

PHYSIOTHERAPY MANAGEMENT FOR EARLY MOBILIZATION AFTER TOTAL HIP REPLACEMENT SURGERY E.C SECONDARY OSTEOARTHRITIS HIP: A CASE STUDY

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Abstract

Introduction: In the lower extremities of the human body, there is a hip joint which is the most proximal part with the type of synovial ball and socket joint. In carrying out the functions, the hip joint often experiences problems both as a result of trauma, degenerative, and post-traumatic hip. Osteoarthritis (90%) contributes the largest problems in hip joint, followed by femoral neck fracture (5%), avascular necrosis (2%), dysplasia (2%), and inflammatory arthritis (1%) (Ferguson et al, 2018). Thus, if conservative treatment did not provide better changes, then a total hip replacement is performed to reduce pain and improve physical function. Total hip replacement is a surgical procedure by replacing the entire hip joint with an implant. Implants themselves can last up to 20 years.

Case Presentation: A 58-year-old patient with unable to endure pain and discomfort in his activities and at rest, when consulted by a doctor, patients experience infections around implants and plates & screws. After total hip replacement patient complained of pain in the incision on the side of thigh and limited movement in the left leg.

Management and Outcome: Early mobilization given in the form of breathing exercises, isometric exercises, and other exercises on the bed, then on the second and third days began to be given transfer-ambulation exercises. Pain is measured using NRS and joint scope of motion is measured using a goniometer.

Discussion: From several articles that become supporting in line with the results obtained where the initial mobilization is a major influence in the patient's life in the future. Patients who do initial mobilization are able to return to activity more quickly than patients who do not do initial mobilization.

Conclusion: After receiving physiotherapy management for early mobilization at three days after surgery, there was a decrease in pain levels, an increase in joint scope of motion, and a decrease in edema in the patient's left leg.

Keyword: total hip replacement, , physiotherapy, early mobilization

Introduction

In the lower extremities of the human body, there is a hip joint which is the most proximal part with the type of synovial ball and socket joint. The hip joint formed by head of femur with acetabulum part of os coxae that capable of flexion, extension, abduction, adduction, internal rotation, and external rotation movements. In addition, the hip joint also bears a load of 0.5 times the weight load when standing and 1-6 times the weight load when walking (David & Robert, 2021). Therefore, maintaining the function of the hip joint is very important for harmony in walking.

In carrying out the functions, the hip joint often experiences problems both as a result of trauma, degenerative, and post-traumatic hip. Osteoarthritis (90%) contributes the largest problems in hip joint, followed by femoral neck fracture (5%), avascular necrosis (2%), dysplasia (2%), and inflammatory arthritis (1%) (Ferguson et al, 2018). Thus, if conservative treatment did not provide better changes, then a total hip replacement is performed to reduce pain and improve physical function (Visser et al, 2011). Total hip replacement is a surgical procedure by replacing the entire hip joint with an implant (Kisner & Colby, 2012). Implants themselves can last up to 20 years (Maxery & Magnusson, 2013).

Although implants can last a long time, it is not uncommon for periprosthetic fractures around the implant to require revision or addition of prosthesions, such as plate and screw (Patsiogiannis et al, 2021). Periprosthetic fractures most often occur around the femoral implant. The prevalence increases if the patient is female, osteoporosis, osteolysis, and begin to loosen the prosthesis (Abdel et al, 2016). Although in a small possibility, infection around the prosthesis was reported in 11.6% of periprosthetic fractures (Chevillotte et al, 2009).

Case Presentation

Mr. HW is 58 years old with a job as a mechanical technician had hip arthroplasty surgery in 2004 due to an accident in which the patient hit a truck block that was not visible in the rain until it bounced off the edge of the pavement so that it broke the head of femur, medial shaft femur, and patella.

In 2019, the patient had an accident resulting in a fracture of the bottom of the implant, then a plate and screw was installed by attaching to the atropylated hip implant. Two months after installation, patients complained of pain and discomfort when moving as the plate and screw shifted. The doctor was advised to perform surgery again, but the patient refused so he was only prescribed medicine. During the period 2019-2023 patients continue to walk with the help of crutches, if he did not use crutches the patient is able to walk but followed by pain when full

bearing.

In 2023, patients unable to endure pain and discomfort in his activities and at rest, when consulted by a doctor, patients experience infections around implants and plates & screws. So that total hip replacement surgery will be carried out on July 4, 2023. However, because the patient has previously had implants and prosthesis inserted, it must be removed first on June 27, 2023, followed by skeletal traction installation for one week. After the leg lengthening has made enough room for the installation of new implants, total hip replacement surgery is performed using the posterolateral approach. After surgery, the patient complained of pain in the incision on the side of thigh and limited movement in the left leg.

Management and Outcome

Before surgery, patients are educated about prohibitions or restrictions after total hip replacement and teach patients to move safely to avoid prosthetic dislocation, to teach basic exercises in the healing phase after surgery (Maxey & Magnusson, 2013). On the first day after surgery, abdominal breathing is given to regulate breathing, give a relaxing effect, and activation of the abdominal muscle; pelvic tilting to strengthen the abdominal muscles and gluteus maximus; quadrieps set to reduce muscle spasm, strengthen the quadriceps muscle, and prevent patellar adhesions, ankle pumps are performed to maintain the strength of the gastrocnemius and soleus muscles and help to pump blood to the lower extremities so as to minimize thrombophlebitis.

