THE FUNCTIONAL TREATMENT FOR HIPS WITH APPLIED ENDO-PROSTHESIS IN THE "LACU-SARAT BRAILA" RECOVERY CENTER (2009-2013)

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Abstract
The present study focuses on the necessity and efficiency of the kinetic recovery of the operated hip, and on increasing the orthopedist's trust in the kinetic act as a medical act executed in a responsible and understanding fashion by qualified staff. Arthroplasty refers to the replacement of a joint deteriorated by a certain pathological process (degenerative arthritis, infection, or tumor) with an artificial one, named endoprosthesis, a joint which must remain perfectly functional. The lot comprised 76 (63%) male patients and 45 (37%) female patients, 44 (37%) of which with ages between 40 and 60 years, 54 (45%) between 60 and 70, and 21 (18%) over 70 years of age. The distribution of the study lot was made depending on the addressed symptomatology: chronic pain, acute pain and mobility reduction. Thus, 52 (42%) patients featured acute pain, 42 (33%) chronic pain and 35 (27%) mobility disorders accompanied by walk disorders, that is, tilting pelvis 67 (55%) and limping 54 (45%) (Figs. 3-4), with hip prostheses of different types and at various intervals from the intervention. Subjects were clinically, functionally, radiologically and MRI investigated, preoperatively, postoperatively, after 3 months and after 1 year. A recovery program featuring educational, hygienic, diet, medication and physical-kinetic aspects was applied daily for a 14 to 15-day period, followed by kinesiotherapy and massage 2 to 3 times a week, by reevaluation and by a complete treatment at 3 months and at 1 year, respectively. Monitoring was made by the VAS scale for pain, Womac Lequesne for the functional status and Tinetii for the walk. Results. All patients have been evaluated initially, after 10 days and at the completion of the treatment, after 3 months and after 1 year. The recovery of hip arthroplasty must be carried out in time and maintained for the entire life. We concluded that hips with applied endo-prosthesis must present the same functionality as a normal joint. If mobility is restored by the very functionality of prosthesis as passive element, stability and walk require a 4-5 force musculature, values that can be obtained only through an analytical kinesiotherapy program for each muscle group. Due to the fact that the application of endoprostheses occurs between the ages of 60 and 80 years, the reeducation of the walk is slow, and the fear of falling hinders recovery, which is an issue with great impact on the quality of life.
Key words: *kinetic recovery, arthroplasty, falling hinders*

INTRODUCTION

Establishing the inferior train is conditioned by the structural-functional integrity of the neuro-myo-arthro-kinetic components. A special role in this sequence is played by the hip, the most important joint in the orthostatic stability and walk. In the prospective study we observed the results of the recovery program, evaluating the following parameters: pain, mobility, stability, the force of the stabilization musculature, walk and, respectively, quality of life in patients with operated hip.

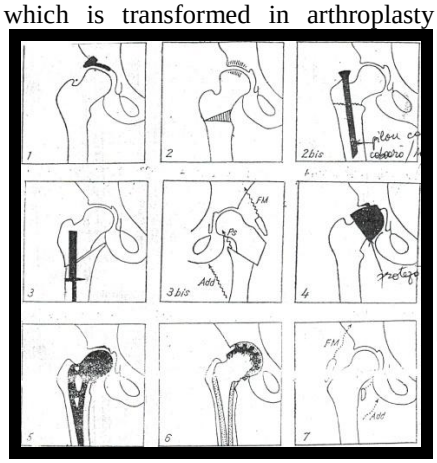
Arthroplasty refers to the replacement of a joint deteriorated by a certain pathological process (degenerative arthritis, infection or tumor) with an artificial one, named endoprosthesis. As a rule, surgical treatment is required when the means of the applied preservative, accurate and intensive treatment fail. Surgical treatment depends on the decision of the surgeon, who establishes the type of prosthesis depending on the disease: coxarthrosis, aseptic necrosis (2), and hip arthroplasty (1).

