

SUMMARY

Introduction: Rotator cuff tears and shoulder impingement syndrome are considered to be among the most common causes of pain and disability in the upper limb. The incidence of these type of injuries are increasing with age with higher rates observed among men.

Signs of rotator cuff are initially treated conservatively. Physiotherapy with adjuvant pharmacotherapy and the reduction of activities triggering or aggravating symptoms in a large group of patients brings satisfactory results. However, unless this form of treatment is effective, surgery should be considered. In the last decade, arthroscopic reinsertion of injured tendons has become the most frequently chosen form of surgical treatment.

Objective, quantitative assessment of strength and force-velocity parameters should be an integral part of a comprehensive functional assessment of patients at various stages of treatment after arthroscopic reconstruction of the rotator cuff. This information is necessary for the proper and effective management of therapeutic and rehabilitation procedures.

Aim of the study: The main aim of the study was to assess the functional capacity as well as the strength and force-velocity abilities of the external and internal rotator cuff muscles in patients after arthroscopic reconstruction of the rotator cuff at selected stages of treatment.

Material: The study involved 95 people, including 48 subjects from the study group with the injury within muscle and tendons forming the rotator cuff of the shoulder joint, which arthroscopic reinsertion of the damaged structures and 47 healthy individuals who comprised the control group. Surgical procedures were performed at Holy Family Specialist Hospital in Rudna Mała near Rzeszów by the same doctor. In the analyzed groups, males dominated significantly. The age of the patients and the controls ranged from 40 to 65 years of age. The mean age in both groups was comparable (with the difference of approx. 14 months).

Methods: Patients qualified for surgery underwent a triple assessment of their clinical condition: study I - the day before the planned surgery, study II - 6 months after the surgery, and study III - 12 months after the surgery. People qualified for the control group were tested once. In the periods between the examinations, the operated patients followed the rehabilitation program according to the guidelines developed by the investigator and approved by the attending physician.

The main part of the study was the assessment of the strength and force-velocity parameters of the external and internal shoulder rotators, carried out in isokinetic conditions on the System Biodex 4 Pro stand. The dynamics of changes in the functional status of operated patients was performed using the Constant Shoulder Score questionnaire and the Western Ontario Rotator Cuff Index. The VAS scale was used to assess the severity of pain.

Results: In the studied population of patients, before the rotator cuff reconstruction, the subjective pain score amounted to 5, 6 months after the reconstruction it decreased to 2.5 and 12 months after the surgery was about 2. The differences between subsequent studies were statistically significant.

There was also a significant improvement in the functional status as assessed by the CSS in each subsequent studies. After 6 months from the surgery, the CSS value decreased on average by about 22 points, and after the next 6 months by over 9 points.

As a result of the conducted study, a statistically significant improvement in the functional state was demonstrated on the WORC scale. The average improvement after 6 months after the procedure was 610 points, while after 12 months - 842 points. Taking into account the percentage, it was found that the level of functional capacity in the studied population before the surgery was on average about 43% of the maximum value, and a year after the surgery it was over 83%.

12 months after the arthroscopic reconstruction of the rotator cuff, most of the strength and power-velocity parameters of the muscles performing external and internal rotation of the shoulder joint, obtained during the isokinetic evaluation, improved significantly. The results of the investigated parameters obtained by the operated limb were significantly lower as compared to the control group.

As a result of the conducted study, no statistically significant influence of independent factors, i.e. gender, nature of the problem (traumatic or degenerative) and the degree of damage on the results obtained in the studied population, was found.

Conclusions:

- 6 and 12 months after arthroscopic reconstruction of the rotator cuff, the functional status of the studied patients improved significantly,
- 12 months after arthroscopic reconstruction of the rotator cuff, most of the tested strength and power-velocity parameters of the muscles performing external and internal rotation of the shoulder joint statistically improved significantly, however, there were deficiencies in the parameters studied between the operated and non-operated limbs, and in relation to the control group,

- the period of 12 months after the reconstruction of the rotator cuff is insufficient to restore muscle strength at the level of the non-operated limb and in relation to the control group. On the other hand, it allows for a significant, though incomplete, improvement of the functional state of patients in terms of performing everyday activities.