

Clinical Practice Guideline for Patients Requiring Total Hip Replacement

Inclusions

Patients undergoing elective total hip replacement

Exclusions

Patients with active local or systemic infection or medical conditions that substantially increase the risk of severe perioperative complications or death.

Indications

Primary total hip replacement (THR) is most commonly used for hip joint failure caused by osteoarthritis; other indications include, but are not limited to, rheumatoid arthritis, avascular necrosis, traumatic arthritis, certain hip fractures, benign and malignant bone tumors, the arthritis associated with Paget's disease, ankylosing spondylitis, and juvenile rheumatoid arthritis. The aims of THR are relief of pain and improvement in function.

Issues

- Pre-Surgical Patient Education
- Perioperative Blood Loss
- Deep Venous Thrombosis (DVT) and Pulmonary Embolism (PE)
- Infection
- Dislocation
- Patient Anxiety
- Discharge Planning
- Rehabilitation

Goal

- To improve patient outcomes following THR surgery while making efficient use of health care resources.

Recommendations

Perioperative Complications:

Blood Loss

- Autologous blood donation 3 weeks prior to surgery

Postoperative Complications:

Deep Venous Thrombosis (DVT), Pulmonary Embolism (PE)

- Full length TED stockings
- Either warfarin or low molecular weight heparins beginning 12 hours pre- or postoperatively with a duration of 7 to 10 days
- Foot and calf pumping

Infection

- Use of a cephalosporin for antibiotic prophylaxis, started preoperatively and continued for a 24 hour period

Patient Anxiety/Dislocation

- Inclusion of consistent patient education both preoperatively and postoperatively, by all members of the health care team
- Patient education booklet that the patient can refer to before and after surgery, and following hospital discharge

Mobilization

- Ambulation beginning postoperative Day One, with routine physiotherapy protocol in hospital
- A routine physiotherapy protocol using outcome goals for both home care and outpatient physiotherapy for patients following discharge from hospital

Discharge Planning

- Early, consistent information involving the entire health care team
- Goal to discharge the patient home 5 days postoperatively

Outcome Measures

- Use of the Functional Assessment Tool as an outcome to measure patient functionality and quality of life

Background

Introduction¹

More than 120,000 artificial hip joints are being implanted annually in the United States. Successful replacement of deteriorated, arthritic, and severely injured hips has contributed to enhanced mobility and comfortable, independent living for many people who would otherwise be substantially disabled. New technology involving prosthetic devices for replacement of the hip, along with advances in surgical techniques, has diminished the risks associated with the operation and improved the immediate and long-term outcome of hip replacement surgery.

Questions remain, however, concerning which prosthetic designs and materials are most effective for specific groups of patients and which surgical techniques and rehabilitation approaches yield the best long-term outcomes. Issues also exist regarding the best indications and approaches for revision surgery.

Indications¹

Primary THR is most commonly used for hip joint failure caused by osteoarthritis; other indications include, but are not limited to, rheumatoid arthritis, avascular necrosis, traumatic arthritis, certain hip fractures, benign and malignant bone tumors, the arthritis associated with Paget's disease, ankylosing spondylitis, and juvenile rheumatoid arthritis. The aims of THR are relief of pain and improvement in function. Candidates for

elective THR should have radiographic evidence of joint damage and moderate to severe persistent pain or disability, or both, that is not substantially relieved by an extended course of nonsurgical management. These measures usually include trials of analgesic and nonsteroidal anti-inflammatory drugs (NSAIDs), physical therapy, the use of walking aids, and reduction in physical activities that provoke discomfort. In certain conditions such as rheumatoid arthritis and Paget's disease, additional disease-specific therapies may be appropriate. The patient's goals and expectations should be ascertained prior to THR to determine whether they are realistic and attainable by the recommended therapeutic approach. Any discrepancies between the patient's expectations and the likely outcome should be discussed in detail with the patient and family members before surgery.

In the past, patients between 60 and 75 years of age were considered to be among the best candidates for THR. Over the last decade, however, the age range has been broadened to include more elderly patients, many of whom have a higher level of comorbidities, as well as younger patients, whose implants may be exposed to greater mechanical stresses over an extended time course. In patients less than 55 years of age, alternative surgical procedures such as fusion and osteotomy deserve consideration. However, there are no data showing that the outcomes of these procedures are as good or better than those from THR when performed for similar indications. Advanced age alone is not a contraindication for THR; poor outcomes appear to be related to comorbidities rather than to age.

There are few contraindications to THR other than active local or systemic infection and other medical conditions that substantially increase the risk of serious perioperative complications or death. Obesity has been considered a relative contraindication because of a reported higher mechanical failure rate in heavier patients; however, the prospect of substantial long-term reduction in pain and

disability for heavier patients appears to be similar to that for the population in general.

Thus, although the clinical conditions and circumstances leading to THR are broadly defined, several issues regarding indications remained unresolved. For example, data are insufficient on the associations between potential risk factors (e.g., age, weight, smoking, medications) and outcomes to guide treatment of the individual patient. Moreover, indications are not clear for use of the various surgical approaches and types of prostheses in individual patients. Finally, standardized instruments to measure levels of pain, physical disability, and quality of life as perceived by the patient need to be used to guide clinical decision-making and choice of surgery.

Perioperative Complications

Blood Loss

Total hip replacement surgery is associated with significant blood loss. The proportion of hip replacement surgeries requiring blood transfusions has been seen to be over 50%². The decision to transfuse patients undergoing surgery is generally made by agreement of the anesthesiologist and surgeon, but there are no clear criteria for making this decision. We do know that patients with a low preoperative hemoglobin receive more transfusions than patients with higher hemoglobin levels².

