MASSACHUSETTS GENERAL HOSPITAL

MGH Thyroid ERAS
Updated 07.29.2021

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
Preemptive Analgesia Surgeons, residents, fellows CPC / pre-op Nursing Anesthesia	• Patients should receive 975mg to 1,000mg of acetaminophen orally prior to surgery • Patient SHOULD receive celecoxib 400 mg PO 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 patients older than 65 years of age
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 Anesthesia	• The following medications are **NOT PREFERRED** and should be avoided if possible: 1. Isoflurane 2. Morphine • Fentanyl is the preferred narcotic for intraoperative use

	• Total intravenous anesthesia (TIVA) is **PREFERRED** in patients who are at high risk of postoperative nausea and vomiting. • Antibiotic prophylaxis is not routinely indicated. If desired, prophylaxis should be provided with cefazolin (unless allergic in which case an appropriate substitute should be given) within 60 minutes of incision.
Neuromuscular Blockade Anesthesia	• If patient will undergo nerve monitoring during the procedure, long-acting neuromuscular blockade should either be avoided, or should only be used in smaller doses if it will wear off within 20-30 minutes

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 Surgeons, residents, fellows Anesthesia PACU Nursing Floor Nursing	• Patients should receive scheduled acetaminophen 650gm PO q 6 hrs. • 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

SURGICAL BUNDLE

Element	Definition
Demarcation and Verification as ERAS/SSI Patient Surgeons, residents, fellows Surgical clinic nursing	• Identify patients as same-day discharge in pre-op note.
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 and activity 2. Day of surgery workflow / expectations 3. ERAS pain control methodology 4. Routine postoperative care and expectations 5. Total thyroidectomy patient education regarding calcium supplementation
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. Forced warm air over-body device
Intraoperative Skin Prep Surgeons, residents, fellows OR Nursing	• Acceptable skin preps: • Clear Chloroprep is the preferred skin prep • Prep must be allowed to air-dry (minimum 3 minutes) before draping and incision Exclusive iodine-only solutions are <u>not</u> acceptable except in emergent cases
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).
PACU Care	• Incentive spirometry

Surgeons, residents, fellows PACU Nursing	• Fingerstick glucose every six hours. • Head of bed at 30 degrees. • Continue SCDs
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
Post-Operative Labs Surgeons, residents, fellows PACU Nursing Floor Nursing	• No routine labs
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 medications: • If total thyroidectomy RPRR, then patients will receive 500 mg calcium every six hours. • If total thyroidectomy patients are being discharged, then patients should receive a dose of calcium prior to discharge and given instructions regarding home calcium regimen
Discharge Surgeons, residents, fellows PACU Nursing	Discharge: • Surgeon or surgical representative must see patient prior to discharge from hospital. Patients should expect to stay in the hospital for 4 hours post-op unless specifically discharged sooner by the attending surgeon • Parathyroidectomy patients are planned for discharge • Hemithyroidectomy patients are planned for discharge • The decision to admit or discharge the total thyroidectomy patients will be at the discretion of the surgeon and addressed in the pre-operative visit.

Thyroid Compliance Metrics

Role Group	Metric
Anesthesia Anesthesiologist Anesthesia residents	Anesthesia Metrics 1. Pre-op non-narcotic analgesics 2. More than two antiemetics administered 3. IV Fluids 4. Quantity of long-acting and short-acting opiates
Surgeon Surgeons, residents, fellows Surgical clinic nursing	Surgical Metrics 1. Identify patient as same-day discharge in pre-op note. 2. Pre-op education given to patient 3. Calcium administered in PACU 4. Surgical representative sees patient four hours after surgery concludes