MASSACHUSETTS GENERAL HOSPITAL

MGH Mastectomy ERAS
Updated 7.29.2021

ANESTHESIA BUNDLE

Element	Definition
Preoperative Testing Surgeons, residents, fellows PPE/PATA Anesthesia	• In accordance with hospital policy, all patients should receive an anesthesia preoperative phone call, or visit, per departmental guidelines, prior to the day of surgery. Anesthesia consultant will communicate any recommendations for further testing with primary surgeon's office. • Patients with high degree of medical or anesthetic complexity as assessed by the surgeon at the preoperative visit should be referred to anesthesia for preoperative evaluation per institutional best practice via e-mail at least 7 days prior to surgery to facilitate preoperative workup • In accordance with departmental guidelines, patients older than 65 and patients with a history of cardiac disease should have an EKG performed within 6 months of surgery • A CBC should be performed within 90 days for patients • Routine preoperative chest x-rays are not indicated • Diabetic patients should have a preop fingerstick on day of surgery
Preoperative Medication Management Surgeons, residents, fellows PPE/PATA Anesthesia	• Hold ACE inhibitors and ARBs on the day of surgery • Take prescribed beta-blockers on the day of surgery • Patients on long-acting narcotic therapy (e.g. OxyContin) should take their extended-release narcotic on the day of surgery • Anticoagulation management will be at the discretion of the primary surgeon • Vitamin/herbal supplements, and fish oil should be held 7 days prior to surgery • Ativan PO on day of surgery per surgeon order
Preemptive Analgesia Surgeons, residents, fellows CPC / pre-op Nursing Anesthesia	• Patients should receive 975mg to 1,000mg of acetaminophen orally prior to surgery • Patients should receive gabapentin 300mg prior to surgery • Patient SHOULD receive celecoxib prior to surgery
Pre-operative Fluid Management Anesthesia	• Saline lock IVs prior to arrival in operating rom
Premedication CPC / pre-op Nursing Anesthesia	• Routine premedication with midazolam is discouraged in older patients • Regional anesthesia placement may be facilitated by fentanyl +/- midazolam for procedural sedation; however, patients over 65 should receive no more than 1 mg IV midazolam (fentanyl only sedation preferred)
Intraoperative Antiemetic Prophylaxis Anesthesia	• Unless contraindicated, patients should receive antiemetic prophylaxis with at least two of the following medications administered intraoperatively: 1. Zofran 4mg IV 2. Haloperidol 1mg IV 3. Dexamethasone 0.1mg/kg (max 8mg) 4. Scopolamine patch (should not be used in patients over 65)
Postoperative Antiemetic Use Surgeons, residents, fellows Anesthesia PACU Nursing Floor Nursing	• The following medications are acceptable for rescue antiemetic use: 1. Zofran 1-4mg IV 2. Haloperidol 1mg IV 3. Metoclopramide 5-10mg IV 4. Promethazine 6.25-12.5mg IM • The first line rescue antiemetic given in the PACU should be a drug not given pre- or intraoperatively
Intraoperative Medication Use	• The following medications are **NOT PREFERRED** and should be avoided if possible: ○ Isoflurane ○ Morphine

Anesthesia	• Fentanyl is the preferred narcotic for intraoperative use
	• Total intravenous anesthesia (TIVA) is **PREFERRED.**
	  ○ TIVA should consist of Propofol and one of the following:
	  ▪ Dexmedetomidine. **Please turn dexmedetomidine OFF once neuromuscular blockade is allowed.**
	  ▪ Lidocaine 1.5mg/kg/hr IV infusion (should not be used for patients receiving regional anesthesia)
	  ▪ Ketamine 5mcg/kg/min IV infusion
	  ▪ If possible, remifentanil should be **AVOIDED** to minimize the risk of PONV and hyperalgesia.
	• Antibiotic prophylaxis should be provided with cefazolin (unless allergic in which case an appropriate substitute should be given) within 60 minutes of incision
	• If a patient is to receive vancomycin, then that patient should not be the first case of the day.
	• In the absence of paravertebral blocks, multimodal analgesia should be achieved with use of two or more of the following, unless contraindicated:
	  ○ Ketamine 0.5mg/kg IV bolus and 5mcg/kg/min IV infusion
	  ○ Lidocaine 1mg/kg IV bolus and 1.5mg/kg/hr IV infusion (should not be used for patients receiving regional anesthesia)
	  ○ Dexmedetomidine infusion at 0.5mcg/kg/hr IV with NO intravenous bolus of dexmedetomidine administered. **Please turn dexmedetomidine OFF once neuromuscular blockade is allowed.**
	  ○ Regional anesthetic techniques

