

**THE RECOVERY THROUGH PHYSIOTHERAPY OF THE
GERIATRIC PATIENTS SUFFERING FROM
ENDOPROSTHETIC COXARTHROTHIS**

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Abstract:

Physiotherapy represents many times the only method of treatment a patient can adopt, as it deals with diseases which can be treated neither through surgery, nor through medication.

Physiotherapy represents an individualised therapy method which involves programmes of dynamic or static physical exercises; it may be used in prophylaxis, cure and recovery.

Physiotherapy has a remarkable role in hip arthrosis, representing an important part in the management of pain for anyone suffering from this disease. It is also the best way to limit the unfavourable evolution of the hip arthrosis, and that of other joints.

Introduction:

The coxofemoral joint is one of the most important joints in the human body as it has a significant role in walking. Together with the hip muscles it also realizes the function of body weight support, maintaining the vertical position.

Coxarthrosis manifests itself through joint degeneration determined by a morfo-functional lack of balance. It is also known as hip osteoarthrosis or hip arthrosis and represents the location of degenerating rheumatism at the hip joint. Coxarthroses are more frequent in the case of patients over 40 and their incidence is even greater in the case of older people. Overweight and old age are the most important causes for the appearance of this disease.

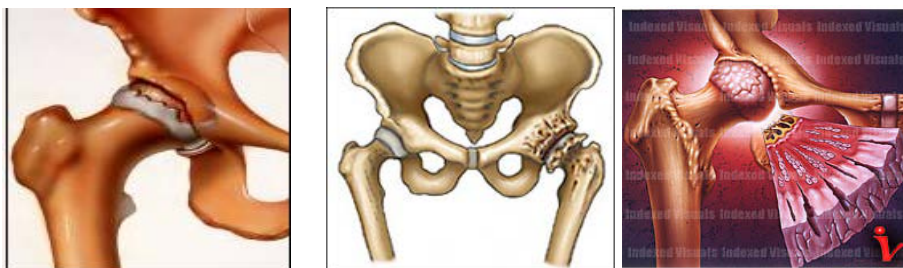


Fig.1 Hip Arthrosis

Classification:

- Primitive Coxarthroses;
- Secondary Coxarthroses:
 - with alteration of joint mechanics (congenital modifications, acquired modifications of the hip joint);
 - without alteration of the joint mechanics (infections, rheumatism).

Coxarthroses has an insidious start. Initially, the pain has mechanic characteristics and then it makes movement almost impossible; there may be reduction of joint mobility, reduction of extension, of internal rotation, abduction, vicious position (flexion, adduction, external rotation) Patrick sign, Duvernay shoe sign (put on from behind), difference of members length.

Hip arthroplastic surgery is a procedure through which, part of the damaged joint components are replaced with artificial components.

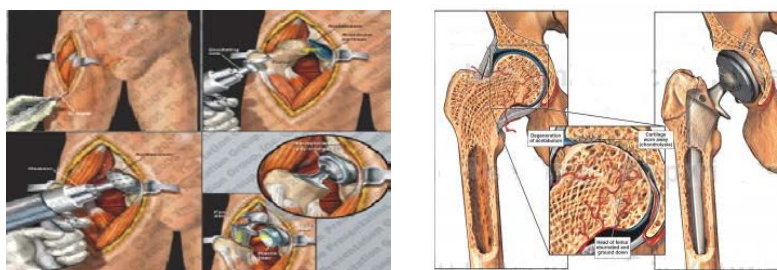


Fig.2 Hip arthroplastic surgery in coxarthrosis

The purpose of hip prosthesis is mobility improvement and pain reduction.

Hip prosthesis is widely used nowadays, that is why the intervention of physiotherapy, pre and post surgery is particularly important and efficient, making the patient re-take the daily activities sooner.

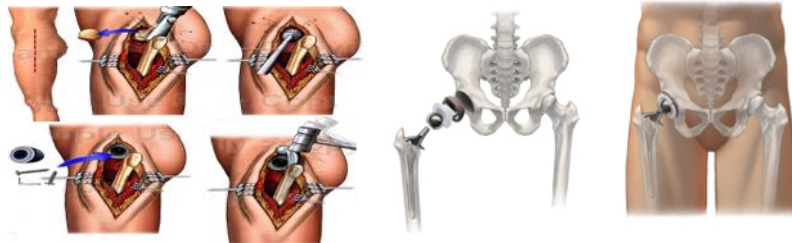


Fig.3 Prosthesis in hip arthrosis

Materials and methods

The group of subjects included six patients, women and men, between 60 and 70 years old, diagnosed with coxo-femoral arthrosis; this determined surgical intervention with the purpose of fitting up a hip prosthesis