Treatment of pre-degenerative arthritis: these forms are generally observed in patients before the age of 40, usually as consequences of some well defined causes and in the case of which architectural vices can be analyzed. 1) the orthoplastic stop; 2) the Pauwels variation osteotomy; the McMurray osteotomy (medially); 4) cervical osteotomy (Moore) – which always entails the risk of complications, the necrosis of the femoral head. (6)

Confirmed coxarthrosis: in establishing the indications of the surgical treatment of confirmed coxarthrosis various factors are involved. The real and the physiological age, the clinical-radiological form, the phase of the evolution and life and work conditions are highly important in choosing the surgical solution. 1) cup arthroplasty (Smith-Petersen); 2) the McMurray osteotomy with tenotomy; 3) total arthroplasty (McKee). (2)

Cup prostheses consist of preserving the femoral cervix and head to which a cup making articular contact with the acetabulum is fixed. One of the indications of this prosthesis is the ischemic necrosis of the femoral head. *Total prosthesis* is indicated in all the large anatomical-functional

degradations of the hip: secondary and primary decompensated coxarthrosis; posttraumatic sequelae; cervix fractures with decayed acetabulum, aseptic necrosis, old hip dislocations; old arthrodesis executed at need at an early age and which is transformed in arthroplasty when the spine, the knee, the opposite hip can not functionally compensate the ankylosis of the hip; inflammatory chronic rheumatism, ankylosing spondylitis and rheumatoid polyarthritis; sequelae of infectious coxitis.



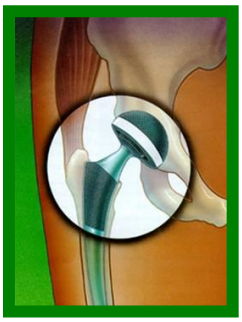


Fig. 1. Types of hip orthopedic-surgical interventions (6)

Fig. 1 bis. Resuming the walk by Botez (5)

The postoperative treatment in meant to:

1. Prevent profound venous thrombosis: drug and kinetic treatment, adequate positioning.

2. During hospitalization, the initiation of recovery by maintaining mobility within the limits of prosthesis, akinetic muscular invigoration, isometry on different muscular groups and passive and active flexion angles (without rotation), all of them unburdened. Mobilization sitting down, resuming the orthostatic position and the walk according to the possibilities of loading and to the support means. Adapting the prosthetic means (frame, crutches, walking sticks).

3. Home recovery or in specialized services is meant to resume walking. The course of resuming the walk is the following: walking in place, followed by walking around the bed, walking around the house, walking on plane ground, walking on the stairs (with crutches, walking sticks, or without).

4. Avoiding falls and the dislocation of the prosthesis by: renewing the stability position by the means of free postures, fixed postures, invigoration of musculature, invigoration of hip abductor muscles, invigoration of the pelvic-trochanter, invigoration of the greater gluteal, of hip abductor muscles, of hip flexor muscles.

5. Resuming the walk (3)

Exercises intended for resuming the walk begin with periods of adjustment to orthostatic position which, in general, is highly important in particular in the elder.

The moment standing up on both feet is possible without balance problems, the walk begins. walking without leaning on the affected inferior limb; the patient walks with crutches; leaning on the healthy limb; the crutches are brought forward; the affected limb is brought forward between the crutches without burdening it (it touches the floor); the body weight is moved on the crutches by poising the body forward; the healthy inferior limb passes between the crutches and leans on the floor in front of the crutches, at the same time the body weight being moved from the crutches on the healthy limb.

In this phase of walking without leaning on the affected inferior limb, a few aspects are followed: the foot of the affected limb is not suspended in the air, but is put on the floor in virtual leaning; the extension of the hip during the posterior step must be completed; the knee must flex just as in the case of a normal walk; touching the floor with the affected limb, though relatively mimed, must be done accurately first by heel, than by rolling on and leaving the floor by toes; the poising of the affected limb, just as the virtual leaning, must be done without deviation (usually in abduction and external rotation); the rotation of the pelvis above femoral heads must be as symmetrical as possible during the pelvic step; the distance between the steps must be equal and constant (usually, the length of a step and a half).

The patient is taught to go up and down on the stairs.

The patient must mount with the healthy limb, and then the crutches and the affected limb are brought on the same stair.
The crutches and the affected limb are brought down, and then the healthy limb is brought on the same stair.
1. The walk with leaning on the affected limb is resumed gradually, depending on the type of lesion.
2. The walk leaning on a walking stick begins when the patient has reached to a burdening of about 50% of the body weight and the pelvis does not poise (the Trendelenburg sign) due to the insufficiency of the abductor muscles. The walking stick is held in the *hand opposite to the affected limb*, and they move together. The burdening is graduated by loosening the leaning of the hand on the walking stick.
3. The complete recovery of the walk requires a series of complex exercises, such as: walking freely, walking on a slanted surface, walking back, walking sideways, walking with crossed legs, walking crisscross, and turnings.
During the leaning interval of each inferior limb, there are two phases: the cushioning phase and the impulsion phase.

