

RECOVERY THROUGH KINETOTHERAPY AFTER A LATARJET PROCEDURE

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Abstract: *The Latarjet procedure provides excellent long-term outcomes in the treatment of recurrent anterior glenohumeral instability. Twenty years after the Latarjet procedure, arthritis may develop or progress in 23.5% of cases, but the majority of arthritis is mild. [9]*

This paper had as object of study the importance of kinetotherapy in the recovery of the shoulder after a Latarjet procedure. The research also aims upon the importance of a well-developed program, using individualized and rationalized exercises in order to bring a rapid and efficient recovery of the patient.

The clinical trial was performed on a 21-year-old practitioner of the handball game and was run for six months.

The results obtained after the kinetotherapeutic program are based on the physically and psychologically evolution of the subject understudy. The recovery program was structured in five phases, depending on the patient's evolution and response after the three evaluations that were made during the recovery process.

Key words: *Latarjet procedure, kinetotherapy, shoulder recovery*

1. Introduction

The shoulder joint has the largest range of motion in the body. Anatomically, it consists of a shallow articular fovea, which can easily cause instability between the acromion and the humeral head. Due to

this instability, pain in the shoulder joints is the second most frequent type of complaint, surpassed only by lumbar pain [2].

Medical conditions that trigger shoulder pain include adhesive capsulitis, impingement syndrome, myofascial pain

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syndrome, hemiplegic shoulder pain, glenohumeral instability, glenohumeral joint arthritis, and biceps tenosynovitis [10].

The treatment of recurrent glenohumeral dislocation is surgical; the type of procedure depends on the characteristics of the instability, type of underlying lesion, number of dislocations until surgery, age, and level of physical activity practiced and expected [11, 12], [15].

Coracoid process transfer, also known as the *Latarjet* procedure, was first described by Dr Michel Latarjet in 1954. [8] The procedure, which involves the transplantation of a section of the coracoid process flush with or slightly medial to the anterior aspect of the glenoid, continues to be popular for anterior shoulder stabilization with associated glenoid bone loss [14]. More recently, the arthroscopic *Latarjet* technique has been described, with promising early results [4], [7]. The Latarjet procedure, particularly when performed arthroscopically, is a technically difficult procedure [6].

Recovery of internal and external rotator muscle strength after surgical stabilization by the Bristow-Latarjet procedure seems important in order to allow patients to truly benefit from the surgical therapy and resume normal daily activity [1], [3], [5], [13], [16].

2. Objectives and hypothesis

The aim of this research is to select the best kinetotherapeutic means and methods for the recovery of the shoulder joint and to create a personalized program

so that the patient who has undergone the Latarjet procedure to recover as much as possible regarding the anatomical function.

General objectives of the research:

- Determining the incidence of trauma in the shoulder joint;
- Identify the most efficient devices, equipments to improve the functionality of the upper limbs resulting from the shoulder dislocations;
- Development of appropriate kinetotherapeutic programs for the subjects of research in order to improve the functional parameters;
- Implementation of kinetotherapeutic means to recover the subject of research;
- Evaluating the effectiveness of the recovery methods using different testing.

Research hypothesis: If a kinetotherapeutic program, optimally conceived and appropriate to the particularities of the subject helps to recover and restore the functionality of the affected member, increase muscle activity within a time frame as well as to regain self-confidence.

3. Material and Methods

The clinical trial was performed on a 21-year-old subject and took place between November 2017 and April 2018.

The athlete presented left anterior shoulder dislocation (recent injury after a relapse). It is worth mentioning that the subject after the surgery had immobilized the abduction arm at 90° in a orthosis with immobilization support for 2 weeks. After these 2 weeks of immobilization, the

kinetotherapeutic plan was started.

This research began with first patient assessments and completing medical records.

The recovery programs that have been developed and used were structured in five phases.

In addition to these exercises, the recovery of the subject included massage, kinetic bands, psychotherapy, hydrokinetotherapy, physiotherapy, medical treatment and to the end of kinesitherapy, the subject gradually began to practice swimming.

The kinetotherapeutic plan was composed of five phases as follows:

- Passive and active exercises for wrist, elbow and cervical area were performed in the first phase (the first 1-3 weeks) after the orthosis was abandoned for the use of movement, abduction, adduction, flexion, extension, exercises with the cane, submaximal isometry in all planes, cure for the reduction of pain inflammation and posture exercises.
- The second phase (weeks 4-9), was divided into 2 stages, all passive and active exercises:
 - In the first stage (weeks 4-6), in which shoulder pivotal exercises, initiation in joint mobilization, flexion, extension, abduction, 45° external rotation, 45° internal rotation, isometry, isotonicity, proprioceptive exercises, neuroproprioceptive facilitation techniques for scapula.
 - During the second stage (weeks 7-9), flexing, extension, adhesion to tolerance, external rotation 50-60°, internal rotation 50-60°, articulation mobilization, different isometric angles, isotonic exercises for shoulder

muscles, proprioceptive exercises.