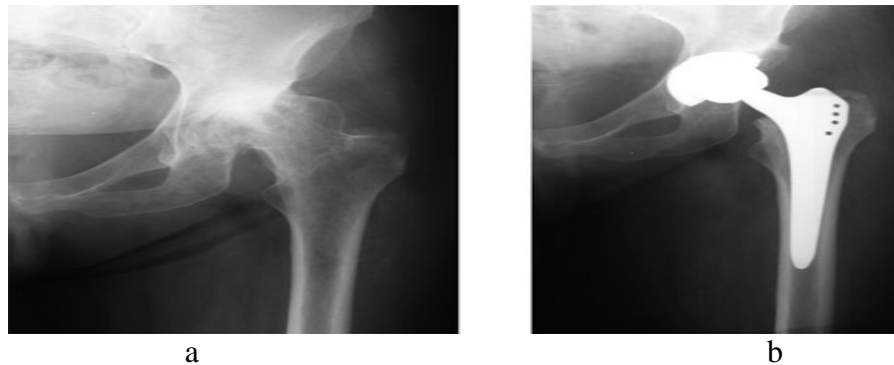


Fig.4 X-ray photograph before prosthesis (a) and after (b)

The study was carried out in the Physiotherapy Complex Suceava; the material conditions for the study were as follows:

- for the testing, the following materials were used: goniometer, metric band;
- the physiotherapy room had the following equipment during treatment: gymnastics mattress, ergonomic bike, trellis, rolling carpet, sand bags, sticks, weights, elastic bands, Rocher box, stepper, pulley equipment, counter-resistance equipments, benches.
- Massage office: massage table, warm compresses;

The hip is a segment that may suffer from a number of affections that is why the present study resides on the following hypothesis:

- By applying physiotherapeutic means in the case of patients who suffered surgery for the implant of the total hip prosthesis, the subsequent may be obtained: consolidation of recovery process, acceleration of recovery time, prevention of complications as well as integration of the prosthesis in the global movement scheme of the inferior limb.
- If we apply an individual programme, based on stages, during the functional recovery after surgery, then, the recovery will be functional and social and professional re-integration faster.

The objectives are established as follows: prevention of hip dislocation, maintaining the muscular force at hip and knee level, prevention of oedema, thrombophlebitis, pulmonary embolism, education of patient in view of transfer and movement with the help of various devices (frame, crutch, walking stick); acquire active movements without any pain; informing the patient on the activities and exercises which are not allowed after surgery; gaining independence in daily activities and self-care.

Stage 1 (1-14 days)

This stage is characterized through: initiation of the patient's transfer from bed to chair and vice versa (the patient's chair has to be higher, in order not to permit a wider than 70° thigh flexion), isometric contractions of the quadriceps every hour; passive rising of the leg, knee stretched (after three or four days); crutch walking without support starting day four; starting day four or five, after removing bandages, flexion exercises, knee extension at the side of the bed; seating in declive position, manual lymphatic drainage at the inferior limb level, massage, passive and active mobilization of the under and upper joints; frame walking starts; recovery goes on following the objectives: pain control, bracing of under and upper muscles of hip joint and recovery of joint mobility;

Stage 2 (14-60 days)

The following exercises are to be started: flexion and extension of ankle joint; isometric contractions of thigh muscles (unoperated inferior limb in flexion, sole on the bed, the other inferior limb is pushed towards the mattress); hip abduction, leg in supination; quadriceps bracing (isometrie, flexion and extension on the short movement arc); bracing of thigh and shank muscles; bracing of buttocks muscles

Active movement: hip flexion not higher than 70°, maintaining a neuter rotation position of the inferior limb, no hip abduction higher than the middle body line, frame walking, weight lifting percentage depends on the type of surgery and doctor's orders.

The patient continues the exercises of the preceding stage, other exercises are initiated – abduction from lateral horizontal position, hip extension, ergometric bike exercises (high chair and minimum resistance), and frame walking still continues, initiation of stair frame walking, observation and correction of walking deviation.

Stage 3 (60-120 days)

There are to be done vertical position and horizontal lateral position exercises, the patient continues bike exercises, bracing exercises for the other joints (unoperated inferior limb, trunk, superior limbs), getting the optimal muscular strength for the internal muscles of the hip, integration of hip joint in the complex movement of the inferior limb, gain of walking ability.

In order to favour local recovery it is necessary to apply a set of rules to maintain the circulation and trophicity of the local but also peripheral tissue; this, to keep up muscle value and joint dynamics. It is one of the most difficult tasks in recovery, as it may be very easy to worsen rather than improve the process.

