Medical / Surgical Management of Hip Fractures
NEBGEC Frail Elderly and Geriatric Syndromes
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• I have no commercial or financial conflicts of interest to disclose.
Case

- 87 y.o. female presents following a fall while getting out of a car this morning. She arrived by squad and has been evaluated by the ED staff. X-rays show a minimally displaced femoral neck fracture. Her history is significant for DMII, CAD (MI four years ago – medical management), and HTN. She lives independently but receives help with day to day activities from her daughter who lives nearby.
Overview

- Scope, severity and complexity of hip fractures
- Urgent preoperative evaluation
- Timing of surgery
- Pre, peri, postoperative care
- Co-management model
Scope, Severity, Complexity

- 11 million falls / year
- Complications - $20 billion / year
- 320-350,000 hip fractures / year
- $6-8 billion / year
- 90% aged 65 or older
- 76% are female
Scope, Severity, Complexity

• Mortality
  – 11-23% at 6 months
  – 22-29% at one year

• Morbidity
  – 60% - regain prefracture walking ability
  – 50% - regain prefracture ADLs ability
Scope, Severity, Complexity

- Co-morbid conditions
  - Cardiac risk factors
  - Diabetes
  - Osteoporosis
  - Delirium
  - Functional status
Pre-operative Assessment

• Historically done by Primary Care, Anesthesiologists, Cardiologists, Pulmonologists
• Co-management has become popular
• Many assessment tools exist (ASA, ACC/AHA, Lee index)
Pre-operative Assessment

- Who needs assessment?
- JCAH require H&P within 30 days
- UNMC Surgical Co-Management inclusion criteria:
  - DM I/II
  - Anticoagulation
  - Immunosuppressed
  - Dementia
  - ETOH abuse
  - CHF
  - Obesity
  - TIA/Stroke
  - IBD
  - Rheum
  - CAD / Risk
  - COPD/Asthma
  - CRI
  - Liver disease
Pre-operative Assessment

- Labs – No definitive recommendations
- CXR – Smokers > 50 years old
- EKG – Based on risk
- PFT – No good evidence
  - Pneumonia Risk Index
- Overall must obey Hospital or Anesthesia requirements but should approach each patient independently
Pre-operative Assessment

• If no specific question – overall assessment

• Risk stratify not “clear”
  – Type of surgery / urgency
  – Type of anesthesia
  – Co-morbid conditions

• Optimize medical condition
Pre-operative Assessment

• Prevention of known complications
  – Prosthetic heart valves
  – DVT
  – Endocarditis
  – Surgical wound infections
  – Reactive airway disease
  – HTN
  – Glucose control
  – ETOH Use
  – Adrenal insufficiency
Pre-operative Assessment

• Pre-operative medications
  – Anti-platelet agents
    • Controversy - ASA
  – Diabetic meds
  – HTN / Anti-arrhythmia meds
  – Steroids
  – Rheumatologic meds
    • Immunomodulators
    • Methotrexate
Glycemic Control – Pre-op

• Hold oral hypoglycemic meds am of surgery
  – Metformin pm before as well
• Half dose of am insulin (long and short)
• Glargine (Lantus) – Full dose PM before
• Frequent monitoring before and during
## Pre-operative Assessment

### Surgical Risk

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<thead>
<tr>
<th>High</th>
<th>(cardiac risk &gt; 5%)</th>
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<tbody>
<tr>
<td></td>
<td>Emergent major operations, particularly in elderly</td>
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<tr>
<td></td>
<td>Aortic and other major vascular surgery</td>
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<td></td>
<td>Peripheral vascular surgery</td>
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<td>Anticipated prolonged surgical procedures associated with large fluid shifts</td>
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<th>Intermediate</th>
<th>(cardiac risk &lt;5%)</th>
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<tr>
<td></td>
<td>Carotid endarterectomy</td>
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<tr>
<td></td>
<td>Head and Neck surgery</td>
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<td></td>
<td>Intraperitoneal / Intrathoracic surgery</td>
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<td>Orthopaedic surgery</td>
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<td>Prostate surgery</td>
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<tr>
<th>Low</th>
<th>(cardiac risk &lt;1%)</th>
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<td>Endoscopic procedures</td>
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<td>Superficial procedures</td>
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<td>Cataract surgery</td>
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<td>Breast surgery</td>
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Clinical risk factors include ischemic heart disease, compensated or prior heart failure, diabetes mellitus, renal insufficiency, and cerebrovascular disease.
Perioperative CV Risk

