Trakia Journal of Sciences, Vol. 10, Suppl. 3, 192-195, 2012

Available online at:
http://www.uni-sz.bg

ISSN 1313-7069 (print)
ISSN 1313-3551 (online)

REHABILITATION PROGRAM IN ENDOSCOPY MENISCECTOMY OF THE KNEE JOINT – PRESENTATION OF A CLINICAL CASE

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ABSTRACT
Meniscal disabilities are the most common injuries of the knee joint and represent over 60% of all soft tissue injuries of the knee. In certain diagnosis the treatment is mainly surgical - meniscectomy.
Objectives of the study Preparation and implementation of a comprehensive rehabilitation program to improve functional status and the support function of the affected lower limb, reduce pain, improve mobility of the knee joint and overcome muscle imbalance.
Methods. The recovery of a patient after endoscopic meniscectomy of the knee joint was observed. A complex rehabilitation program was applied, involving Kinesitherapy and Physical therapy in an early post-operative period. Before the rehabilitation the necessary measurements and manual muscle tests were made.
Results. As a result of the rehabilitation the functional condition of the patient has significantly improved. The volume of motions of the affected knee joint has increased, the muscle imbalance was eliminated, aches and pains were reduced, and the gait and the full weight on the limb were restored.

Key words: meniscectomy, complex rehabilitation, Kinesitherapy, Physical therapy.

INTRODUCTION

Ruptures of meniscus occur in injuries and they are among the most common injuries of the knee joint. They are mainly seen in athletes, who during a training or a competition happen to be in a position of half-bent knees and hip joints, and there are conditions for twisting the thigh and lower leg. There are disciplines in which athletes are particularly predisposed to a damage of the meniscus and ligamento-capsular apparatus of the knee (1). Most of the time during training and racing their knees are loaded with a variety of complex rotational movements, as in soccer, skiing, basketball, volleyball, athletics and more. The preceding microtraumas or pathological changes predispose meniscal damage. They also happen during industrial and daily activities most often in young people of working age. Medial meniscus is damaged more frequently than the lateral (2, 3).

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Modern artroscopic treatment of knee pathology in the past two decades have established a new philosophy in the reconstruction of meniscal damage, which is directed at improving regenerative potential and congruity of the joint, and better stability of the joint (4). The capacity of the knee to absorb the stresses on the articular cartilage after damage to its meniscuses is significantly reduced. This increases the risk of synovial impeachment and later development of arthritic changes (1).

Objective

Preparation and implementation of a comprehensive rehabilitation program to improve functional status and the support function of the affected lower limb, to reduce pain, to improve mobility of the knee joint, and overcome muscle imbalance.

MATERIALS AND METHODS

Among the most frequent knee trauma is the meniscus tear and overstretching of the ligament apparatus. It is characterized by constant pain, disruption of joint mobility and

blockages, hypotrophy of muscles around the bone and distortion of the function of affected limb.

This requires the application of endoscope diagnosis and endoscope meniscectomy for faster recovery with the help of comprehensive rehabilitation. KT begins early (the second day after surgery), as the main task is to strengthen the m. quadriceps femoris (5, 6). Gravitational overload of the joint is usually fully permitted by the second week (1).

A recovery of a 19 years old patient was observed, a former sportswoman in boxing, with an old injury of the right knee joint, dislocation of the patella and medial meniscus injury. After an endoscope meniscectomy of knee joint, a comprehensive rehabilitation program was implemented including Kinesitherapy and physical therapy in the early postoperative period.

Classes were held in Center for Rehabilitation - "Kinesi-3" - Stara Zagora, a treatment course of 10 treatments, once a day with a duration of 40-60 minutes during pre- graduate experience of students from third grade in "Rehabilitation therapist".

Before rehabilitation the necessary measurements and manual muscle tests were conducted (7, 8). *After the measurements and examinations it was found that: flexion in the right knee is limited - 100 °, the extension is normal, there is a slight hypotrophy of the thigh muscles - m.quadriceps femoris (more pronounced in m.vastus medialis), and pain during active flexion in the knee joint*. The recovery of the patient comes to the beginning of the second week after the meniscectomy, apparently she is visibly in a good health. The patient walks with the help of one crutch, as she spares the affected limb and feels a slight instability.