Isometric contractions of the segment muscles, tonus maintenance and muscular trophicity.

In order to maintain good functions and trophicity of the whole segment we resort as soon as possible to passive-active mobilization, of all inferior limb joints, movements which do not affect the injured area.

Movement amplitude is determined by the type of injury. Movement will be done considering pain limit. Mobilization will insure good circulation of the segment. Static, isometric contractions executed regularly in all muscle groups will prevent installation of muscle hypotrophy.

➤ **Exercises- examples:**

1. On the quadriceps muscle of the affected inferior limb: the patient, lying on the back, realizes, at the physiotherapist command the isometric contraction of the quadriceps for 5-6 seconds; than, the muscle is relaxed and the physiotherapist executes, within the pain limit, passive flexion of the knee joint.
2. Face down, the patient executes flexion and extension of knee joint of the affected limb.
3. Lying on the back, the patient does flexion and extension of knee joint of the affected limb.
4. Seated at the edge of the bed, shanks hanging down perpendicularly on the floor, the patient does flexions and extensions of both knee joints.
5. Seated, the patient stands on toes and returns to the initial position.

6. On hip and shank muscles: the patient lies face down; under the ankle, in the inferior third, it is placed a sand bag, so as the knee is flexed 15°-20°. The physiotherapist places the hand on the inferior third of the shank, applying a little pressure; the patient tries to realise flexion of the shank; the isometric contraction is kept for about 5-6 seconds, followed by a relaxation period when the physiotherapist passively realises flexion within pain limits.

7. For the sural triceps muscle: the patient lies on a bench, on the back; the physiotherapist presses gently, as follows: one hand fixes the shank (in its inferior third) and the other hand placed at the level of the transversal arch, on the plantar part of the leg, opposes to the movement of plantar flexion.

8. On the quadriceps muscle: the patient lies on the back; at the physiotherapist order he does an isometric contraction of the quadriceps for 5-6 seconds, then relaxes the muscle and the physiotherapist does the flexion passively, within the pain limit, from the joint of the affected knee.

9. Seated at the edge of the bed, shanks hanging down perpendicularly on the floor; a sand bag is placed on the inferior third of the shank; the patient does the flexion of the shank on the hip and returns to the initial position.

10. Lying face down; a sand bag is placed on the inferior third of the shank; the patient does flexion and extension of the affected knee joint.

11. Seated, the patient realises flexion and extension of the hip of the affected inferior limb.

12. Seated, the patient does knee flexions of about 30° and returns to the initial position.

13. Seated, facing the trellis, the patient does the following movements in the order described:

- placing the leg on the first step of the trellis (the affected inferior limb);
- returns to the initial position;

14. Standing on one leg (the affected inferior limb) facing the trellis hands on the trellis at shoulder level, the patient stands on his toes and returns to the initial position.

Results

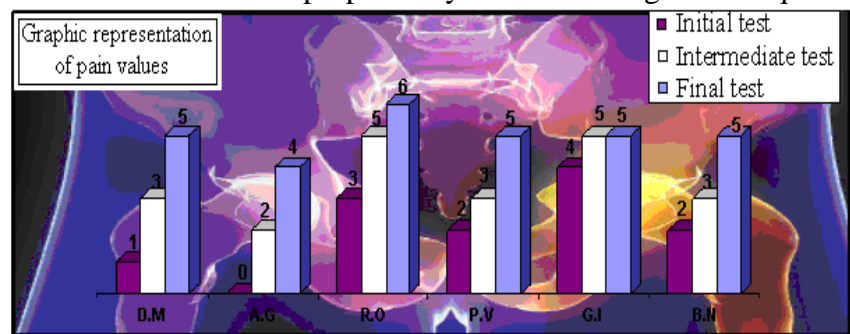
There were a series of tests and measurements in the initial phase, the intermediary one and the final stage; the data are included in charts and are presented in order to emphasise the functional deficit of the patient, caused by this affection of the inferior limbs.

Pain parameters and the patients' walking were evaluated following Merle d'Aubign and Lequesne scores, which are frequently

used by physiotherapists in order to follow the evolution and efficiency of treatment.

