Outpatient Shoulder Arthroplasty: How to ensure success and safety

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Topics

Background

Program development
  ◦ Understand the players to get buy in
  ◦ Generate pathways
  ◦ Service line management and technical factors

Outcomes
  ◦ Safety
  ◦ Satisfaction
Background

The US health care environment is changing

Affordable Care Act effects

- High deductible plans for private insurance
  - Consequences
- Subsidized private insurance
  - Low reimbursement
  - Often declined by physicians
- More working poor/Medicaid
  - Often also not accepted
Background

One way to control costs is to transition care from the hospital setting to the outpatient environment

- Greater surgeon control over service line
- Better opportunity to cut costs and control quality

Others have reported successful outcomes with outpatient joint replacement

- Unicompartmental knee arthroplasty
- Total knee arthroplasty
- Total hip arthroplasty

Aynardi, HSS J, 2014
Berger, CORR, 2009
Cross, Int Orthop, 2014
Dorr, J Arthroplasty, 2010
Kolisek, CORR, 2009
Background
What are the resources that are needed to make this work?

Challenges:
- Service line control (or at least cooperation)
- Pathways for post-operative issues
- Anesthesia compliance
- Administrative concerns
- Implant and vendor costs
Buy In

Multiple stakeholders
Varies by practice type with variable amounts of influence over them
- OR nurse manager
- Hospital or ASC administrator
- Anesthesia
- Recovery room
- Rehab
- Partners?
Buy In

ADMINISTRATION

Safety

Costs

The Angry Bureaucrat

Everything not prohibited is mandatory.
Buy In

ANESTHESIA

Minimal benefit to them
- And it’s disruptive

Blood pressure

Muscle relaxation

Block vs peri-articular injections
- Potentially contentious
- $$$
- Concern with indwelling catheters

Weller, AAOS, 2016
Buy In

RECOVERY ROOM

ASC staff used to shorter PACU stays

Need education regarding recovery from deeper general anesthesia +/- muscular paralysis
Pathways

Prehab
PACU
Blood product triggers
Relationship with hospital for transfer
  ◦ If using ASC
Post-op rehab
Phone line for post-operative problems
Requires meetings
Patient Selection

Patients offered outpatient TSA by operating surgeon

- Absence of significant cardiopulmonary comorbidities
  - <70 years old
  - BMI < 35
  - 1 of 3: OSA, COPD, morbid obesity
  - 1 of 3: CAD, CHF, HTN
- Privately insured
  - Cannot offer patients with government payors
Patient Selection

Evaluation by anesthesia staff
- Nurse and staff anesthesiologist

Confidence in this system is critical
Patient Selection

Results in selection of patients that are...

- Younger
- Healthier
- Socially independent or with strong support networks

This is appropriate risk stratification
Set Patient Expectations

Office visit more involved

Odds of success/satisfaction

Benefits of outpatient surgery

Timeline of pre-op and post-op appointments

Complications specific to outpatient surgery

Medicine is a science of uncertainty and an art of probability.

(William Osler)
Minimizing EBL

Transfusions not needed to date in our outpatient shoulder arthroplasty experience

Avoid drains

Adjuncts available
- TXA
- Aquamantys
Pain Control

Initial investigation on outpatient TSA focused on interscalene catheter blockade

- Sufficient analgesia
  - VAS ~1/10
- Low complications
- High satisfaction

Shah, Indian J Orthop, 2007
Gallay, CORR, 2008
Ilfeld, Anesth Analg, 2005
Pain Control

But interscalene catheters have problems

- 156 shoulder arthroplasties with indwelling interscalene catheter
- 30% complication rate
  - 13% major
    - respiratory distress
    - pneumonia
    - catheter incarceration
    - relacitrant bracial neuritis
  - 17% minor: mostly catheter dysfunction

Weller, AAOS, 2016
Pain Control

Liposomal bupivacaine (LB) plus dexamethasone effective
- Reduced LOS, pain, narcotic use

Comparative studies
- LB vs interscalene block
- LB groups with equal or less
  - Pain
  - Narcotic use
  - Length of stay
  - Cost (~$1200 per case)
  - Complications

Routman, JSES, 2016
Okoroha, JSES, 2016
Hannan, Am J Orthop, 2016
Weller, AAOS, 2016
Pain Control

Pre-medication
- 10mg oxycodone
- 300mg gabapentin
- 1g tylenol

Intra-operative
- 20cc liposomal bupivacaine
- 40cc 0.25% bupivacaine
- 30mg ketorolac

Post-operative
- Oxycodone and oxycontin
- Tylenol IV/PO
- Gabapentin
PACU

Post-operative management
- PACU monitoring
- Discharge criteria
  - Ambulation
  - Void bladder
  - Adequate pain control
  - Follow up phone call next day

