

PRE – OPERATIVE RECOVERY IN ACL REPAIR AND RECONSTRUCTION

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Abstract: This article is designed to support and require a preoperative recovery program in knee ligaments when scheduled surgery is performed.

Introduction: Ligaments injuries can be caused by abnormal knee movements and are associated with knee sprain. Sprain is a traumatic condition of a joint, caused by forced movement over physiological limits, which leads to injuries of varying intensity, from simple ligament distention to ligaments rupture, often with bone fractures especially at the knee.

Ligaments injuries are often caused by a knee trauma caused by an overwork, a mechanical shock, sporting activities or other types of activities on uneven ground and causing the sprain or the dislocation of the knee joint [1] It is estimated that 70% of ACL injuries occur through non-contact mechanisms, while 30% appear as a result of direct contact with an object or other person. This is due to the fact that the broken anterior cruciate ligament occurs following the movement when the knee joint is in flexion and rotated. [2]

This indicates that the force acting on the previously crossed ligament cannot be null. Very important in protecting the anterior cruciate ligament are the knee joint proprioceptors, which indicated signaling when ligament is overloaded. [5]

Classification in terms of how the anterior cruciate ligament can be traumatized by several mechanisms;

- sudden change of direction;
- sudden stop;
- incorrect landing after a jump;
- sudden changes in speed during running;
- sudden twisting of the knee joint when it is fixed to the ground;
- generally all shocks that are transmitted to the knee joint when it is loaded into flexion and rotation. [3]

Most of the time the rupture of anterior cruciate ligament (ACL), is produced due to a rotational mechanism and more rarely the translational movement (fig.1)

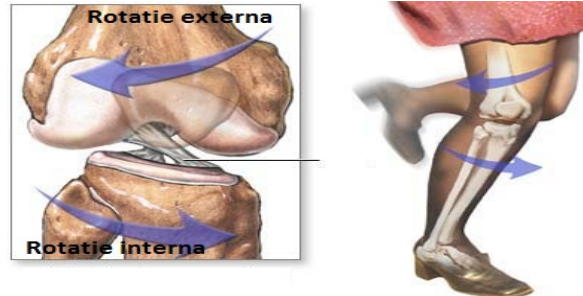


Fig.1 ACL rupture mechanism [4]

Treatment of the anterior cruciate ligament rupture is eminently surgical and consists of restoring the knee anatomy by replacing the broken ligament with a graft.

Taking into account that this lesion does not impede normal knee mobility, we can say that surgery is not immediately mandatory and the subject can continue to work without serious consequences, yet it has been shown by numerous studies that the lack of the anterior cruciate-ligament even if the patient is a sedentary person causes movement abnormalities in the knee joint that lead to premature degradation (osteoarthritis). There are two operative moments: in the acute period of the lesion, that is, within the first three days of the trauma, or six weeks after the accident. Ideally in the opinion of Dr. Andrei Ioan Bogdan is 4-6 weeks after the trauma, the evolution of the patient being a remarkable post-operator and very fast recovery.

In this therapeutic strategy, the patient is required to perform physiotherapy to reach the knee joint with normal parameters before surgery: minimal or absent pain, normal mobility, good muscle tone, lack of swelling or edema.

Material and method: We will therefore present a case study, a knee joint after surgery repair and reconstruction, due to a previously anterior cruciate ligament rupture. The subject was co-opted into a complex recovery program that was scheduled for surgery reappear and reconstruction of the ligament.. After confirmation of the positive diagnosis, in addition to stabilizing the knee joint from the point of view regarding edema and inflammatory process, it is recommended to

perform a preoperative physiotherapy program in a specialized center to stabilize the knee joint.

The subject presented on the third day of the trauma and asks for an assessment and the onset of a kinetic program as recommended by the specialist doctor.

In the first stage will take pre-operative recovery program, a period of four weeks, by 5 sessions per week with supplementary program for the days of rest at home. The second post-operative stage was achieved over a period of 8 weeks, 3 sessions a week, with the recommendation to continue the program as a home care program.

