Patient Selection For Ambulatory Surgery: Can Any Patient Be an Outpatient?

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Outline

- Describe the concerns of ambulatory surgery in challenging patients
- Understand the approach to determining patient selection for ambulatory surgery
- Justify appropriate selection of challenging adult patients scheduled for ambulatory surgery
  - Sick, elderly, obese, OSA, diabetes mellitus, cardiac implantable electronic devices

Reengineering in Surgical Paradigm

- In the US, ~ 70% surgical procedures performed on an outpatient basis
- Improvements in surgical and anesthetic techniques make more procedures possible in outpatient setting
- Complex surgical procedures are increasingly performed on complex patients

In an ambulatory setting, patient selection influences perioperative outcome.

Patient Selection Influences Perioperative Outcome

- Delayed discharge home
- Reduced efficiency of the ASC
- Unplanned hospital admission
- Increased post-discharge complications
- Unplanned readmission
- Patient/family dissatisfaction
Suitability For Ambulatory Surgery: Complex and Dynamic Process

- Surgical procedure
  - Cataract, peripheral, cavity
- Patient’s preoperative health
  - ASA Physical status
- Proposed anesthetic technique
  - Local/regional anesthesia vs. GA
- Suitability of surgical facility
  - HOPD, ASC, Office-based
- Social considerations
  - Appropriate caregiver availability

Procedure Considerations

- Low risk of severe intra- or postop blood loss
  - Tranexamic acid allowed TKA on outpatient basis
- Postoperative pain easily controlled
- No need for intensive or prolonged postop care
- Duration of procedure ??
- Surgeon’s expertise

Outpatient Total Knee Arthroplasty

- Outpatients were younger, had lower comorbidity burden
- TKA performed on an outpatient basis had lower risk of re-hospitalization
- Reasons for re-hospitalization
  - Inadequate pain control
  - Comorbidities, particularly HF


Laparoscopic Roux-En-Y Gastric Bypass

- Bariatric Outcomes Longitudinal Database (n=51,788) lap gastric bypass procedures
- Median age=45 years; BMI=46.3 kg/m²
- Patients discharged on an ambulatory basis had a 13-fold increased risk of 30-day mortality when compared with the LOS of 2 days
- Ambulatory discharge was associated with a trend toward increased serious complication


Patient Selection for Ambulatory Surgery: Predictors of Complications

- ACS-NSQIP database 2005-2010 (n=244,397)
- Predictors of 72-h perioperative morbidity:
  - High BMI
  - COPD
  - Previous PCI/cardiac surgery
  - Hypertension
  - H/o TIA/CVA
  - Prolonged operative time


Unplanned Admission After Ambulatory Surgery

- Length of surgery more than one hour
- High (≥3) ASA physical status classification
- Advanced age (>80 years)
- High BMI

ASA Physical Status Scale

- Inter-rater reliability assessed in a cohort of 10,864 patients
  - ASA 1=5.5%, ASA 2=42%, ASA 3=46.7%, ASA 4=5.8%
- ASA-PS scale had moderate ability to predict in-hospital mortality and cardiac complications
- Despite the inherent subjectivity, ASA-PS scale can be used as a measure of preoperative health


Patient Considerations

- Patients with ASA physical status 4 NOT suitable for ambulatory surgery
  - A patient with severe systemic disease that is a constant threat to life
- Patients with ASA physical status 3 consider other factors
  - A patient with severe systemic disease

Age

Age alone should not be used to determine suitability for ambulatory surgery.

Outpatient Laparoscopic Cholecystectomy in the Elderly

- Analysis of the NSQIP database (2007-2010)
- Elderly (>65 yr) undergoing elective lap chole on an outpatient basis (n=7499) compared with inpatients (n=7799)
- Predictors of inpatient admission and mortality
  - ASA 4, CHF, bleeding disorder, CRF on dialysis
- Factors that did not influence admission
  - Diabetes mellitus, BMI, smoking status

Age and Ambulatory Surgery

- Age > 80 years is an indicator of increased perioperative risk

- Consider post-discharge issues
  - Increased need for supervision
  - Social issues such as elderly or debilitated partner

Obese Patients
For Ambulatory Surgery

Ambulatory Surgery in Obese

Systematic Review: Results

- 106,119 patients (prospective cohort trials = 62,476 and retrospective trials = 43,643)
- Bariatric surgery population = 39,548, and systematic review patients n=2549
- Obese had increased respiratory events
  - O₂ desaturation, need for O₂ supplementation
  - Stridor/laryngospasm, airway obstruction