Ability to keep patient for 23h observation
- Not utilized
Availability

Infrastructure for phone calls to address post-op issues
- Residents
- PA
- Self

Follow up call
- ASC/hospital staff
- Your office
Outcomes

30 patients underwent outpatient TSA

Age and co-morbidities matched cohort of 30 TSA’s done in hospital

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>ASC</th>
<th>Hospital</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>52.6 (33-68)</td>
<td>54.2 (28-63)</td>
<td>0.39</td>
</tr>
<tr>
<td>Sex</td>
<td>23M/7F</td>
<td>14M/16F</td>
<td>0.03</td>
</tr>
<tr>
<td>BMI</td>
<td>31.6 (20.6-55.7)</td>
<td>31.5 (22.7-44.3)</td>
<td>0.96</td>
</tr>
<tr>
<td>ASA score</td>
<td>2.1</td>
<td>2.3</td>
<td>0.33</td>
</tr>
<tr>
<td>Extremity</td>
<td>13R/17L</td>
<td>18R/12L</td>
<td>0.30</td>
</tr>
<tr>
<td>Operative indication</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Osteoarthritis</td>
<td>24</td>
<td>27</td>
<td>0.47</td>
</tr>
<tr>
<td>Inflammatory arthritis</td>
<td>2</td>
<td>2</td>
<td>1.00</td>
</tr>
<tr>
<td>Post-traumatic arthritis</td>
<td>2</td>
<td>0</td>
<td>0.49</td>
</tr>
<tr>
<td>Osteonecrosis</td>
<td>1</td>
<td>1</td>
<td>1.00</td>
</tr>
<tr>
<td>Post-capsulorrhaphy arthritis</td>
<td>1</td>
<td>0</td>
<td>1.00</td>
</tr>
</tbody>
</table>

Brolin, JSES, 2016
Outcomes

No significant differences in complications between inpatient and outpatient groups

No cardiopulmonary complications in either group

No (re)admissions or re-operations in either group

<table>
<thead>
<tr>
<th>90-Day Episode-of-care Complications</th>
<th>ASC</th>
<th>Hospital</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total complications</td>
<td>4 (13.3%)</td>
<td>3 (10.0%)</td>
<td>1.00</td>
</tr>
<tr>
<td>Infection</td>
<td>0</td>
<td>0</td>
<td>1.00</td>
</tr>
<tr>
<td>Anterior subluxation</td>
<td>1 (3.3%)</td>
<td>1 (3.3%)</td>
<td>1.00</td>
</tr>
<tr>
<td>Subscapularis failure</td>
<td>1 (3.3%)</td>
<td>0</td>
<td>1.00</td>
</tr>
<tr>
<td>Arthrofibrosis</td>
<td>2 (6.7%)</td>
<td>0</td>
<td>0.49</td>
</tr>
<tr>
<td>Superficial venous thrombosis</td>
<td>0</td>
<td>1 (3.3%)</td>
<td>1.00</td>
</tr>
<tr>
<td>Blood transfusion</td>
<td>0</td>
<td>1 (3.3%)</td>
<td>1.00</td>
</tr>
<tr>
<td>Readmission within 90 days</td>
<td>0</td>
<td>0</td>
<td>1.00</td>
</tr>
<tr>
<td>Reoperation within 90 days</td>
<td>0</td>
<td>0</td>
<td>1.00</td>
</tr>
</tbody>
</table>
Outcomes

20 outpatient shoulder arthroplasties surveyed
- 17 TSA, 3 RTSA

5 point Likert scale
- Overall satisfaction
- ASC facility experience

Binary scale
- ASC vs hospital
- Repeat experience

<table>
<thead>
<tr>
<th>Name ________________________</th>
<th>Athena ________________________</th>
</tr>
</thead>
<tbody>
<tr>
<td>Date of Surgery __________</td>
<td>Type of Surgery □ Total Shoulder □ Total Hip □ Total Knee</td>
</tr>
<tr>
<td>Involved Side □ Right □ Left</td>
<td></td>
</tr>
</tbody>
</table>

In the first 3 months after your surgery at Campbell Clinic Surgery Center...

1. Did you have to see your regular family doctor about a medical problem after your surgery?
   □ Yes □ No If yes, what was the problem? _____________________________
   ___________________________________________________________________

2. Were you admitted to the hospital within 90 days after your surgery?
   □ Yes □ No If yes, why were you admitted? ____________________________
   ___________________________________________________________________

3. Did you have an infection at your surgical incision site within 90 days after surgery?
   □ Yes □ No If yes, what antibiotics were prescribed? ________________
   ___________________________________________________________________

4. How satisfied were you with your experience at Campbell Clinic Surgery Center?
   □ Extremely □ Very □ Moderately □ Slightly □ Not at all

5. Would you consider having surgery at the Campbell Clinic Surgery Center again?
   □ Yes □ No □ Not sure

6. Are you happy that you had your surgery at a surgery center rather than the hospital?
   □ Yes □ No □ Not sure

7. How satisfied are you with your surgery overall?
   □ Extremely □ Very □ Moderately □ Slightly □ Not at all

8. Would you consider having this surgery again?
   □ Yes □ No □ Not sure

Please contact Margaret Knack, RN (Research Nurse) at 901-759-5413 with any questions.

Thank you for your feedback.
Outcomes

95% “extremely” or “very” satisfied

95% preferred ASC to hospital

All would have an operation at ASC again

One patient (5%) would not have TSA again
Conclusions

Buy in from all stakeholders is key

Developing an outpatient joints program requires meetings

Patient selection and setting appropriate expectations are crucial

Mechanisms exist to mitigate blood loss and enhance pain control
Thank You