EFFICIENCY OF PHYSICAL THERAPY AFTER ARTHROPLASTY OF THE HIP JOINT IN THE ELDERLY

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Abstract: Background. Osteoarthritis is a condition common in people over the age of 50-60 years, a consequence to progressive destruction of articular cartilage of the hip joint , which determines stiffen evolving hip, accompanied by severe pain. We believe that the increased frequency of disease in elderly people, but also the middle-aged argue the necessity of applying kinetic means after hip prosthesis to these subjects.

Aims. Applying an early physical therapy program in subjects with osteoarthritis, upon which intervened surgically total hip arthroplasty leads to functional recovery of the hip-femoral joint and increase their quality of life.

Methods. This study, based on the method of the experiment, was performed on a number of 44 subjects diagnosed with osteoarthritis in the advanced stage.

Results. Analysis of the results reveals improve clinical and functional status of patients.

Conclusions. In subjects over 65 years, clinical parameters values followed during postoperative physical therapy program highlighted the efficiency of the recovery methods applied in order to regain normal functionality of the hip.

Key word: osteoarthritis, total arthroplasty, physiotherapy

Introduction

Osteoarthritis of the hip is the most disabling of arthritis, is a condition relatively common [1], especially in people aged 50-60 years.

Symptoms of the disease lies in the significant decrease in hip mobility and muscle tone, which is why patients realise difficult to perform daily activities such as boots, resting on a chair, walking, climbing or descending stairs [2].

All forms of osteoarthritis requires in each case, a different approach in the treatment of physical therapy [3]. In terms of an enhanced form of the condition is required initially surgery as total hip arthroplasty [4], after application of kinesiology. Total hip arthroplasty is a medical procedure effective in treating hip joint degeneration [5, 6].

A number of specialized studies mention the importance of total hip arthroplasty in hip pain relief and affected the functional independence of patients [7].

Although hip arthroplasty is used successfully in the treatment of coxarthrosis, literature data indicate the presence of postoperative complications in about 15% of patients, complications that arise as a weak pain and physical functions [8].

Vilardo, L. Shah, M. [9] support the possibility that postoperative become acute pain and to persist longer than 2 months after the intervention, under exclusion of other causes pain generators.

In this context should apply the benefits of physical therapy on his hip functionality and quality of life.

Hypotheses

Placing pre and postoperative physical therapy program appropriate to the age, associated pathology and exercise tolerance elderly contribute to reducing the negative consequences caused by surgery and increased functional independence of patients

Material and methods

Research protocol

a) Period of the research

This study was conducted from January 2014 - December 2014 and was based on the experimental method and the theoretical and practical method of documenting.

b) Subjects

The study was conducted on a sample of 44 subjects, aged 64-75 years.

All subjects were diagnosed with osteoarthritis in advanced stage and were selected from patients of Orthopaedics and Traumatology Hospital *Foişorul de Foc* in Bucharest .

To establish the role of physical therapy before and after surgery were established and recorded followed parameters to analysis and interpretation of results and the physical therapy program has been in patients of this study.

We note that all subjects have given their consent to participate in the study.

c) Applied tests

The subjects were evaluated in two test moments: initial (T_I) before hip arthroplasty and kinetic software application, and final (T_F), 4 weeks thereafter. The data collected were placed in tables and graphs.

For monitoring and quantifying the results, the following parameters were evaluated:

- Parameter postoperative pain revealed by Visual Analog Scales, a horizontal line of 10 cm with keywords on each end that the patient indicates a point that we believe is subjective perception of pain, anxiety and stress before surgery and joint replacement of the hip [10] ;
- Parameter joint amplitude at the hip-femoral joint on flexion and abduction on goniometer measured using [11];
- Parameter muscular hip of stabilizers: quadriceps, middle and big gluteal, psoas iliac, according to international standards measured through muscle testing scale of 0-5 [12, 13];
- Parameter thigh hypotrophy determined by measuring of thigh perimeter with metric tape at the crease subfesier, the patient beeing in standing with legs slightly apart and your body weight equally distributed on both feet [14];
- Parameter subjective assessment of quality of life Scale
- Parameter represented by gait.

d) Studied moments

Physical therapy applied pre- and postoperative (between times T_I and T_F) targeted the following general objectives.

Preoperative physical therapy program objectives [15] were represented by:

- Maintaining strength muscle,
- Maintaining joint mobility,
- Breath education,
- Enabling the general circulation,
- Balancing mental patient.

The means for achieving the targets were isometric exercises for the buttocks and quadriceps muscle contraction lasting 6 seconds and pause 12 seconds, and isotonic exercises for the leg muscles affected to the healthy upper limb ,individualized dose (10-20 reps with pause 5 or 10 repetitions).

The general objectives of postoperative physical therapy [16] were:

- Pain relief,
- Fighting muscle contractures,
- Improving muscle strength of the lower limb joints stabilizers,
- Improved knee and hip joint mobility with respect to specific restrictions,
- Walking reeducation.