Multiple methods to decrease the incidence of allogenic blood transfusions are available, including predonation of blood (autologous blood donation), hemodilution, perioperative blood salvage, and preoperative administration of erythropoietin³. Preoperative erythropoietin therapy has been shown to be effective in reducing the incidence of blood transfusions in patients with hemoglobin levels between 10-13 mg/dL⁴. Erythropoietin may be as effective as autologous blood donation in reducing the need for allogenic transfusions, and can increase the number of rheumatoid arthritis patients who can make autologous

donations⁴. The antifibrinolytic agent tranexamic acid may have a role in reducing blood loss^{5,6}.

Postoperative Complications

Deep Venous Thrombosis and Pulmonary Embolism

Pulmonary embolism (PE) is a major concern with THR, resulting primarily from development of deep venous thrombosis (DVT) in the lower extremities⁷. Fatal PE occurs in up to 5% of patients who have undergone hip replacement surgery⁷. There are various treatments that can be used to try and reduce the risk of DVT and PE.

The National Guideline Clearinghouse (NGC) guideline for DVT⁷ recommends that either subcutaneous low molecular weight heparin (started either 12 hours before surgery, 12-24 hours after surgery, or 4-6 hours after surgery at half the usual high-risk dose and then continuing with usual high risk dose the following day) or adjusted dose warfarin (ratio target 2.5, range 2.0 to 3.0, started preoperatively or immediately after surgery). One review⁸ concluded that low molecular weight heparins and warfarin are more effective than other agents, but heparins are associated with a higher rate of bleeding complications, so warfarin is recommended as the most effective and least risky. However, warfarin requires intermittent blood work throughout treatment, and so compliance and quality of life become an issue. Adjusted dose heparin, started preoperatively, is an acceptable but more complex alternative. The optimal duration of anti-coagulant prophylaxis is 7 to 10 days^{9,7}. For high-risk patients only, the NGC guideline on DVT prophylaxis⁷ recommends extending the duration of prophylaxis beyond the 7 to 10 day duration.

The NGC⁷ also recommends that graduated compression stockings or intermittent pneumatic compression may also provide additional efficacy against DVT. Other agents, such as low dose unfractionated heparin, aspirin, dextran, intermittent

pneumatic compression alone, are all less effective and not recommended.

Foot and calf pumping devices appear to prevent DVT, and may protect against PE, and reduce mortality, but compliance remains a problem in most cases⁸.

Infection

Wound infections are among the most common nosocomial infections among hospitalized surgical patients and are the second or third most common nosocomial infections among all hospitalized patients¹⁰. Antimicrobial prophylaxis has shown to be effective in the prevention of infection¹⁰. A Cochrane Review¹¹ found no convincing evidence that any particular cephalosporin is more effective than another. It also found no evidence that extending the antibiotic regimen beyond 24 hours postoperatively reduces the number of infections. A single dose or short-term administration is not only as effective as longer-term, but will lower overall costs and reduce the risk of toxicity and development of bacterial resistance^{12,13,14}.

Patient Anxiety

Major surgical procedures such as total hip replacements affect the patient both physically and psychologically. If a patient is unduly anxious, recovery may be affected, prolonging the length of hospital stay, the cost of care and the patient's well being. Preoperative education reduces patient anxiety, reducing stress and enhancing patient outcomes, and ultimately reducing the patient's length of stay in hospital¹⁵. A Cochrane review is currently being done on this topic and is expected in early 2004.

Dislocation

Dislocation of the hip after a THR can be up to 2.4%, mostly occurring in the first year⁸. Prevention of dislocation comes in two forms. First, it has been shown that dislocation

occurs less often with an anterolateral surgical approach than a posterior approach⁸. Second, patient education focusing on hip precautions and an exercise regime can help to reduce dislocations. It is generally recommended that education efforts be concentrated in these areas, both pre and postoperatively¹⁵.

Mobility

Early mobility has been shown to decrease risk for DVT, pressure sores, and respiratory complications in patients undergoing orthopedic surgery^{7,16}. Patient outcomes are improved, patient satisfaction is increased, and length of stay in hospital is shorter when a patient is mobilized early and follows a standardized physiotherapy protocol¹⁷.

Continuity of patient care throughout the recovery process after a THR is important. A protocol for home care and outpatient physiotherapy improves patient outcome and reduces the length of hospital stays¹⁸.

Discharge Planning

Many studies have described the importance of early development of a formalized discharge plan and of effective intraorganizational and interorganizational communication of this plan. With a discharge planning protocol in place that all members of the health care team communicate, patients have shorter hospital stays, fewer readmissions, and higher rates of needed post-discharge services^{19,20}.

It is imperative that the patient and caregiver be involved in the discharge planning and decision-making. With the increasing number of elderly patients and elderly caregivers for these patients, planning for discharge becomes more complicated and crucial to the patient achieving desired outcomes¹⁹. All health professionals have a responsibility to ensure that there is a plan for discharge, and that this is well communicated to both

the patient and the discharge destination, whether it be care closer to home in a community hospital, retirement facility or long term care centre, rehabilitation setting, or home with home care services^{19, 20}.

Outcome Measurement

It is important for the health care team to be able to measure patient outcomes, based on the patient's functional goals and quality of life. The Institute for Clinical Evaluative Sciences (ICES) has published a Functional Assessment Tool, a valid and reliable measure for patient progress⁸.

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