PAIN	VALUES
permanent pain,	0
pain exacerbated at night	1
pain during walking, which prevents any activity	2
endurable pain	3
pain that fails to stand	4
mild pain, intermittent, normal activity	5
indolor	6

Chart 1 Values proposed by Merle d'Aubign and Lequesne

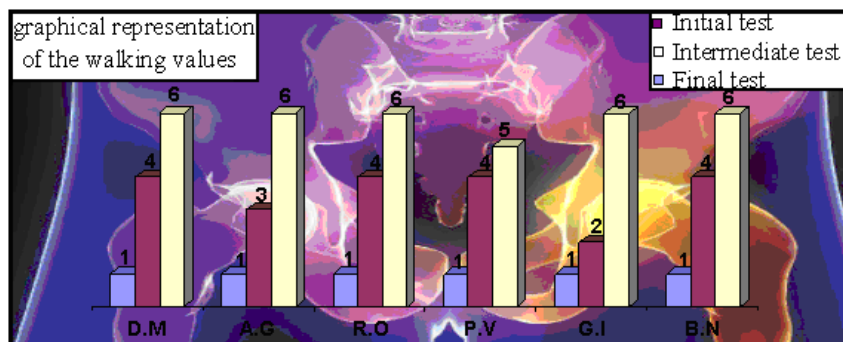


Graphic 1 Graphic representation of pain values registered in the case of the six patients

Another evaluated parameter was walking, which registered improvement; the values and graphic of this parameter may be observed below.

WALKING	VALUES
impossible	0
by card	1
with 2 axillary crutches	2
with 2 sticks	3
limited or possibly with a cane	4
no stick with light limp and fatigue	5
normal	6

Chart 2 Values proposed by Merle d'Aubign and Lequesne



Graphic 2 Graphic representation of walking values registered in the case of the six patients

Conclusions

- Applying physiotherapeutical treatment we have concluded that complete recovery in case of endoprosthesis coxarthrosis lasts about 100-120 days.
- Global evaluation of functional recovery in case of hip total arthroplasty was of outmost efficiency regarding the final goal: walking.
- Physiotherapy represents a compulsory link in coxarthrosis treatment; without recovery, surgical intervention only has structural, not functional contribution in the healing process and can determine important pathological sequels.

Bibliography:

1. Lucia Coppola, Lucia Coppola Stefano Masiero, Stefano Masiero – Riabilitazione in ortopedia, Ed. Piccin, 2005.
2. Tudor Sbenghe – Kinetologie profilactică, terapeutică și de recuperare, Ed. Medicală, București, 1987;
3. Dr. Ion Stroescu – Recuperarea funcțională în practica reumatologică, Ed. Medicală, București, 1979;
4. www.arthroport.com;
5. www.ancaeginocchio.it/anca/coxartrosi.html;
6. <http://www.mon-arthrose.com/hanche/maladie/generalites.htm>;
7. http://ubanon.free.fr/la_dysplasie.htm;
8. www.aeartroscopia.com
9. <http://www.doereport.com>
10. <http://www.vitosha-hospital.com>
11. <http://www.anatomie-online.com>

Titlu: Recuperarea prin kinetoterapie a pacienților geriatrici cu coxartroză endoprotezată

Cuvinte cheie: recuperare, coxartroză endoprotezată, kinetoterapie.

Abstract: Kinetoterapia reprezintă de foarte multe ori singura modalitate de tratament pe care pacientul o poate aborda, întrucât ea se adresează unor afecțiuni ce nu mai pot fi tratate nici chirurgical și nici medicamentos. Kinetoterapia este o formă terapeutică individualizată care, plecând de la programe de exerciții fizice statice și dinamice, se poate folosi în programele terapeutice profilactice (de prevenire), curative și de recuperare.

Kinetoterapia are un rol remarcabil pentru artroza șoldului reprezentând o parte foarte importantă în managementul durerii pentru oricine suferă de această afecțiune. Este și cea mai bună cale de a limita evoluția nefavorabilă a artrozei șoldului, dar și de la nivelul altor articulații.

Titre : La récupération dans la thérapie physique pour les patients gériatriques avec coxarthrose implant.

Mots – clé: récupération, coxarthrose implant, thérapie physique.

Résumé: La kinésithérapie est très souvent le seul mode de traitement que le patient peut l'aborder, parce qu'elle résout certains problèmes qui ne peuvent être traitées ni chirurgicalement, ni médicalement. La physiothérapie est une forme de thérapie individualisée, qui peut être utilisée dans le traitement prophylactique (prévention), de guérison et de récupération, en abordant la dynamique des programmes des exercices et des programmes statiques.

La kinésithérapie détient un rôle remarquable dans l'arthrose de la hanche, en représentant une partie très importante dans la gestion de la douleur pour tous ceux qui souffrent de cette affection. Elle est, aussi, le meilleur moyen de limiter l'évolution défavorable de l'arthrose de la hanche, mais aussi, dans les autres articulations.