Neuromuscular Blockade Anesthesia	• If paralysis is needed for reconstruction, NMB may be maintained with either rocuronium, vecuronium or cisatracurium; cisatracurium is preferred in patients with renal dysfunction • Adequate offset of neuromuscular blockade should be ensured with either: sustained handgrip on 100 Hz tetanic stimulation of >5 seconds or quantitative TOF monitor with ratio >0.9 or documentation of adequate conditions for reversal (>2 twitches) and appropriate dose of reversal agent per best practice.

Intraoperative Fluid and Ventilation Management
 	
Anesthesia
	• Intraoperative fluid management should be aimed at maintaining adequate end-organ perfusion while minimizing iatrogenic volume overload
	• Hypotension alone should not necessarily be treated with fluid boluses unless other clinical signs point to hypovolemia
	• Vasopressors should be considered a first line treatment for hypotension due to induction of general anesthesia
	• Insufficient data exists for noninvasive cardiac output monitors (NICOMs) to recommend their routine use; however, clinicians may opt to use these devices to guide resuscitation in patients whose volume status is difficult to ascertain clinically. NICOMs or other measures of volume status should be used in cases where fluid administration exceeds 1600 mL of IV Fluid or EBL exceeds 500 mL.
	• Best Practice:
	  ○ No fluids should be administered in preop holding
	  ○ If patients are hypotensive with other indicators of hypovolemia, crystalloid boluses should be given at no more than 3-5mL/kg/hr with appropriate time allowed for clinical response
	  ○ Colloid may be substituted for crystalloid at the anesthesiologist's/surgeon's discretion
	• If a urinary catheter exists, then:
	  ○ Accept urine output of 0.2mL/kg/hr
	  ○ Do not give fluid to treat low urine output if other data imply euvolemia
	• Ventilation strategy
	  ○ Goal ventilation strategy should be TV of 5-7 mL/kg of IBW with PEEP ≥ 5 cm H_2O

Postoperative Analgesia	• Patients should receive scheduled acetaminophen 650gm PO q 6 hrs.

Surgeons, residents, fellows Anesthesia PACU Nursing Floor Nursing	• Narcotic therapy should be minimized 1. First line rescue therapy for mild to moderate pain should be a non-narcotic such as Acetaminophen or adjustment of regional analgesia catheter 2. Oxycodone 5-10mg PO or tramadol 50-100 mg PO are the preferred first line narcotic agents; IV narcotic therapy should be used for third line rescue use only for patients tolerating oral agents
Regional Analgesia Anesthesia	• Patients should receive paravertebral blocks prior to operations • If patients are not candidates for paravertebral blocks, then infiltration of local anesthetic into surgical field should occur.

