Perioperative Essentials for Early Discharge and Outpatient Total Joint Arthroplasty

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Outpatient TJA Demand

• **Multiple Factors Fueling Interest**
  – Surgeon investment in ASC’s
  – Surgeon Control of OR Environment

• **Potential Benefits**
  – Patient Demand ?
  – Better Patient Outcomes and Satisfaction ?
  – Cost Reduction ?
Average Inpatient Length of Stay (LOS) for Hip Replacement Procedures, United States 1992-2010

[1] An unknown error in the partial hip replacement data occurred in the NHDS 2004 data file. A correction for total partial hip cases was made by excluding cases with diagnosis of spine (720-724, 737, 756, 805, 806)

Source: National Hospital Discharge Survey (NHDS), 1992-2010.
Average Inpatient Length of Stay (LOS) for Knee Joint Replacement Procedures, United States 1992-2010

Source: National Hospital Discharge Survey (NHDS), 1992-2010.
Outpatient Arthroplasty

• Can decreasing LOS transition safely to outpatient hip and knee arthroplasty?

• Safely performed in an ASC?

• Essential Perioperative Program Elements?

• How are patients safely selected?
Outpatient TJA Essentials

• Trained Peri-operative Staff (OR, PACU)
• Partnership / Coordination with Anesthesia
• Multi-Modal Pain Control Program
• **Peri-Operative Medical Program / Specialist**
• Patient & Family Education
• Office Staff / Nursing Support
• Optimized Surgical Techniques
• **Proper Patient Selection !!**
• Preoperative & PACU
  – Essential for perioperative management
  – Competence in postoperative pain control, fluid resuscitation, monitoring, etc

• OR Staff
  – Must have competence and excellence in hip and knee arthroplasty
  – Critical for **efficient** surgery
  – Critical for **SAFE** surgery
• Coordination of multiple facets:
  – Perioperative medical conditions
  – Minimizing postoperative hypotension, nausea, urinary retention, etc. that may delay discharge
  – Expedited anesthesia recovery

• Cooperation in multi-modal pain program
  – Regional analgesia
  – Technique and dosing of anesthetic agents critical to efficacy and side-effect mitigation
Multi-Modal Pain Program

- Pre-emptive analgesic modalities
- Regional anesthetic techniques
  - Technique and anesthesiologist dependent
- Peri-articular injections
- Postoperatively
  - Multiple non-opioid medications of different clinical pathways
  - Minimization of opioids
**Periop Medical Program**

- **Preoperative:**
  - Consistent high-quality medical risk stratification
  - Medical condition optimization
  - Standardization possible?

- **Postoperative:**
  - Medical optimization avoids discharge delay and minimizes readmissions
  - Glucose control, fluid resuscitation, etc
Two aspects: Patients and Stakeholders

1. Patients
   – Include caregivers/family
   – Appropriate expectations must be clearly communicated

2. Stakeholders in Patient Care
   – All must communicate *identical message* to patients
   – Preop, surgery day and postop
   – Frequent meetings with all stakeholders
• Burden of transition from inpatient to outpatient setting
• More frequent interaction postop
• Competence must be maintained
• Expedited patient access to nurses and physicians
  – May require expanded office resources
Patient Selection

- Likely Mostly Critical and Multi-Factorial
- Motivated patient
  - Apprehension a predictor of potential failure
- Family / home support
- Pre-operative physical / mental condition
- Minimal if any pre-operative narcotics

- Medical Risk Stratification
Length of Stay Predictors

Predictors with “Large” Effect

Meta-Analysis Past 10-Year Data

- Bilateral TKA
- Comorbidities
  - EtOH / Drug Abuse
  - Hematologic Disorder
  - CAD
  - Diabetes
  - Chronic Renal Failure
  - Respiratory / Pulmonary
- Hypoalbuminemia
- Mental Health
- Minority Race
- Smoking
- Hospital Volume
- Surgeon Volume
- Operative Time
• Selecting “young healthy patients”
  – Straightforward, relatively small %

• True transformation to outpatient?
  – Much larger segment of population with medical co-morbidities

• Medical Risk Assessment
  – ASA / CCI not sensitive or specific
  – Newly developed “OARA Score”
**ASA not sensitive/specific (whole numbers)**