Preoperative Recovery Program:

Objectives:

- Decreasing pain, inflammation, limiting edema and maintaining nutrition of the knee joint;
- Maintaining joint mobility within the limits of physiological movement amplitude;
- Maintain and improve muscle tone;
- Proprioceptive stimulation to maintain and increase stability, balance and coordination.

To decrease pain, inflammation, limit edema and maintain nutrition of the knee joint, the following means were used:

- analgesics and anti-inflammatory drug treatment (specialist recommendation);
- physiotherapy treatment consisting of applying electrotherapy, TENS and interferential current for 12 min a procedure;
- if necessary, analgesics ointments or cold compresses were applied;
- positional assisted postures;
- active assisted mobilizations;
- manual lymph drainage;
- postural hygiene specific to the knee joint.

To maintain joint mobility within the range of physiological movement amplitude, active mobilizations assisted within the amplitude of movement (until pain appears) were used in the first week; then gradually increased using means to facilitate increasing joint mobility: balls, elastic bands, pulleys

To maintain and improve muscle tone, strength-specific analytical exercises were used for the lower limb muscles as follows;

- exercises on dorsal, ventral and lateral decubitus position; flexions; extensions; abductions adductions without weights; then adding weights;
- exercises at the edge of the treatment table in the sitting position, exercises the therapist's resistance then weighing 1 kg attached to the ankle joint;
- using elastic band exercises performed in standing position
- exercises to pulleys apparatus (Fig sites no. 2,3,4)



Fig. 2 strength exercises



Fig. 3 strength exercises



Fig. 4 strength exercises

For proprioceptive stimulation, to maintain and increase stability, balance and coordination of the joint, progressive weights on pulleys were used from decubitus, sitting and standing positions. There were used walking recovery exercises and progressive alternating on both legs charge and then only on one leg charge; side-to-back displacements,

front-to-back travel, ladder exercises, motricity designed areas of varying degrees of difficulty.



Fig. 5 proprioceptive exercises



Fig. 6 proprioceptive exercises



Fig.7 proprioceptive exercises

Results and discussions: Proprioceptive stimulation is the end point in the program, given that total recovery cannot be achieved in such a short period.(Fig.5,6,7) It should be specified that the program cannot be applied if there is no punctual investigation in the acute phase of the trauma itself, any complications resulting from the ligament lesion could have blocked the program in the acute phase. Therefore stated that successful preoperative program is given by a serious investigation and management of the trauma by specialized physicians and finally by an orthopedic surgeon. The physician's recommendation accompanied by a well-defined therapeutic program with clear objectives leads to a realizable pre-operative recovery kinetic program.

Conclusions:

- The patient undergoes a positive physical and mental form with a pain-free knee, no edema or other external signs, the muscular strength is recovered in an 80-90% (without overload for

protection), joint mobility is within acceptable limits with a functional balance of 80-90%, stability, coordination located at an excellent level.

- The patient could perform normal activities without any problems. However, if we perform a functional evaluation to achieve the degree of performance or effort, there is a risk of a traumatic recurrence with complications, and for a longer period of time the possibility of appearance of a joint degeneration type arthrosis, due to uncertain stability of the knee joint.
- The remaining functional status achieved at the surgical intervention momentum condition the achievement of a better recovery after ligament repair and reconstruction, and therefore a favorable prognosis in the realization of the post-operative recovery program by shortening the duration of the functional regaining the morphological functional parameters as close as possible to the normal limits.

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RECUPERAREA PRE-OPERATORIE ÎN LIGAMENTOPLASTIA ACL

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Cuvinte cheie: recuperare pre-operatorie, ligamentoplastie, ligament încrucișat anterior.

Abstract: Prezentul articol, este realizat în vederea argumentării și necesității efectuării unui program de recuperare preoperatoriu în ligamentoplastia de genunchi atunci când sunt realizate intervenții chirurgicale programate.