SURGICAL BUNDLE

Element	Definition
Demarcation and Verification as ERAS/SSI Patient Surgeons, residents, fellows Surgical clinic nursing	• Selected patient placed on ERAS/SSI pathway • Flag placed in Epic that will be visible whenever Epic opened during episode of care that makes it clear to all providers that patient is on ERAS/SSI pathway
Preoperative screening Surgeons, residents, fellows Surgical clinic nursing PPE/PATA team	Preoperative screening should include: 1. Anemia screening 2. Nutritional screening per institutional best practice 3. Tobacco and alcohol use screening and cessation counseling 4. Identify any bleeding risk, anyone on anticoagulants
Patient Education Surgeons, residents, fellows Surgical clinic nursing PPE/PATA	Educational material will be provided by the surgeon's office at the time of booking covering: 1. Preoperative discharge preparation including dietary recommendations, home preparation, physical activity, and alcohol/tobacco abstinence 2. Day of surgery workflow / expectations 3. ERAS pain control methodology, including regional anesthesia 4. Routine postoperative care and expectations 5. JP drain teaching with arrangements for VNS
Preoperative Nutritional Supplement Surgeons, residents, fellows Surgical clinic nursing	• Patients should drink water until 2 hours before induction of anesthesia
Preoperative antibacterial shower Surgeons, residents, fellows Surgical clinic nursing	• Shower/bathe with liquid chlorhexidine soap for 2 days prior and on the morning of surgery per institutional best practice or surgeon instruction.
Maintenance of Normothermia Surgeons, residents, fellows Anesthesia OR Nursing	• Actively warm before and throughout surgery to achieve target temperature of 36° C using one or more of the following: 1. Room temperature at >68° F until patient prepped and draped 2. Fluid warming device under body 3. Forced warm air over-body device
Intraoperative Skin Prep Surgeons, residents, fellows OR Nursing	• Acceptable skin preps: 1. Clear Chloroprep is the preferred skin prep 2. Prep must be allowed to air-dry (minimum 3 minutes) before draping and incision 3. Exclusive iodine-only solutions are <u>not</u> acceptable except in emergent cases
Intraoperative Drain Placement Surgeons, residents, fellows OR Nursing	• Drain care per surgeon orders
Intraoperative Medication	• Nitrobid ointment is applied to the mastectomy skin flap at the discretion of the surgeon, usually 2-3 cm strip distributed over 8 x 10 cm area of the breast skin.

Surgeons, residents, fellows OR Nursing	
Optimized Postoperative Fluid Management Surgeons, residents, fellows Anesthesia PACU Nursing Floor Nursing	• Initial postoperative fluid orders: 75mL/hr or 1 mL/kg/hr, discontinue within 36 hours or once PO intake > 500 mL <u>Postoperative Hypotension and Fluid Responsiveness:</u> • Do not intervene unless: 1. MAP < 65 **or** 2. UOP < 0.2 mL/kg/hr **and** patient has other signs of hypovolemia • If any of the above occur, the patient should be examined and causes of hypotension other than inadequate fluid administration excluded (e.g. bleeding, myocardial ischemia etc.) • If the patient meets above criteria, initial response may be: 1. Crystalloid or colloid 250mL bolus up to 3 times <u>and/or</u> 2. Vasopressors if patient is in a step-down or ICU setting (consider placing patients in such a setting if you anticipate fluid management challenges) • Failure to respond appropriately should result in: 1. A call to the senior resident or attending before administering additional fluid 2. A more objective measure of fluid status. Inferring fluid status is difficult and frequently inaccurate. Ideally, non-invasive monitoring should be made available (e.g. ultrasound machines that allow simple echocardiography). 3. The on-call Acute Pain Service (APS) resident or equivalent anesthesia provider on call should be notified for patients with fluid-refractory hypotension with an epidural.)
PACU Care	• Incentive spirometry • Fingerstick glucose every six hours. • Head of bed at 30 degrees. • Continue SCDs • Surgeon to send designee to check on patient prior to discharge.
Early Postoperative Diet Advancement Surgeons, residents, fellows PACU Nursing Floor Nursing	• Advance diet as tolerated in PACU.
Early Postoperative Mobilization Surgeons, residents, fellows PACU Nursing Floor Nursing	• Patients should be out of bed within four hours of arrival in PACU.
DVT prophylaxis Surgeons, residents, fellows CPC / pre-op Nursing OR Nursing PACU Nursing Floor Nursing	• • DVT prophylaxis per primary surgeon order.
Post-Operative Meds Surgeons, residents, fellows PACU Nursing	Scheduled pain meds: • Oxycodone immediate release 5-19mg PO q4 hrs PRN