who started non-operative treatment at an early stage.[7–9] From the emergence of new disease-modifying drugs and implementing management strategies with measures of disease activity as a therapeutic goal, the medical rather than surgical focus became more clear. The number of publications on studies of surgical operations on hands and wrists has declined, reflecting the timing of RA therapy. Cases with confirmed deformities of the disease continue to be referred for hand and wrist surgical procedures late. To date, medical literature lacks studies that discuss proper timing for surgery in RA.

Aims

This article aims to determine whether hand surgery in patients with early RA or with disease recurrence despite DMARDs is effective.

Materials and method

A narrative review was performed on the PubMed (MEDLINE) and LILACS using the terms “Arthritis, Rheumatoid”, “Rheumatoid Nodule”, “Surgical Procedures, Operative”, “Diagnostic Imaging”, “Arthrodesis”, “Synovectomy”. Only articles published between 2007 and 2019 were recruited. Studies that tested surgical procedures in patients with advanced disease such as the presence of

ulnar deviation and subluxation of the metacarpophalangeal joints, inability to perform tasks of daily living and those with a need of arthroplasty were excluded from this study.

Results

The surgical procedures described in this article are synovectomy, soft tissue repair, and arthrodesis.

Synovectomy

The synovectomy is performed openly or arthroscopically and includes the removal of the inflamed tendon and surrounding synovial tissue between the tendon and arthritis. It is mainly performed on the wrist, but can also be performed on metacarpophalangeal and interphalangeal joints.[10] There is evidence that synovectomy may slow bone progression when performed in the early stages, which are defined as Larsen stage 1 and 2 by some studies.[11,12] Larsen stage 1 is established when there are no radiographic changes despite soft tissue involvement; Stage 2 is characterized by periarticular erosions, including evidence of osteopenia and soft tissue enlargement on radiography.[13] Lack of clinical response is one indication for this procedure, and the time of unsuccessful drug treatment recommended to perform this procedure varies from 3 to 6 months between studies.[14,15] The main clinical outcomes described in the synovectomy were visual analog pain scale, patient satisfaction, and mean of Larsen score. Most of the studies were retrospective with a small number of studied patients. Overall, results were positive about pain reduction, patient satisfaction, and Larsen scores stabilization. They observed that a larger number of ruptured tendons and the advanced age of patients may negatively impact the surgical outcome of synovectomy.[16,17]

Soft tissue surgery

Tendon procedures involve techniques such as transfer and repair after injury, either by terminal termination suture or use of tendon grafts such as of the muscle Palmaris longus. Only two studies were selected in this field.[16,17] Clinical treatment before the procedure was not mentioned, and patients had a mean disease time of 12 years. A retrospective cohort study through simple linear regression on 41 patients showed a weak but significant positive correlation between older age and Delay of Metacarpophalangeal joint Extension (DME).[17] The number of ruptured tendons and the flexion contracture of the involved metacarpophalangeal affect the surgical outcome, even with tendon repair.[16] Thus, it is reasonable to consider an earlier indication for surgical tendon correction and to take into account the patient's age before performing this tendon procedure.

Arthrodesis

Two procedures are cited in most studies: radio-lunar arthrodesis and radio scaphoid. The authors obtained satisfactory results using techniques, such as increased Carpal Height Ratio (CHR) and Ulna Translation (UT), got from radiography to plan the procedure. .[16,17] Patients in these studies had more advanced disease, at least Larsen III (presence of interarticular narrowing on the radiograph of the affected joint) and yet had improved joint pain. There were no studies of arthrodesis in the initial phases of the disease. Future studies in patients with early disease may use the assessment of CHR and UT indices to help predict surgical outcomes.

Discussion

It can be stated that there is a lack of prospective studies. The short follow-up interval in the original studies, the small number of patients, an unclear definition of the time since diagnosis, the clinical treatment received prior to the procedure, and different clinical outcomes made it difficult to compare and interpret the results. However, patients' satisfaction after the procedure and reduced joint pain are positive described outcomes of early intervention that have been revealed in previous studies.[18–20] In a study conducted on 113 patients diagnosed with rheumatoid arthritis who had undergone various upper limb surgeries- including synovectomy, ulnar nerve neurolysis, radial-semilunar arthrodesis, and tendon transfers an improvement was shown in the modified Stanford Satisfaction Assessment Questionnaire (mHAQ) applied 10 years after surgery.[18] There were 73 hand surgeries, and approximately 63% of the patients described pain improvement. Forty percent of the patients reported strength enhancement.[19]

Challenges with the interface between hand surgery and rheumatology

There is a divergence of opinion between rheumatologists and surgeons on the effectiveness of hand surgery in rheumatoid arthritis. We also note this difference before the procedure, the timing of its performance, and often to the indications of the operation. Such disagreement varies with procedure, outcome, and professionals. In a cross-sectional study, 34% of rheumatologists agreed that metacarpophalangeal joint arthroplasty improves function in the United States. In contrast, 82% of hand surgeons in the same country believe that the procedure is effective for this purpose.[21] The divergence affects the perception of one specialty about the knowledge of the other due to the lack of qualitative studies that show the benefit of the surgeries for early stages in the hands and wrists of patients with RA.

About 70% of rheumatologists consider hand surgeons to be unaware of the treatment options available for RA, while the same proportion of surgeons consider rheumatologists to lack knowledge about surgical alternatives.[22] Some authors report the complaint from their fellow local experts that rheumatologists often refer their patients at more advanced stages of the disease. One study showed that surgery rates

vary with the availability of specialties such as rheumatology.[23] Individuals without access to disease-modifying drugs progress faster to deformities and are associated with higher rates of surgery.[23] A cross-sectional evaluation, after interviewing 35 hand surgeons and 59 rheumatologists, also showed disagreement between rheumatologists and surgeons about the effectiveness of surgery to correct deformities and the level of evidence regarding metacarpophalangeal joint arthroplasty.[24] This study also pointed out to the poor contact that rheumatologists have with hand procedures during medical residency which can as a result decrease the number of early referrals.

Prospective studies, systematic reviews, and consensus among several specialties involved in rheumatoid hand care should be performed to better define the surgical approach. The few studies on surgical indications were both relatively old and based on the authors' own experiences. When deficiencies in the literature are added to the factors discussed in the present study related to the interface between specialties, the investigation of early intervention in patients with RA is compromised.

Conclusion

According to this review, there were no controlled studies that ideally evaluated the efficacy of the early surgical approach of patients with rheumatoid arthritis. Synovectomy, soft tissue repair, and partial arthrodesis were promising procedures in patients with a diagnosis of rheumatoid arthritis who had not responded to drug therapy for 3 to 6 months.

Conflict of Interest Disclosures

The authors declare they have no conflicts of interest.

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