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Ministry of Health

Rehabilitation Protocol for

"Total Hip Arthroplasty Rehabilitation Protocol"

Kingdom of Saudi Arabia

Ministry of Health

General Directorate of Medical Rehabilitation & Long-Term Care

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Total Hip Arthroplasty (THA) Rehabilitation Protocol

Overview.

Total hip arthroplasty (THA), also known as total hip replacement, is an orthopedic operation that involves replacing the hip joint's articular surfaces (head of femur and acetabulum) with smooth metal and extremely cross-linked polyethylene plastic.[1] THA is today's most common and successful orthopedic procedure. THA can help reduce pain and improve quality of live and function in patients with disabling hip conditions.

Goals and Rationale.

This protocol paper aims to improve the quality of the THA rehabilitation program provided by physiotherapists in MOH. The information was collected and reviewed to ensure the best available evidence was presented to the care providers and to help them make better patient decisions. The physiotherapy interventions could be started before the surgery and continue after the surgery in the inpatient unit and outpatient clinic.

Indications for Surgery.

The following are common indications for THA:

- Severe hip pain with motion and weight bearing with significant motion limitation.
- Nonunion fracture, instability, or deformity of the hip.
- Bone tumors.
- Failure of conservative management or previous joint reconstruction procedures.

Recommendations for Total hip Arthroplasty (THA)

- Physical therapists should design preoperative THA exercise programs and teach them to perform strengthening and flexibility exercises.[4] The preoperative rehabilitation process could be started from the early phase before the surgery.
- preoperative rehabilitation could be beneficial for:
  - Decrease length of stay in inpatient after surgery.
  - Decrease anxiety.
  - Improve self-confidence.
  - Improve therapist-patient relationship.
- It's recommended that people get hip replacement advice on preoperative rehabilitation. Include advice on:
  - Pre\postoperative exercise plan.
  - Healthy Lifestyle e.g.: weight management, diet, and smoking.
  - Maximizing functional independence.
- Preoperative Assessment:

  Examination and evaluation of:
  - Pain.
  - Range of motion.

- Muscle strength.
- Balance.
- Ambulatory status.
- Leg lengths.
- Gait characteristics.
- Use of assistive devices.
- General level of function.
- Perceived level of disability.

- Preoperative intervention:

  Education and advice on:

  - Precautions and contraindications.
  - Rehabilitation process.
  - Goals & expectations.
  - Safety principles and fall prevention.
  - Patient/family information booklet.
  - Discharge planning.
  - Functional training for early postoperative days includes bed mobility and transfers.

- Gait training with assistive devices. Upper limb strengthening exercises should be started before the surgery to help with assisted walking devices after the surgery.
- Stair climbing training.
- Early postoperative exercises.

Physical therapists should collect data using outcome measures eg. Hip disability and Osteoarthritis Outcome Score (HOOS), 30-second Sit-to-Stand, Lower Extremity Functional Scale (LEFS), and Timed "Up and Go" (TUG) during the rehabilitation programs.

- Postoperative rehabilitation

Physiotherapy begins as soon as the patient is medically stable, typically on the day of surgery when possible.

✓ Early Mobilization: Physiotherapy exercise and rehabilitation should start early, and the patient should be encouraged to move the hip through the available ROM.

✓ Weight-Bearing Considerations: After THA, patients are usually permitted to bear as much weight as tolerated almost immediately after surgery. Expect in the following case:

- Bone grafts.
- Poor quality of patient's bone.

- Trochanteric osteotomy. Although uncommon, restricted weight bearing is at least 6 to 8 weeks or possibly 12 to 16 weeks for bone healing.

"Several randomized, controlled investigations have demonstrated that immediate weight bearing as tolerated after cementless or hybrid hip arthroplasty does not result in higher rates of adverse effects."

✓ Early Postoperative Motion Precautions After Total Hip Arthroplasty:

Precautions may depend on the surgical approach but the most common advice to keep in mind includes:

- Avoid hip flexion more than 90° and adduction and internal rotation beyond neutral.
- Do not cross the legs.
- Avoid standing activities that involve rotating the body toward the operated extremity.

✓ Follow weight-bearing restrictions for 6 to 8 weeks or up to 12 weeks for bone healing to occur. Precautions apply to traditional total hip arthroplasty and may or may not be necessary after minimally invasive procedures, depending on the surgeon's guidelines.

Phase 1:

Goals and interventions

Day 1 – first few weeks after surgery.

goals	interventions
☑ Pain control. ☑ Prevent vascular and pulmonary complications.	• Pain medication as prescribed by a physician. • Change position regularly. • Ankle pumping exercise. • Deep breathing exercise.
☑ Prevent postoperative dislocation or subluxation of the operated hip.	• Patient and caregiver education about precautions during other ADLs. • Contact the physician if any signs and symptoms of dislocation appear such as shortening of the operated lower extremity not previously present.
☑ Achieve independent functional mobility before discharge.	• Bed mobility, sit-to-stand chair exercise. • Transfer training. • Walking training with an assistive device (initially a walker or two crutches) –immediately after surgery. • Progress to one crutch or a cane depending on pain, strength of hip abductors, and gait symmetry. • Stair training with an assistive device, –one step at a time.
☑ Prepare upper limbs and non-operated lower limbs for gait and transfer training. ☑ Strengthening of upper limbs and non-operated lower limbs.	Active-resistive exercises in functional movement patterns, targeting muscle groups used during transfers and ambulation with assistive devices.
☑ Prevent musculature atrophy in the operated limb	Quadriceps, hip extensor, and hip abductor muscles isometric exercise –just enough to elicit muscle contraction.