The orthopedic hygiene of the hip (6)
Most of the hip traumas feature coxarthrosis as tardy sequela. The recovery of early sequelae must be complemented with a series of prescriptions that the patient will follow at home for months and years, sometimes for life. These prescriptions are part of what was called "hygiene of the hip": losing weight, even under the ideal weight; avoiding walking on bumpy ground and stairs; avoiding limping by the mental control of the walk; avoiding extended orthostatic position and walks; at least twice a day the patient will keep to resting in the bed, with the inferior limbs stretched; leaning on the walking stick on longer distances; daily riding a bicycle or a fixed bicycle; twice a day, the patient will execute the exercises prescribed for mobility and for muscle invigoration; legs will not be crossed; hips are not to be flexed more than 90 degreed; for a long postoperative period, a pillow is used between the inferior limbs in sideway decubitus.

OBJECTIVES, PURPOSE

The present study intends to prove the efficiency of kinesiotherapy (by posturing, mobilization, invigoration, orthopedic hygiene of the hip) applied to a lot of patients having undergone the application of an endoprosthesis, in view of relieving pain, of improving mobility, stability, the walk and the socio-professional reintegration.

MATERIAL AND METHOD

The clinical study was carried out within the "Lacu Sarat" specialty Ambulatory and the S.C. "FIZITER" S.A. recovery Center on a lot comprising 121 patients, between April 2009 and April 2013.
The lot consisted of 76 (63%) male patients and 45 (37%) female patients, with ages between 40 and 60 years – 44 (37%) patients - 60 and 70 years – 54 (45%) patients – and over 70 years – 21 (18%) patients.
The distribution of the study lot was made depending on the addressed symptomatology: chronic and acute pain and reduction of mobility.
Thus, 52 (42%) patients featured acute pain, 42 (33%) featured chronic pain and 35 (27%) featured mobility disorders, accompanied by walk difficulties: pelvic tilting – 67 (55%) patients and limping – 54 (45%) (Figs. 3-4).

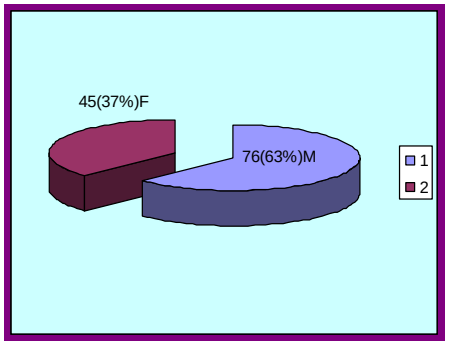


Fig. 1. Distribution of the study lot by sex

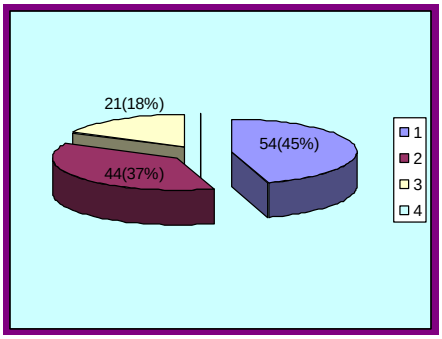


Fig. 2. Distribution of the study lot by age

All patients having benefited by an initial subjective clinical exam (the VOS scale) and by an objective one (articular and muscular testing, measurements, evaluation of the walk), the Womac Index, the Lequesne functional Index, Tinetii for the walk, muscular testing for stability, articular testing for articular mobility. (2,3,5)

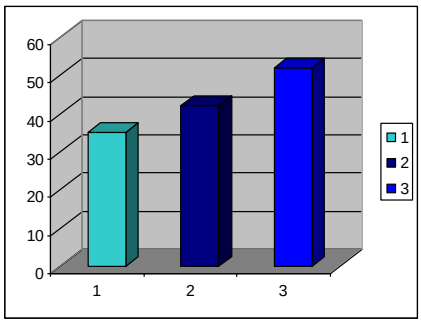


Fig. 3. Distribution of the study lot by addressed symptomatology:chronic and acute pain and reduction of mobility

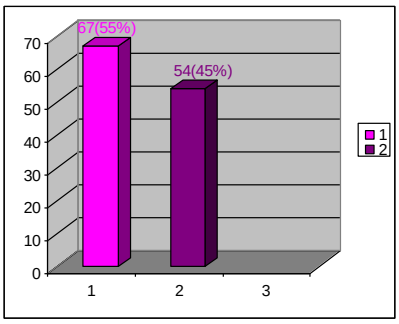


Fig .4. Distribution of the study lot by mobility disorders: pelvic tilting 67 (55%) and limping 54 (45%).