Systematic Review: Results

- No differences in unanticipated admission rate
  - Obese and non-obese cohorts
  - Studies of bariatric and non-bariatric surgery
- BMI in non-bariatric surgery studies around 30
- BMI in bariatric surgery studies was around 40
  - Rigorous preoperative preparation
  - Super obese (BMI>50) higher risk of complications


Selection of a Obese Patient For Ambulatory Surgery

Preoperative Assessment & Identification of Comorbid Conditions
OSA, Hypoventilation, Cardiovascular, Difficult airway, DM

BMI<40 kg/m²
BMI 40-50 kg/m²
BMI>50 kg/m²

Follow SAMBA-OSA Recommendations

Not Suitable For Ambulatory Surgery

Preoperative Assessment
Known or Presumed OSA
Follow SAMBA-OSA Recommendations

OSA Patients For Ambulatory Surgery

ASA-Scoring System For OSA Patients

A. Severity of OSA (0-3 pts)
B. Invasiveness of surgery/anesthesia (0-3 pts)
C. Requirements for postoperative opioids (0-3 pts)

- Overall score (0-6): A + greater of B or C
- Score 4: increased risk from OSA
- Score 5 or 6: significantly increased risk from OSA
- Not suitable for ambulatory surgery
- Intra-abdominal and upper airway surgery are not suitable for ambulatory surgery.

SAMBA-OSA Systematic Review

- No difference in complications between OSA and non-OSA patients undergoing ambulatory surgery
- Most studies used standardized, protocolized approach to patient care
  - Emphasis on preoperative diagnosis
  - Emphasis on use of non-opioid analgesics to minimize opioid use
  - Emphasis on postoperative care particularly use of CPAP after discharge

Selection of a OSA Patient For Ambulatory Surgery

- No guidance can be provided for airway surgery

Joshi, Girish, MB, BS, MD, FFARCSI
Surgery For OSA in An Ambulatory Setting
- Systematic review of 18 studies (2160 patients)
- No deaths or major catastrophic events
- Overall adverse event rate = 5.3%
- Respiratory complications = 1.5%
  - Majority were O₂ desaturations, and were not clinically significant
- Readmission rate 0.4%
- OSA surgery performed on an outpatient basis is generally safe
- Exceptions: tongue base surgery, high AHI, high postop opioid requirements
Rotenberg B: Curr Anesthesiol Rep 2014; 4: 10-8

Laryngopharyngeal Surgery in OSA
- Analysis of the National Survey of Ambulatory Surgery
- No increase in airway surgery over a decade
- Unplanned readmission rate <4%
- No mortality or serious complications
- Minor complications: 9%

Diabetic Patients For Ambulatory Surgery

Glycemic Control Guidelines
- Is there a preoperative blood glucose level above which one should postpone elective surgery?
  - No evidence that any particular blood glucose level is harmful for outpatients
  - First step in decision making: assess for significant complications of hyperglycemia such as severe dehydration, ketoacidosis, and hyperosmolar non-ketotic states
  - Postpone surgery of these conditions are present

Preoperative Blood Glucose Level
- Good long-term control: proceed with surgery
- Poor long-term control: consider comorbidities and risks of surgical complications (e.g., delayed wound healing and wound infection)
- Decision to proceed made in conjunction with the surgeon
**Management of Pacemaker Patients**

- Rendering PM asynchronous, even in PM-dependent patients, not always required
- Render asynchronous, by programming or by a magnet, only if significant inhibition is observed
- Caution: pacemakers with special algorithms (e.g., rate responsive devices, MV sensors, search hysteresis/capture, battery extenders)

**Preoperative Considerations in Patients With Implantable Cardioverter Defibrillator**

- Is EMI likely? No → Proceed With Surgery
  - Yes → Is the Procedure below umbilicus? Yes → Proceed
  - No → Is the patient pacemaker dependent? Yes → Reprogram ICD
  - No → Use a Magnet

**Summary**

- Complex ambulatory surgical procedures will increasingly be performed on complex patients
- Patient selection is complex and dynamic process
- First step in determining appropriate patient selection includes preoperative assessment and identification of any comorbid conditions, which should be optimized to minimize risks
- Developing and implementing clinical pathways should improve the process of patient selection

**Future**

Why is the patient in the hospital? Will hospitalization improve outcome?

**Thank You. Questions**

The Art of Anesthesia