On the second day of postoperative surgery, active assisted exercises were added to maintain joint scope of motion and bridging to strengthen the gluteus and hamstring muscles as well as ambulation exercises from sleeping on your back on the bed to sitting on the edge of the bed. Then on the third day after surgery, the patient began to do walking exercises using crutches with non-weight bearings. Non-weight bearing is carried out considering that the patient himself has done many actions in the hip area so that the bone density is not as firm as the beginning.

In addition, the surgical position is posterolateral so patients are advised not to do hip flexion more than 90°, adduction past the midline of the body, and endorotation first (Maxey & Magnusson, 2013). From the first day of surgery to the third day, measurements are carried out as an evaluation of patient development, as follows:

Pain with Numeric Rating Scale

Nyeri	T1	T3
Silent pain	4/10	3/10
Motion pain	6/10	4/10

Tenderness pain	6/10	4/10
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Active Range of Motion with Goniometer

Regio		T1	T3
Hip	Sinistra	S = NT°-0°-10°	S = NT°-0°-30°
	Dextra	S = NT°-0°-120°	S = NT°-0°-120°
	Sinistra	NT	NT
	Dextra	F = 50°-0°-30°	F = 50°-0°-30°
	Sinistra	NT	NT
	Dextra	R = 45°-0°-40°	R = 45°-0°-40°
Knee	Sinistra	S = 0°-0°-15°	S = 0°-0°-40°
	Dextra	S = 0°-0°-135°	S = 0°-0°-135°
Ankle	Sinistra	S = 20°-0°-50°	S = 20°-0°-50°
	Dextra	S = 20°-0°-50°	S = 20°-0°-50°

Passive Range of Motion with Goniometer

Regio		T1	T3
Hip	Sinistra	S = NT°-0°-15°	S = NT°-0°-45°
	Dextra	S = NT°-0°-120°	S = NT°-0°-120°
	Sinistra	NT	NT
	Dextra	F = 50°-0°-30°	F = 50°-0°-30°
	Sinistra	NT	NT
	Dextra	R = 45°-0°-40°	R = 45°-0°-40°
Knee	Sinistra	S = 0°-0°-20°	S = 0°-0°-40°
	Dextra	S = 0°-0°-135°	S = 0°-0°-135°
Ankle	Sinistra	S = 20°-0°-50°	S = 20°-0°-50°
	Dextra	S = 20°-0°-50°	S = 20°-0°-50°

Discussion

The physiotherapist met Mr. HW one day before surgery and the first to third day after surgery. Before surgery, the patient did not have any complaints and still installed skeletal traction in the distal part of the femur with half-flexion hip and knee. On the next day or the first day after surgery, the physiotherapist again meets the patient with bandage attached to the hip sinistra

complaints of incision pain and limitation of movement. Patient's face looked pale and endured pain. The difference in size between the gastrocnemius sinistra muscles is smaller than that of dextra. When palpated on bandage-treated areas, it was warmer than healthy followed by strain on the quadriceps muscles.

There is a difference in pain from T1 to T3, where in stay position or without motion pain with an initial value of 4 to 3, in motion pain most felt during hip flexion with an initial value of 6 to 4, and in tenderness most felt near the incision area with an initial value of 6 to 4. The journal states that patients who do initial mobilization at 72 hours after surgery have lower pain scores than patients who did not mobilize (Aprisunadi et al., 2023). This is also supported by Warwick et al. (2019), where total hip replacement patients who were given early mobilization had better pain control than those who did not do initial mobilization. Then they also explained physiotherapy began to come to treat patients within 8 hours after the operation was performed (Warwick et al., 2019). A decrease in pain values is followed by a decrease in temperature and tension in the quadriceps muscles so that the patient is able to increase the degree of joint scope of motion.

On the first day after surgery, the patient is still reluctant to move the left leg so he is given exercises that can relax and reduce the patient's fear. In addition, bed exercises are aimed at maintaining and preparing the patient for transfer-ambulation. Usually, on the first day the patient will start the exercise of sitting on the edge of the bed and walking on the third day if there are no complaints of severe pain and dizziness (Maxey & Magnusson, 2013). However, given the condition of the patient's bones that are not sturdy and have often been placed prostheses around the bone, physiotherapists have become more careful in providing interventions. So on the second day physiotherapy provides active movement exercises and begins to ambulate, although the pain is still but the patient's willingness to be able to return to activity is very large. In Lei et al. (2021) stated, that patients who perform ambulation early have a better quality of life than patients who are late in ambulation. In addition, active motion interventions can have a good impact on back to daily activities.

On the third day, patients reported much less pain although still assisted by pain relief. So that the patient wants to move the legs greater degrees than the first day. Physiotherapists began to add walking exercises. Given that the patient's bone density is not as strong as it was before surgery and to avoid dislocation, The patient walked on two crutches and a non-weight-bearing for several weeks after surgery while waiting for tissue growth and wound healing. Early mobilization after surgery is essential to prevent further complications due to prolonged lying on bed, maintaining the lower extremities to keep moving so as not reduce the range of motion of the joint after surgery or when the patient has returned home (Aprisunadi et al., 2023), Also provide

education on recommendations and restrictions after total hip replacement.

Conclusion

After receiving physiotherapy management for early mobilization at three days after surgery, there was a decrease in pain levels, an increase in joint scope of motion, and a decrease in edema in the patient's left leg.

Acknowledgments

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