Comprehensive rehabilitation program in the early postoperative period

1. Methods of KT

Objective of KT:

An optimal recovery of the daily physical activity and mobility without support means.

Tasks of KT:

1. Reduce the pain and swelling;
2. Overcoming the muscle imbalance;
3. Gradually restoring the mobility in the knee joint;
4. Improving circulation and trophicity of the limb;
5. Stimulation of neuromuscular recovery;
6. Prevention from complications;
7. Training patients on proper gait and posture of the body and limbs;

Means of KT:

• Treatment from a position (to reduce swelling)
• Total developing exercises for upper limbs and torso;
• Breathing exercises;
• Analytical exercises for the toes, ankle (plantar and dorsal flexion);
• Analytical exercises for the hip joint from different starting positions;
• Isometric contractions for the femoral quadriceps lasting 6-10 sec;
• Analytical exercises for the knee joint - from eliminated gravity, and later from antigravity position;
• PIR for m. rectus femoris from position lying on the stomack;
• Miotic reflex - pulling the patella of the operated knee joint in a distal direction;
• Passive movements of the patella;
• Exercises with appliances;
• Exercises for balance and coordination;
• Different types of walking with a gradual loading of the limb (5-8).

2. Physical Therapy:

• Cryotherapy for 10 minutes
• Interferential current 90-100 Hz for 5 min, and 0-100 Hz. for 10 min;

3. Training in activities of daily living.

RESULTS AND DISCUSSION

As a result of the conducted Kinesitherapy, we achieved the desired effect in the recovery of the knee joint. The functional condition of the patient was significantly improved. The capacity of movement of the affected joint has increased, the muscle imbalance was gotten over, the pain was reduced, the gait was improved, and the support means was removed.

Table 1. *Anthropometric measurements – circumferences of lower limb*

Circumferences of lower limb	Dex. 27/02/2012	Dex. 08/03/2012	Sin.
Gluteal fold	57.5 cm	57.9 cm	57.5 cm
20 cm from the patella	55 cm	55.5 cm	55.5 cm
12 cm from the patella	48 cm	48.5 cm	48.5 cm
5 cm from the patella	43 cm	44 cm	44 cm
Knee joint	40.5 cm	39.5 cm	39 cm
Shank	38 cm	38 cm	37.5 cm
Ankle	22 cm	22 cm	22 cm

The anthropometric measurements in **Table 1** show that there was a positive effect on the hip circumferences, which had increased with about 1 cm at all levels of measurements. A part of the hypotrophy of m.quadriceps femoris was also overcome.The data from table indicate a 1 cm reduction of the swelling in the knee joint. The pain in active movement in the joint was reduced.

Table 2. *Goniometry of the knee joint*

Knee joint	Dex. 27.02.2012	Dex. 08.03.2012	Sin.
Extension - flexion	S:0°-0-100°	S: 0 – 0 – 115 ˚	S:0°-0-125°

As a result of the application of special exercises to restore the affected knee **(Table 2)** improved were: the active range of movement regarding a flexion with 15^0, the stability of the joint during walking and stair climbing, the active movements in overcome resistance.

Table 3. *MMT - Flexion of knee joint*

Motor muscles	Dex. 27/02/2012	Dex. 08/03/2012	Sin.
m. semitendinosus	Assessment 3(-)	Assessment 4	Assessment 5
m. semimembranosus			
m. biceps femoris			

Table 4. *MMT - Extension of knee joint*

Motor muscles	Dex. 27/02/2012	Dex. 08/03/2012	Sin.
m. quadriceps femoris: rectus femoris vastus lateralis vastus medialis vastus intermedius	Assessmen 3	Assessmen 4	Assessmen 5

Data from **Tables 3 and 4** are an evidence of improved muscle strength of flexor muscles and the knee joint extensors, as the movements of these muscles were performed in full volume against moderate resistance. As a result, their gait have improved and the support means removed. In regard to the proper walking and loading of the limb, a good effect was achieved by climbing stairs, walking to overcome obstacles and walking on a slope.

RESULTS AND CONCLUSIONS

As a result of the complex rehabilitation including Kinesitherapy, Physical therapy and training in activities of daily living, we achieved the desired effect in the recovery of the right knee joint. The functional condition of the patient was significantly improved. The volume of movement of the affected knee has increased, the muscle imbalance has been

overcome, the pain was reduced, and the gait and the full weight on the limb were restored.

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