PROGRAM OF THERAPEUTIC EXERCISES IN PATIENTS OPERATED SURGICALLY BY ARTHROSCOPIC ACROMIOPLASTY: A STUDY PROTOCOL

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ABSTRACT

Objectives: To know the effectiveness of a domiciliary programm of therapeutic exercises, performed previously to the beginning of the treatment, in patients surgically treated by arthroscopic acromioplasty.

Methods: We will conduct a randomized controlled trial in a sample of 20 patients, randomly distributed into two groups: experimental group n = 10 patients and control group n = 10 patients. Both groups will receive a physiotherapy treatment protocol at the Hospital de Utrera (Seville, Spain), before the surgical intervention. The experimental group will also receive a program of therapeutic exercises, which will be performed by them at home, before the physiotherapy treatment. We will evaluate patients twice, in the first and last session of Physiotherapy. The variables that will be evaluated include the painful perception (visual analogue scale -EVA), joint mobility (goniometry) and the degree of functionality through (Constant scale).

Results & Discussion: In this research project, we intend to analyze, if there is an added benefit, when performing the Home Therapeutic Exercise Program prior to the beginning of the Physiotherapy treatment protocol. In this case, we think that these factors could condition a decrease in the physiotherapy sessions necessary for the recovery of patients.

Key Words: Shoulder impingement syndrome, impingement, rotator cuff, subacromial impingement syndrome, physical therapy, exercise movement techniques, acromioplasty, surgery.

HIGHLIGHTS

• Analyze, if there is an added benefit, when performing the Home Therapeutic Exercise Program prior to the beginning of the Physiotherapy treatment protocol.
• To find out a decrease in the physiotherapy sessions necessary for the recovery of patients.

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Background

Shoulder pain is one of the most frequent osteomuscular pathologies in primary care (1), being the third reason for consultation, after lumbar and cervical pain (2). The pathologies of the shoulder are an important cause of disability in the general population, affecting the activities of daily life and sleep. One of the most common disorders in the joint complex of the shoulder is Subacromial Compression Syndrome (3) (4). We are therefore facing a very frequent problem in our primary care and work assistance environment, which has a significant economic impact, both due to the incapacities of daily life and the generation of sick leave (5) (3) (6) (7) (8).

In 1972, Neer (16) introduced for the first time the concept of impingement (impingement, impingement, rubbing) of the rotator cuff, indicating that it results from the mechanical compromise of the rotator cuff tendon below the anterior inferior part of the acromion, by one or more than the components of the acromial arch: acromion, acromioclavicular ligament, acromioclavicular joint and the coracoid process. There may be involvement of the long biceps tendon and the subacromial serous pouch. The main clinical manifestations are pain, restriction of active joint mobility, decreased muscle strength and difficulty in the ability to perform their daily activities (DA), work and / or sports activities, causing a large functional loss and disability (3) (4) (10) (11) (12) (13) (14).

Acromioplasty is the surgical technique whose main objective is to eliminate compression of the tendon of the supraspinatus muscle, caused by the acromion (15) (9). In the last 10 years there has been an exponential increase in patients undergoing acromioplasty (12) (13) (15) (16), and arthroscopic surgery has become the procedure of choice in the repair of rotator cuff lesions.

Our population, object of study, will be patients undergoing arthroscopic acromioplasty in the High Resolution Hospital (HRH) of Utrera (Seville, Spain), is characterized by an important clinical manifestation in terms of pain, restriction of active joint mobility, decreased muscle strength and difficulty in the ability to perform their DA, work and / or sports activities (12) (13) (14).

There seems to be a certain consensus in studies carried out, after acromioplasty, that Physiotherapy plays a fundamental role in postoperative functional recovery (6) (17). Among the numerous procedures that physiotherapists use in their practice during the care of patients, therapeutic exercise occupies a central place among the key elements of programs aimed at improving or restoring functions or preventing dysfunctions in patients who participate in them (18 ). The main objectives of postsurgical
rehabilitation of rotator cuff repair are the protection of the healing process, the repair of the tendon, the prevention of joint stiffness and muscular atrophy (19). To achieve the prevention of joint stiffness and muscular atrophy by protecting the healing process, therapeutic exercise plays a decisive role in the recovery of the patient undergoing arthroscopic acromioplasty (20).

**Material & Methods**

The subjects of the study will be patients undergoing arthroscopic acromioplasty at the High Resolution Hospital of Utrera. All the subjects of the study completed and signed the Information Document-Informed Consent for this investigation. Of the 20 intervened shoulders that are part of this study (10 shoulders in the experimental group and 10 shoulders in the control group), 11 are right shoulder and 9 left shoulder. 7 shoulders are operated by acromioplasty plus bursectomy and 13 are operated with acromioplasty plus bursectomy plus tendon repair. 8 subjects are women, 12 subjects are men.

