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A Resource for Interprofessional Providers

Hip Fractures in Older Adults: Peri-Operative Considerations

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Hip fractures are associated with significant morbidity and mortality in the geriatric population. Depression and a decline in functional mobility are seen in over 20% of older adults who sustain a hip fracture. Between 18-33% will die within one year.

Key aspects of these post-fracture complications relate to in-hospital management and post-discharge care. Central among pre-operative considerations is assuring early surgical repair (within 48 hours and ideally within 24 hours after the fracture). Studies show that deconditioning and medical complications are less likely to occur with early repair and restoration of mobility.

Pre-Operative Management

In the pre-operative phase, emphasis should be placed on managing medical co-morbidities, recognition and prevention of geriatric syndromes, and clarification of advance directives. But, as noted, it is crucial not to delay hip repair surgery for these considerations because delayed surgery increases the risk of complications.

Managing Medical Co-Morbidities includes assessment of cardiac and renal risk, and instituting prophylactic anticoagulation.

Cardiac risk (of peri-operative ischemia or myocardial infarction [MI]) is increased in patients who have elevated blood pressure (>180 mmHg systolic or >110 mmHg diastolic), elevated troponin levels, and/or decompensated heart failure. In the absence of these conditions, additional pre-operative testing is unlikely to change management and the patient will suffer from the delay in surgery. On the other hand, cardiology consultation is recommended if a patient has decompensated heart failure, acute coronary syndrome, severe valvular disease, or a significant arrhythmia. Guidelines on pre-operative evaluation are available from the American Heart Association (see resource list on next page).

The Revised Cardiac Risk Index lists predictors of cardiac complications of surgery (Table 1). The use of beta blockers in patients with more than one of these risk factors has been shown to decrease the rate of cardiac death, nonfatal MI, and nonfatal cardiac arrest in some studies. If used, beta blockers should be started before surgery at a low dose, titrated to a heart rate of 60, and continued for 30 days after surgery.

Table 1. High Risk Factors Warranting Consideration of Beta Blocker Therapy

History of coronary artery disease	Diabetes on insulin
History of heart failure or stroke	Creatinine >2.0 mg/dL

Renal risk. Patients with hip fracture commonly present with dehydration due to blood loss from the fracture, lack of fluid intake, or diuretic medications. Dehydration can increase the risk for postoperative delirium. Fluid replacement, to include blood transfusion if hemoglobin is less than 10 gm/dL preoperatively, requires a balance between restoring hydration and causing fluid overload.

Anticoagulation. There is a high rate of venous thromboembolism (VTE) in patients who have hip fractures. The risk begins at the time of the fracture and extends beyond 30 days postoperatively. Because of this, the American College of Chest Physicians has issued recommendations for prophylactic anticoagulation with hip fracture repair. The Guidelines are found at http://chestjournal.chestpubs.org/content/133/6_suppl/71S.full on page 81s. The American College of Chest Physicians recommends against aspirin for VTE prophylaxis. In fact, medications with anti-platelet activity, like aspirin, clopidogrel, and non-steroidal anti-inflammatory drugs, along with oral anticoagulants like warfarin, should generally be stopped in patients with hip fracture.

TIPS FOR DEALING WITH PATIENTS WHO HAVE A HIP FRACTURE

- Seek to have surgery performed within 48 hours, and ideally within 24 hours.
- Assess medical conditions and hydration before surgery.
- Assess for and prevent delirium throughout the patient's treatment.
- Get the patient up and out of bed on the first post-operative day. Early mobilization aids in recovery.
- Treat osteoporosis with calcium, vitamin D, and (unless contraindicated) bisphosphonates.
- Continue rehabilitation for at least 4-6 weeks after discharge.

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Recognition of Geriatric Syndromes. Geriatric syndromes are a group of medical problems, commonly found in elderly individuals, that impair functional recovery and contribute to delirium and morbidity (Table 2). These syndromes, which include delirium, pressure ulcers, malnutrition, and polypharmacy, need to be addressed and managed throughout the hospitalization. Delirium can also be induced by pain, so careful attention should be given to pain control both before and after hip repair surgery.

Syndrome	Implication
Delirium	Develops in up to 60% following hip surgery. Portends poor recovery. May lead to death or institutionalization.
Malnutrition	Predisposes to infection and impedes recovery.
Polypharmacy	Inappropriate medications can precipitate delirium.
Pressure ulcers	Prevented by early mobilization.

Advance Directives. Communication with the patient and family or caregivers helps to establish a clear picture of the patient's wishes should an adverse event occur. The existence of a prior "do not resuscitate" (DNR) sometimes causes confusion when patients are about to undergo surgery.

A DNR order should be discussed with the patient if possible, and with family and caregivers, but it is not a reason to withhold hip surgery, which results in substantial pain relief.

Post-Operative Management

Post-operative management of the geriatric patient with a hip fracture stresses early mobility, prevention and management of delirium and pain, while addressing osteoporosis and post-discharge rehabilitation.

Mobilization of the patient on the first post-operative day has been shown to decrease the incidence of delirium, VTE, and pneumonia. Eliminating tethers (urinary catheters, IVs, and drains) helps to encourage mobility.

Post-Discharge Care

Osteoporosis. Low-impact hip fractures are, by definition, due to the osteoporosis. All patients with these fractures need treatment with bisphosphonates, calcium (1,200 mg daily), and vitamin D (800-1000 IU daily). Start calcium and vitamin D while in the hospital. There is no clear recommendation about when to start bisphosphonates following a hip fracture, but in the absence of contraindications, therapy can begin as early as 2 weeks after surgery (but always within 6 months). Men with osteoporosis also require an evaluation to determine the cause.

Rehabilitation. Involve social workers early to assess post-discharge needs to support safety and maximize independent function. Early physical and occupational therapy are essential, with the therapy setting (home, outpatient, institutional) dependent on the patient's functional loss, ability to participate in therapy, and medical status. Therapy for 4-6 weeks after discharge is typical.

Schedule a follow-up office visit within 2-3 weeks to assess progress. Emphasize the importance of fall prevention through home safety and exercise, and if not already started, begin bisphosphonate therapy.

Priorities in the Geriatric Management of Hip Fracture		
PRE OPERATIVE	POST OPERATIVE	POST DISCHARGE
Assess and stabilize comorbidities	Early mobility	Treat osteoporosis
Rehydrate; eliminate non-essential meds	Prevent delirium and manage pain	Continue rehabilitation after discharge
Address advance directives	Remove all tethers/restraints/catheters	Exercise and fall prevention
VTE prophylaxis		

References and Resources

American College of Cardiology Foundation/American Heart Association Focused Update on Perioperative Beta Blockage Incorporated into the ACC/AHA 2007 Guidelines of Perioperative Cardiovascular Evaluation and Care for Noncardiac Surgery.

<http://content.onlinejacc.org/cgi/content/full/1;ajcc.2009.07.010#SEC11.2.1>

American College of Chest Physicians: Evidence-based Clinical Practice Guidelines on Antithrombotic and Thrombolytic Therapy.

http://chestjournal.chestpubs.org/content/133/6_suppl/71S.full

Auerbach AD, Goldman L: Assessing and reducing the cardiac risk of non-cardiac surgery. *Circulation* 2006;113:1361-1376.

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