- Peri / Post-operative MI well documented
- Timing 0-72 hours following
- 21-24% mortality
- Tachycardia, catecholamine driven
- Hypothermia, anemia also implicated
- Often silent
Perioperative Beta-Blockers

• Known to decrease myocardial oxygen demand
• Well known benefit with CV disease / CV surgery
• Now - controversial data for non-CV surgery and patients with risk factors
• Large retrospective cohort study NEJM
Perioperative Beta-Blockers
Revised Cardiac Risk Index

• High risk surgery
  – Intrathoracic, intraperitoneal, supra-inguinal vascular
• History of ischemic heart disease
• History of CHF
• History of cerebrovascular disease
• Diabetes mellitus
• Renal Insufficiency – Cr >2.0
Perioperative Beta-Blockers

• More information to come
• For now........
  – High risk patients
  – Multiple risk factors (2 or more)
  – Earlier is better
  – Titrate
  – Avoid hypotension and bradycardia
  – CLOSE monitoring of pain, sepsis, etc
Obstructive Sleep Apnea

• Under recognized
• Potential for severe complications
  – Hypercapnea
• Treatment very effective
Timing of Surgery

- 24-48 hours
- Unstable patient – 72 hours
- Cochrane review
Post-operative Visit

- Review procedure notes
- Resume pre-op meds
- Pulmonary treatment
- Pain control
- Anticoagulation / Thromboprophylaxis
- Transfusion threshold
- HTN, DM control, Confusion, etc
Glycemic Control - Goals

• Data shows general medical / surgical
  – Fasting 90-126 mg/dl
  – Random < 180 mg/dl

• Individualized treatment OK

• Caution to avoid hypoglycemia

• NO SSI
Glycemic Control – Post-op

- Minimum AC / HS monitoring
- Resume Insulin as previous
- Fluids depending on scenario
- Resume oral meds when PO resumed
- Supplemental insulin – protocol
  - Educational tool
- If any difficulty or prolonged variance in oral intake:
  - IV insulin
IV Insulin - Advantages

• Great outcomes data
  – Morbidity / Mortality / LOS / Wound Healing
• Protocol driven
• Low risk of hypoglycemia
• Adapts to changes in PO intake / TF / TPN
• Diagnostic tool
IV Insulin - Disadvantages

- Frequent monitoring
- Safety
- Transition difficulties
- Confusing to patients
IV Insulin – ACE Position Statement

- Critical illness
- Prolonged NPO - DM
- Perioperative period
- After organ transplantation
- TPN
- Elevated B.S. with high dose glucocorticoids

- CVA
- Labor and Delivery
- Dose finding strategy
- Other illnesses requiring prompt glycemic control
IV Insulin

• When coming off drip
  – Initiate PO meds and insulin regimen
  – Use total infused over 24 hours on IV
  – Keep in mind diet and current condition
  – Minimum 2 hours
  – In complicated patients up to 24 hours
COPD / Asthma

• Anesthesia has many effects on lung function
  – Decreases response to hypercapnea / hypoxemia
  – Atelectasis

• Pulmonary complications
  – Extends LOS
  – Pneumonia
COPD / Asthma

• Smokers alone – 2 fold increase
• Quit > 6 months back to baseline
• FEV1 < 40% - 6 fold increase
• Asthma OK if FEV1 > 80%
COPD / Asthma

- Tobacco cessation – 6 months
- Incentive spirometry / lung expansion
  - Before and after
- Bronchodilators
Anticoagulation / Thromboprophylaxis

- 50% will clot without
- 1.4-7.5% fatal PE without
- Pharmacologic
  - Warfarin, Heparin, LMWH, Fondaparinux
- Mechanical devices
- Timing – 10-14 days
Discharge Planning

• Primary Care
• PT/OT
• Skilled Nursing / Rehab
• MORE TO FOLLOW.......
Prevention

- Proper screening / treatment of osteoporosis
- Vision / hearing testing
- Medication review / ETOH
- Balance / gait / strength training
- Home safety inspection
Co-Management Model

- UNMC
- Practice patterns
- Communication
- Research purposes
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References