For the inclusion of patients undergoing physiotherapy treatment at the High Resolution Hospital of Utrera, it is essential that after the surgical intervention by acromioplasty (performed at said Hospital), they are evaluated in the Consultation of the Specialist of the Rehabilitation Area (hereinafter FEA de Rehabilitation) of the High Resolution Hospital of Utrera. In this consultation, the FEA Rehabilitation performs a physical examination based on joint balance, functionality and pain of the affected shoulder and decides if it is necessary to treat physiotherapy in the Physiotherapy Room of the Hospital, if so, the patient is included in the waiting list of Physiotherapy of the Hospital. If, on the other hand, after the physical examination, the FEA Rehabilitation decides that the Physiotherapy treatment is not necessary in the Hospital Room, thus receiving the Rehabilitation-Physiotherapy Discharge, it will be evaluated by the Physiotherapist-Evaluator of the present study, to collect the necessary data of his physical exploration and to be able to incorporate them to the database of the study, without having had to realize sessions of Physiotherapy in the Room of Physiotherapy of the Hospital. In the physical examination in the consultation of the FEA of Rehabilitation of the Hospital of Utrera:

- 3 subjects are Alta rehabilitation and Physiotherapy that same day, so the measurement is made for the collection of study data, carried out by the Physiotherapist-Evaluator
- 1 subject for personal and work reasons is transferred to carry out his Physical Therapy treatment to the town of Villamartín, so we lose one subject of the sample, this belonged to the experimental group.
• 16 subjects are included in the waiting list of Physiotherapy of the High Resolution Hospital.

We conducted a non-probabilistic sampling for the convenience of the study. We will estimate the sample size in this study, since it will be considered as a pilot study, with error values of type I of 5% and type II of 20%. We have applied a randomized distribution in the participants, through a sequence of randomization obtained in the web www.randomization.com. In this way, the participants will be distributed in two different study groups, experimental and control, randomly. The study has been masked double blind, both the Physiotherapist-Evaluator and the subjects of the sample are blinded. The subjects do not know the group to which they belong, the Physiotherapist-Evaluator does not know to which group the evaluated belongs, in addition he does not know the objectives of the study. The randomization sequence has been hidden from patients and evaluators, and has been guarded by a collaborator outside the study.

The experimental group and the control group will perform the same protocolized physiotherapy treatment, with the only difference that the experimental group will also receive a program of therapeutic exercises, which will be explained the same day of the surgical intervention to perform it during the time it takes to go to the Physiotherapy Room of the Hospital. Therefore, we will assess the added benefit of the completion of the therapeutic exercise program.

### Results & Discussion

Regarding the physiotherapy sessions that will be carried out, we will analyze the average in both groups. This result will not give information about the possible decrease that we expect in the number of physiotherapy sessions. If our project obtains this result, it could confirm that the rehabilitation-physiotherapy precocious in patients operated on shoulder, through the completion of the Therapeutic Exercises Program prior to the start of the physiotherapy treatment, could reduce the sessions that the patient performs in the Sala del Hospital, thus reducing the costs of care, increasing the independence and responsibility of the patient.

In our results, the pre-intervention moment will refer to the first measurement of the variables (first session of physiotherapy) and the post-intervention moment will refer to the second and last measurement of the variables (discharge of physiotherapy-rehabilitation):

Regarding joint balance, we will analyze 5 mobility parameters: flexion, extension, abduction, internal rotation and external rotation. In the event that we observe greater mobility in these parameters, this could have a satisfactory impact on the performance of Activities of Daily Life, such as basic activities (eating, combing, personal hygiene, dressing) and instrumental activities (cooking, going purchases ...), as well as in the realization of movements in the working
day, which require movements in the last degrees of joint range. These aspects are imparting, since the inability to raise the arm above the head, which may present patients with cuff tears, is an obvious functional limitation, which restricts the execution of basic tasks of daily life.

Additionally, we will analyze the perception of pain measured through the Visual Analogue Scale (VAS) of Pain.

Finally, we will analyze the degree of functionality using the Constant Scale, to see if the results obtained could be favorable for the early recovery of patients.

Conclusions

The implementation of the Home Therapeutic Exercises Program could be an important component in the postoperative treatment of patients undergoing surgery through acromioplasty, since it could reduce the number of physiotherapy sessions, thus reducing the health care cost, the economic cost in sick leave through the reincorporation of the patient to the labor world and / or activities of daily life, in the shortest possible time; in addition, our project could establish treatment plans that help optimize the waiting list of patients who come to the HRH of Utrera (Seville, Spain), so we believe that this project represents an added value, which could improve treatment rehabilitator of these patients.

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Conflict of Interest

The authors state that there are no conflicts of interest associated with this research.

Ethical Approval and Informed Consent

The present research complied with the ethical standards for human research, according to the Helsinki Declaration, considering its last modification. In addition, we obtained the approval of the ethics committee of the University of Seville.

All participants signed an informed consent form, where they were informed of all aspects related to the research, and they were able to resolve all their doubts.

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Clinical Implications for Practice

The implementation of the Home Therapeutic Exercises Program could be an effective tool to improve health status, in patients following postoperative treatment, undergoing surgery through shoulder acromioplasty.

References


