Anesthesia and Pain Service Protocol For Primary Total Hip and Knee Arthroplasty

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Background: A coordinated multidisciplinary perioperative approach to total joint replacement surgery leads to more rapid recovery and improved patient satisfaction. Given the increasing evidence in many areas of health care that standardization may improve outcome and safety, the Department of Anesthesiology is working with the orthopedic surgeons on a revision of the original January 2007 standard operating procedure for best practice anesthesia and postoperative pain management.

Goal: This document outlines recommended protocol for patients who undergo hip or knee arthroplasty.

- **Femoral nerve catheters:** inserted in preoperative holding area by regional anesthesia team , coordinating with the operating orthopedists + OR anesthesiologist so as to not delay cases. The surgical team can call the regional anesthesia yellow phone (721-6276) with any issues.
- **Continuous Epidural:** Consider for patients with a high opioid tolerance preoperatively, (for either hip replacement or knee replacement).
- **low-dose IV Ketamine:** as an adjunct for opioid tolerant patients, for all anesthetic techniques (not just GA) may be given intraoperatively
- **Gabapentin:** 300-600 mg PO before surgery, and **Celebrex** (not currently on Stanford formulary) are other analgesic adjuncts available.
- **Sciatic nerve block:** single shot or a continuous combined femoral/sciatic nerve block technique for knee replacements will be on a case by case basis in consultation with the in-OR anesthesiologist in and the orthopedist.
- For Dr. Maloney's patients (coumadin administered night before surgery), epidurals are contraindicated. A single shot spinal is appropriate within 24 hours of starting coumadin (provided no coexisting coagulation disorders).
- For any surgeon using postoperative LMWH, epidurals may be used *in the event that a femoral catheter is not placed*.
- *No* Toradol® unless requested by the surgical team
- For knee replacement a femoral nerve catheter with local anesthetic infusion provides postoperative pain relief similar to epidural analgesia but has fewer side effects. For peripheral catheters, there is no advantage of adding epinephrine to the local anesthetic.
- In selected cases, other local anesthetics may be used for spinal anesthetics. For example, intrathecal *hypobaric* Bupivacaine is sometimes preferable when position does not allow "bad" leg down position or sitting up.
- Rewarm OR in-between cases when the pts are sitting for spinal, + use forced air warming to maintain normothermia.
- Adjust acetaminophen dose in hepatic impaired pts, for those patients who abuse alcohol.
- Dr. Goodman prefers being able to assess motor function immediately postop in PACU, so no tetracaine in spinals as block may last many hrs.
- Revision hip or knee replacement/revision also follow protocol, except that revision cases are usually longer, so if case is expected to last > 2 hrs, consider GA in addition to spinal, as pt may not be comfortable under sedation for > 120 mins.

Anesthesia and Pain Service Protocol for Total Hip Arthroplasty

	Total hip arthroplasty	Responsibility
Pre-op	Preemptive analgesia with: Acetaminophen 1gm PO 2hrs before surgery with sips of water in preop holding area	Surgeon
	Infection prophylaxis with cefazolin 30min before surgery (1 gram IV for patients <80kg, 2 grams for patients ≥80kg)	Anesthesiologist
Intra-op / Anesthesia	Spinal anesthesia is 1st choice. Alternatively, choose general anesthesia if contraindications for regional techniques are present or if patient does not give consent for regional anesthesia	Anesthesiologist
	Spinal anesthesia with 0.75% bupivacaine, 100-200 mcg of morphine, and 10 - 25mcg fentanyl intrathecally - *OR* - General anesthesia	
	Maintain normothermia (forced air), use fluid warmer (Ranger) PONV prophylaxis with a 5HT3- antagonist	
Postop	Acetaminophen 1gm every 6hrs Opioids ordered by service according to protocol for POD#1 if possible If intrathecal opiates placed, Pain Service to follow patient overnight and evaluate in morning of POD#1 If needed, PCA morphine 0.5-2mg every 10-15min lockout, no basal.	Surgeon, Pain Service, Nursing, Physical Therapy

Anesthesia and Pain Service Protocol for Total Knee Arthroplasty

<table>
<tr><th></th><th colspan="3">Total knee arthroplasty</th><th>Responsibility</th></tr>
<tr><td>Pre-op</td><td colspan="3"><u>Preemptive analgesia</u> – Acetaminophen 1gm PO
2hrs before surgery with sips of water in preop holding area</td><td>Surgeon</td></tr>
<tr><td></td><td colspan="3"><u>Infection prophylaxis</u> - Cefazolin 1 gram IV (2 grams for pt ≥80kg)
30 min before surgery</td><td>Anesthesiologist</td></tr>
<tr><td>Intra-op / Anesthesia</td><td colspan="3">Regional anesthesia techniques are 1st choice. Alternatively, choose general anesthesia if contraindications for regional techniques are present or if patient does not give consent for regional anesthesia.</td><td rowspan="5">Anesthesiologist</td></tr>
<tr><td></td><td><u>Postop coumadin:</u>
Epidural contraindicated

Spinal anesthesia + femoral nerve catheter
– OR –
GA + femoral nerve catheter</td><td colspan="2"><u>Postop LMWH:</u>
Spinal anesthesia + femoral nerve catheter
– OR –
GA + femoral nerve catheter
– OR –
Epidural anesthesia
(option for chronic pain patients, or stiff revision knees)</td></tr>
<tr><td></td><td colspan="3">Femoral catheter inserted. Bolus with 30ml of 0.5% Ropivicaine.</td></tr>
<tr><td></td><td></td><td>If femoral catheter,</td><td>If <u>no</u> femoral catheter is placed
(option for chronic pain patients, or stiff revision knees)</td></tr>
<tr><td></td><td>Spinal anesthesia with
0.75% Bupivacaine,
100-200 mcg of Morphine, and
10 - 25mcg Fentanyl
- OR -
General anesthesia</td><td colspan="2">Epidural anesthesia with
Bupivacaine 0.5% and
0.2mg Hydromorphone bolus.
1hr before case ends, switch to
0.125% Bupivacaine.</td></tr>
<tr><td></td><td colspan="3">Maintain normothermia (forced air), use fluid warmer (Ranger)
PONV prophylaxis with a 5HT3- antagonist.</td></tr>
<tr><td>Postop</td><td colspan="3">Acetaminophen 1gm every 6hrs
Opioids ordered by service according to protocol for POD#1 if possible
If intrathecal opiates placed, Pain Service to follow patient overnight and evaluate in morning of POD#1
<u>Postoperative Regional Anesthesia:</u>
• Femoral catheter infused with 0.125% bupivacaine through standard infusion pumps or portable pumps (IFlow or Stryker) 6-10ml/hr. Anticoagulation may continue with peripheral nerve catheter. Catheter to be removed on POD#2 at the latest.
• If epidural analgesia is used, use 0.125% bupivacaine 6-8ml/hr + hydromorphone 0.2mg/hr. Prior to removal of catheter a 0.2mg bolus of hydromorphone to be given. Epidural to be removed on morning of POD#2. LMWH may be started 2hr after catheter removal.
• Goals are to have minimal motor blockade while maintaining good sensory analgesia. If needed, PCA morphine 0.5-2mg every 10-15min lockout, no basal. Transition to PO pain medication as per protocol</td><td>Surgeon, Pain Service, Nursing, Physical Therapy</td></tr>
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