Tests were carried out initially, at the beginning of each treatment, after 3 months and after 1 year.
Kinetic programs have been individualized depending on pain, on the remaining functional deficit, and objectives. They lasted 15 days and they comprised: balneotherapy in kinetic pools, antalgic and relaxation electrotherapy, massage, analytical kinesiotherapy, simple psychotherapy in view of acknowledging the necessity of the kinetic program and abandoning various postoperative support means (crutches, frame, and walking sticks). The kinetic program was updated weekly.

The operative indications were intended for: degenerative arthritis – 56 patients (38%), femoral head aseptic necrosis – 23 patients (16%), posttraumatic sequelae – 39 patients (27%) from the total of study patients, hip dysplasia – 28 patients (19%) (Fig. 3). The purpose of this study was to determine whether, by applying kinesiotherapy through programs specific to each patient, a significant score increase is obtained, and whether there is a significant difference in score before and after the treatment (Fig. 4).

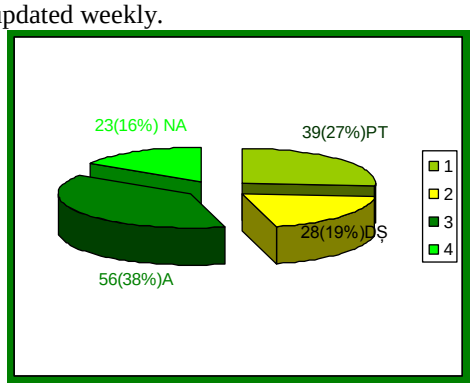


Fig. 5. Distribution of the study lot by operative indications

The following clinical-functional parameters were observed: pain – evaluated by the means of the VAS scale (0-10), physical and functional dysfunctions, mobility, stability, Patrik +-, cognitive dysfunctions (the LOQUESNE, Womac scale), self-perception of the patient, drug consumption. Within the following graphics, the percentage evolution of the initial and final results for the parameters observed in the study will be presented. Is can be estimated that pain reduces significantly; thus, acute pain reduced from 42% acute pain to 32% after the first treatment, chronic pain reduced from 33% to 21%, mobility was enhanced from 89% to 36%. Improvements registered for the cognitive dysfunction was 86,39%.
The self-perception of the patient concerning their health condition indicates an improvement of 64,4% (Graphic I).

Table I. Evolution of the pain score

Lot	Average scores Initial – Final	Score differences (I-F)	Statistic signification
121 people	2.54-0.58	1.96 (77.16%)	P (over 0.001)

Evolution of physical dysfunctions

Lot	Average scores I-F	Score differences (I-F)	Statistic signification
121 people	7.98-1.59	6.39 (80.07%)	P (over 0.001)

Evolution of cognitive dysfunctions

Lot	Average scores I-F	Score differences (I-F)	Statistic signification
121 people	1.69-0.23	6.39 (80.07%)	P (over 0.001)

Evolution of self-perception score

Lot	Average scores I-F	Score differences (I-F)	Statistic signification
121 people	1.77-0.63	1.14 (64.4%)	P (over 0.001)

Evolution of drug consumption score

Lot	Average scores I-F	Score differences (I-F)	Statistic signification
121 people	1.46-0.36	1.10 (75.34%)	P (over 0.001)

Graphic I

Drug consumption dropped from (74.34%) to (30.49%).

The obtained results compare to the ones achieved by recently controlled studies. Analyzing the obtained data, we can sustain that the recovery program consisting of the mentioned kinetic program in the chapter "Treatment", accompanied by the use of natural treatment factors specific to the "Lacul-Sarat" resort, brings a significant improving of the observed parameters.

DEBATE

From the processed data, it follows that the participation to postoperative sequelae recovery is clearly superior in urban inhabitants, as compared to rural inhabitants; the addressed differences between the two sexes are to the advantage of male patients; the study lot comprises people over 50 years of age, the age criterion being insignificant. The obtained statistic results comply with the requirements of this study, that is: the kinetic recovery treatment applied for the purposes mentioned above allows a clearly significant score increase within the recovery program.

CONCLUSIONS

From the point of view of demographic factors, the lot is relatively homogenous. Applying the associated kinetic program in the recovery of dysfunctions produced by applying prostheses on the hip significantly reduces the monitored parameters, reduces pain, muscular contraction and retraction, it enhances mobility, the walk, it modifies patient's self-perception, cognitive dysfunctions and leads to the drop of analgesic and relaxation drug consumption, which is a beneficial phenomenon for the quality of life of the patient on the hip of whom an endoprosthesis has been applied, and for their professional and social reintegration.

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