The means used to attain these objectives were: posture operated leg in abduction of 20° using triunghiulare Muller pillow, correcting the tendency of external rotation with a splint or a scroll type lateral Brown, breathing exercises accompanied by movements of the limbs upper and inhale and exhale exercises against resistance (exhales through the tube immersed in a jar of water) in the first five days and, not least, learned exercises before surgery.

They performed leg exercises supine healthy and exercises with leg operated as follows:

- Phase I (48 hours) consisted of isometric contractions of the quadriceps (10 repetitions), exercises in all planes at the ankle (20-30 reps),
- Stage II (4-5 days) represented earlier exercises, to which was added without gravity hip abduction (20 repetitions) activo-passive flexion of the hip with the knee extended (10 repetitions), balancing in set (40 repetitions), walking frame loading of the hip prosthesis and respect normal step,
- Phase III (6-7 days) was the previous stage exercises, hip abduction of decubitus cushion between your knees heterolateral of isometric prone buttocks, knees flexed, from sitting to standing with support lifting the healthy leg frame (2x6 repetitions),
- Phase IV (days 8-9) with exercises increase muscle strength in the legs,
- Phase V was (10-11 days) is addressed with the involvement of tolerance to walk with crutches or (with progressively increasing load and increased flexion and extension); 4-6 weeks after surgery with a crutch or a cane going to facilitate recovery,
- Phase IV (days 8-9) with exercises increase muscle strength in the legs,
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In applying individualized physical therapy programs have kept in mind the following methods:

- Maintain abduct the hip with a pillow between your legs, the patient was in lateral decubitus ventral

- Use assistive devices to prevent flexion greater than 90 °, and sat operated leg will stay extended
- Avoid crossing one's legs or rotation inwards and outwards peaks feet.

e) The statistical methods used

The software used for statistical analysis was used Microsoft Excel 2013.

Statistical indicators followed were arithmetic averages and the difference between the initial and final values of the parameters evaluated.

Results

Following evaluations made were noted as follows:

- The data showed a higher number of female subjects, the percentage is 68, 8%.
- Monitoring of postoperative pain as "*acute response to surgery*" [17] highlighted the good evolution of this parameter in the experimental group at 4 weeks postoperatively, according to Table. 1.

Table no.1. The pain intensity in the two tests:

The pain intensity in the two tests	Initială Tests(T_I)	Final tests (T_F)
Absence of pain	2	15
Mild pain	5	21
Moderate pain	28	6
Violent pain	9	2

- Parametrul Parameter joint mobility on flexion and hip abduction increased articular mobility

Table no. 2. Evolution of mobility on hip flexion

	Before physical therapy	After physical therapy
Flexion with the extended knee over 90^0	9	3
Flexion with the extended knee over 90^0	5	4
Flexion with the flexed knee over 90^0	4	6
Flexion with the flexed knee below 90^0	15	19
Passive flexion limited	11	12

Subjects in the experimental group were increases in flexion between 20°-35°, and the movement of 15°-25° abduction.

After rehabilitation complex treatment is successfully improving active extension with the knee flexed at values above 150° in 25 cases, while 19 cases were executed passive extension around 15-20 degrees or slightly above it.

Preoperatively 32 patients (72.72%) had abnormal gait (limping), and after application of postoperative physical therapy only 12 patients had abnormal gait .

Resumtion of gait and its training requires values lower limb muscle strength grade five.

The scale of subjective assessment of quality of life had initial value of 4.69 to the average score of the 44 subjects their condition well, and finally 7.8.

Discussions

Speciality literature mentions the benefit of preoperative physical therapy for individuals affected hip arthroplasty, respectively of the postoperative aimed at improving muscle tone [18]. Jack, Ş., C. [19] believes that the preoperative physical therapy intervention on physical functionality, and similar studies converge on the same physical improvement in performance.

The study by Trăilă, L., A. [20] attest to the prevalence of coxarthrosis and hip arthroplasty in individuals females.

Postoperative pain relief confirms that pre- and postoperative physical therapy program well led, individualized reduces postoperative complications.

Similar studies notes following the intervention, reducing postoperative pain in

approximately 84% of patients, while 76% reported improvements in functional recovery of physiological [21].

The decrease decompensation allowed algetic active physical therapy techniques are applied to recover stability and mobility of hip surgery.

Movements of the abduction, adduction, internal rotation, external rotation so the knee extended and flexed with him were affected in most patients and their evolution after physical therapy is less significant.

The results correspond to data obtained from the literature that the exercise properly dosed and applied in accordance with methodical guidelines for the application of physical therapy in elderly increase quality of live.

Conclusions

1. The people most affected by osteoarthritis are female.
2. A well dosed kinetic program, individualized reflected in minimizing complications of hip joint replacement.
3. Postoperative pain decreases in most patients within one month.
4. Preoperative physical therapy has a major role on the functional capacity of the elderly, but this, along with postoperative physical therapy contributes effectively to achieve the state of balance and physical and mental health.
5. Evolution experiment followed parameters in subjects us to say that physical therapy program developed and achieved its goal.
6. Physical treatment advanced coxarthrosis lead to improved stability and specific joint mobility, and to increase exercise capacity and quality of life of the elderly.

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