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<thead>
<tr>
<th>ASA PS Classification</th>
<th>Definition</th>
<th>Examples, including, but not limited to:</th>
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<tbody>
<tr>
<td>ASA I</td>
<td>A normal healthy patient</td>
<td>Healthy, non-smoking, no or minimal alcohol use</td>
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<tr>
<td>ASA II</td>
<td>A patient with mild systemic disease</td>
<td>Mild diseases only without substantive functional limitations. Examples include (but not limited to): current smoker, social alcohol drinker, pregnancy, obesity (30 &lt; BM &lt; 40), well-controlled DM/HTN, mild lung disease</td>
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<tr>
<td>ASA III</td>
<td>A patient with severe systemic disease</td>
<td>Substantive functional limitations; One or more moderate to severe diseases. Examples include (but not limited to): poorly controlled DM or HTN, COPD, morbid obesity (BMI ≥40), active hepatitis, alcohol dependence or abuse, implanted pacemaker, moderate reduction of ejection fraction, ESRD undergoing regularly scheduled dialysis, premature infant PCA &lt; 60 weeks, history (&gt;3 months) of MI, CVA, TIA, or CAD/stents.</td>
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<tr>
<td>ASA IV</td>
<td>A patient with severe systemic disease that is a constant threat to life</td>
<td>Examples include (but not limited to): recent (&lt; 3 months) MI, CVA, TIA, or CAD/stents, ongoing cardiac ischemia or severe valve dysfunction, severe reduction of ejection fraction, sepsis, DIC, ARD or ESRD not undergoing regularly scheduled dialysis</td>
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<td>ASA V</td>
<td>A moribund patient who is not expected to survive without the operation</td>
<td>Examples include (but not limited to): ruptured abdominal/thoracic aneurysm, massive trauma, intracranial bleed with mass effect, ischemic bowel in the face of significant cardiac pathology or multiple organ/system dysfunction</td>
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<td>ASA VI</td>
<td>A declared brain-dead patient whose organs are being removed for donor purposes</td>
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Original Article

Safe Selection of Outpatient Joint Arthroplasty Patients With Medical Risk Stratification: the “Outpatient Arthroplasty Risk Assessment Score”

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• **Outpatient Arthroplasty Risk Assessment Score**

• Developed via partnership between:
  – **Perioperative Medical Specialist**
    • **Dr. Pete Caccavallo, MD**
  – Arthroplasty Surgeon

• Medically-based risk assessment for rapid discharge
• 1120 consecutive THA and TKA patients
  – N = 979 after exclusions
  – 61% Female
  – Mean Age 62.3 yrs
  – Mean BMI 32.4
  – 521 knees (53.2%) / 458 hips (46.8%)

• 264 patients (27%) DC same day or next AM
• 715 patients (76%) discharged ≥ POD 2
OARA Score: Results

Mean OARA Score

Mean ASA-PS and Romano CCI

Same day discharge
POD 1 discharge
POD 2 discharge
POD 3 discharge
≥ POD 4 discharge
• Positive Predictive Value

• **OARA SCORE** ≤ 59 discharge home POD 0 or next day: **81.4%**

• **ASA SCORE** ≤ 2 discharged home POD 0 or next day: **56.5%**

• \( p < 0.001 \)
• Current medical selection criteria for outpatient TJA, such as ASA, are crude
• OARA Score represents a more sensitive medical risk stratification for outpatient TJA
• Improved predictive value for discharge home same or next day

• **Future Work:**
  - Refine/Enhance OARA with large data sets
  - Analysis of Psychosocial Factors
Psychosocial Criteria

• Smoking actually not contra-indication
• Depression / Anxiety / etc
• Inadequate Home Support
  – No spouse, family or friends to assist at home
• **Excessive** Home Support
  – >35 years old and lives with parents!
Peri-Op Optimization

• Team Developed Standardized Protocols
  – Anesthesia / Medical MD / Surgeon

• Surgeon Component

• Consistent Surgical Care:
  – Operative Time
  – Blood Loss
  – Approach / Trauma

• Consistent “product” must arrive in PACU
Our Current Program

• Patient chooses hospital or ASC
• Rigorous Patient Education
  – Starts in Office
  – Teaching Class
  – Expectation Management
• All patients seen by perioperative medical specialist
  – Screened with OARA Score
  – Robust Medical Optimization
Our Current Program

• Preoperative Multi-Disciplinary Conference
• Multi-Modal Pain Program
  – Pre-Operative Oral Meds
  – Single Shot Spinal
  – Adductor Canal Block (TKA)
  – PAI (TKA)
  – Postop Oral Meds
• Surgical Optimization
Our Current Program

• Prior to discharge, ALL patients MUST be seen by:
  – Physical Therapy
  – Orthopaedic Surgeon
  – Perioperative Medical MD

• All patients given perioperative medical MD cell phone and number to reach surgeon overnight

• All patients receive phone call next morning
Starting Outpatient Program

• **Where is your program currently?**
  – Surgical times and LOS
  – Anesthesia / Medical / Hospital Partnership

• **Monitor metrics closely and often**
  – Be prepared to act on the data analysis

• **If considering an ASC**
  – Be honest with yourself
  – Patient safety is top priority
  – Increase slowly / gradually
Summary

• Can be performed safely
• Optimize Essential Perioperative Elements
• Patient Selection is critical
  – To successfully decrease LOS
  – To avoid readmissions