☑ Regain active mobility and control of the operated extremity.	• Bed exercise: – Active-assistive ROM exercises of the hip within available ranges. – If the status of the abductor's muscles permits, active, gravity-eliminated hip abduction in the supine position by sliding the leg on the bed or active antigravity abduction combined with external rotation (clam exercise) – Side-lying position (with a pillow between the thighs to prevent hip adduction past neutral). • Chair exercise: Active knee flexion and extension exercises, emphasizing terminal knee extension. • Active hip rotation, maintaining motion limitations Based on the surgeon's guidelines. • Standing position: Active hip ROM (forward and backward pendular motions) with the hands on a stable surface to maintain balance. • Bilateral, closed-chain, weight-shifting activities, heel raises, and mini-squats.
☑ Prevent a flexion contracture of the operated hip.	Avoid using a pillow under the knee of the operated extremity while supine.

- Criteria to progress

The criteria to advance to the next phase of rehabilitation is highly dependent on weight-bearing and ROM restrictions; however, the following criteria typically must be met:

- Well-healed incision; no signs of drainage or infection.

- Independent level-ground ambulation with one crutch or a cane or no assistive device if weight-bearing restrictions permit.
- Ability to bear full weight on the operated extremity without pain and with a fully extended knee.
- Functional ROM of the hip Muscle strength of operated hip: at least 3/5.

Phase 2:

Begins at about 4 to 6 weeks postoperatively.

Goals	interventions
✔ Regain strength and muscular endurance, emphasizing the strength of hip abductors and extensors.	• While standing on the sound lower extremity, open chain exercises within the available ranges in the operated leg against light resistance. Focus on increasing the number of repetitions rather than the resistance to improve muscular endurance. • Bilateral, closed-chain exercises to strengthen hip and knee extensors, such as mini-squats against light-grade elastic resistance or while holding light weights in both hands when unsupported standing, are permitted. Reinforce symmetrical alignment of the lower extremities during standing exercises. • Unilateral, closed-chain exercises, such as hip hiking or forward and lateral step-ups (to a low step) while standing on the operated extremity and partial lunges with the involved foot forward when full weight bearing, are permitted on the operated lower extremity. During step-ups and

	lunges, apply elastic resistance around the lateral thigh of the operated extremity to simultaneously strengthen the hip abductors and hip extensors.
☑ Improve cardiopulmonary endurance. ☑ Restore ROM while adhering to precautions.	Non-impact aerobic conditioning programs, such as progressive stationary cycling, swimming, or water aerobics
☑ Restore ROM while adhering to precautions.	• Gravity-assisted supine stretch to neutral in the Thomas test position. Pull the uninvolved knee to the chest while relaxing the operated hip. (A hip extension of at least 10° beyond neutral is needed for a normal gait pattern.) • Resting in a prone position for a prolonged passive stretch of the hip flexor muscles. • Integrate gained ROM into functional activities.
☑ Improve postural stability, balance, and gait.	• Progressive balance activities in standing Gait training. • If full weight bearing is not yet permitted, continue or progress to using a cane (held on the hand contralateral to the operated hip) and progress weight bearing on the operated limb. • Practice walking on uneven and soft surfaces to challenge the balance system. • Continue use until weight-bearing restrictions are discontinued or if the patient exhibits gait deviations, such as a positive Trendelenburg sign on the operated lower extremity, indicating hip abductor weakness. Cane use is also recommended during extended periods of ambulation to decrease muscle fatigue.

	• For selected patients, consider treadmill walking to practice a symmetrical gait pattern

- Criteria to progress

The criteria to progress advanced training during the final phase of rehabilitation include the following:

- Pain-free ambulation with or without a cane.
- Functional ROM and strength of the operated hip.
- Independence in ADL.

Phase 3

Begins 12 weeks postoperatively.

Continued training for restoration of strength, muscular and cardiopulmonary endurance, balance, and a symmetrical gait pattern should be the focus of this phase, coupled with a gradual resumption or modification of functional activities.

Return to a full level of functional activities may take at least a year.

Goals	interventions
✔ Extended rehabilitation and modification of activities.	If ongoing rehabilitation services are available to a patient, the following activities should be considered: • Integrate strength, endurance, and balance training into simulated functional activities to prepare for independence.

	• To improve muscular and cardiopulmonary endurance, progressively increase the length of time and distance of a low intensity walking program. Aim for a target frequency of 2 to 4 days a week for 30 minutes each session for the walking program. • Through patient education, reinforce the importance of selecting or modifying activities to reduce or minimize the forces and demands placed on the prosthetic hip. When a patient's employment involves heavy labor, vocational retraining or an adjustment in work-related activities is advised.

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