- In the third phase (weeks 10-15) passive, active-passive, passive-active exercises for joint mobilization, stretching exercises, neuromuscular control means, neuroproprioceptive facilitation techniques, isotonicity, abduction, flexion, extension, internal rotation, external rotation.
- In the fourth phase (weeks 15-20), proprioceptive active exercises were performed and increased functional activity. Exercises specific to practiced sport and further exercises performed in the previous phase.
- In the fifth phase (after week 20), the following month, the patient performed exercise on the affected limb, practiced swimming and all of them coincided with the strenght.

The clinical evaluation included some of the following tests: range motion of the shoulder, muscular testing, Apley test, Hawkins test, Job test, Lift-Off Gerber test.

4. Results and Discussions

The results obtained after the application of the kinetotherapeutic programs show that the objectives of the recovery were fulfilled:

- Reduction of pain and inflammation;
- Protecting the integrity of surgery;
- Obtaining the gradual restoration of passive movement;
- Ensuring proper scapular functionality;
- Standardization of muscle strength, resistance and neuromuscular control;
- Return to full chest function;
- Planned and gradual increase of

stress on the anterior capsule joint.
From the evolution point of view, it can be observed that the patient regained the normal values at the

muscular balance, the articular balance and the tests performed at the level of the shoulder joint

Table 1

Dynamics of the values at the joint testing

Movement	I.E	In. E.	F.E.
<i>Flexion</i>	45°	90°	160°
<i>Extension</i>	15°	30°	45°
<i>Abduction</i>	40°	80°	150°
<i>Adduction</i>	10°	20°	30°
<i>Internal rotation</i>	30°	45°	60°
<i>External rotation</i>	35°	50°	65°

I.E. – Initial evaluation,
In. E. – Intermediary evaluation,
F.E. – Final evaluation

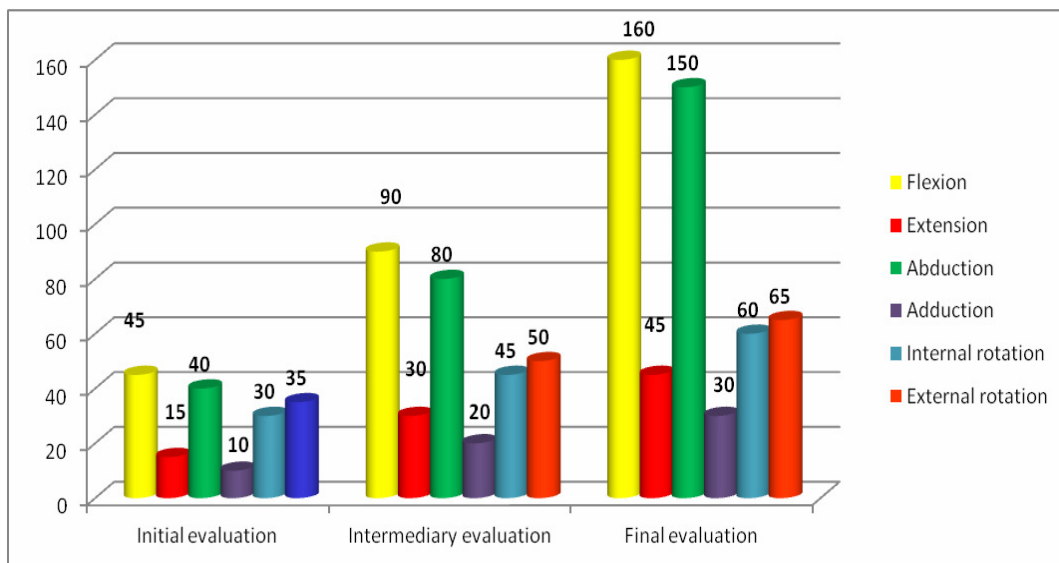


Fig. 1. Results obtained at the joint testing

Table 1, graphic 1 shows the results obtained by the subject after the joint testing. The values obtained by the subject under investigation have improved significantly in all movements of the

scapular-humeral joint.

The degree of flexion of the shoulder by means of the exercises performed in the first three phases increased significantly from the initial test (45°) to the mid-point

test (90°) by 45°, and from the intermediate test (90°) to the final test (160°) increased by 70° by means of the exercises performed in the fourth and fifth phases this movement being carried out painlessly;

The extension degree from initial testing (15°) to intermediate test (30°) increased by 15°, and from the intermediate test (30°) to the final test (45°) increased by 15°, the subject making significant progress.

The abduction movement from the initial test (40°) to the intermediate test (80°) increased by 40°, resulting in an improvement on this movement and from the intermediate test (80°) to the final test (150°), the abduction movement increased by 70°, without any pain;

The adduction movement from initial testing (10°) to intermediate test (20°) increased by 10° and from the intermediate test (20°) to the final one (30°), the adduction movement increased by 10°.

From the initial testing (30°) to the intermediate test (45°) there was an increase in the amplitude of the internal rotation movement by 15° and from the mid-test (45°) to the final test (60°), the amplitude of the internal rotation movement increased by 15°, without the patient experiencing pain;

The degree of external rotation from the initial test (35°) to the intermediate test (50°) was improved by 15° and from the intermediate test (50°) to the final test (65°), the degree of movement of the external rotation also increased by 15°.

Table 2

Dynamics of values at the muscular testing

Muscle	I.E.	In. E	F. E.
<i>Flexors of the arm</i>	F2	F3	F4
<i>Extension of the arm</i>	F1	F2	F3
<i>Abductor of the arm</i>	F2	F3	F4
<i>Adductor of the arm</i>	F1	F2	F3
<i>Internal rotator of the arm</i>	F1	F2	F3
<i>External rotator of the arm</i>	F1	F2	F3

I.E. – Initial evaluation,

In. E. – Intermediary evaluation,

F.E. – Final evaluation

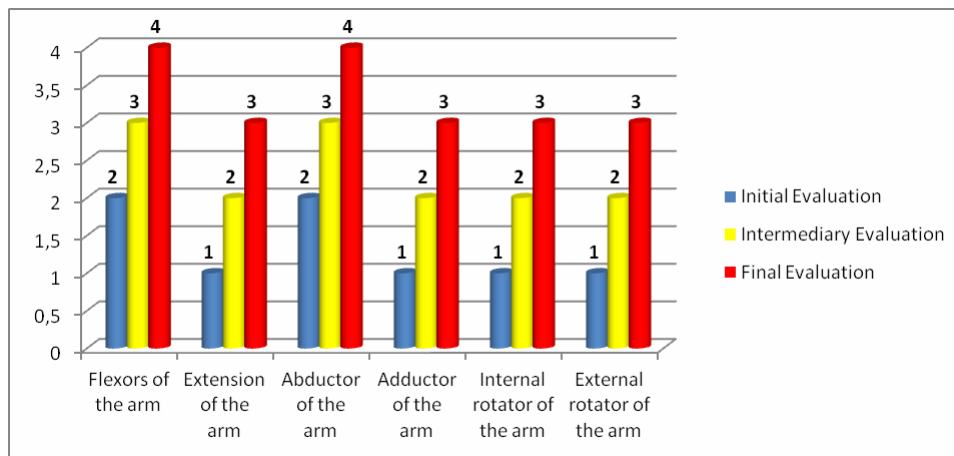


Fig. 2. Results obtained at the muscle testing

Table 2, figure 2 shows the results registered by the patient in the three evaluations made during his recovery process. There is a good evolution in muscle strength, especially in flexor muscles, arm abductors and scapula descenders, which show that the exercises used in the kinesitherapeutic programs aimed at increasing muscle strength, have been well-selected and properly executed.

Regarding the muscular balance in the movements of flexion, extension, abduction, adduction, internal rotation and external rotation made by the scapula-humeral joint, the patient returned to normal force but immediately after the surgery he had a muscle mass deficiency. During the three trials (initial, intermediate and final), the patient recorded values of the force from F2 to F4, which means that he was close to the normal force value, namely F5, for the representative muscles of each movement

5. Conclusions

Following the study of the patient and

the results obtained at the data interpretation we can draw the following conclusions:

In the three tests performed, the degree of flexion was progressively improved with the exercises staged in five phases, the flexion movement reaching its normal value (180°).

The degree of extension, due to the use of the exercises in the five phases, approximated the normal value, namely (60°).

The abduction movement recorded a major increase to almost normal (180°).

The adduction movement, with the help of the exercises, came close to the normal value 45°, not showing any pain after the three evaluations.

The degree of amplitude of the internal rotation movement achieved a 30° increase without pain, the recovery program exercises contributing decisively to this increase.

The degree of amplitude of the external rotation movement increased by a total of 30° reaching almost normal values.

There were recorded values with

progressive relief, so the patient continued the exercise program under the guidance of the physical therapist.

It is very important for the recovery program to be done by a skilled and well-known physical therapist who will leave a mark on the way he / she works with the patient, on the improvement of each movement, but also on the patient's psyche.

The communication and the relationship between patient-physiotherapist-physician have resulted in improved recovery results to the limit of each patient's exercise.

The recovery program was created specifically for this patient, and the positive results made it return to regular day-to-day activities.

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