



Bariatric Protocol

PRE-OPERATIVE		
Medications <input type="checkbox"/> Acetaminophen <input type="checkbox"/> Gabapentin <input type="checkbox"/> Midazolam <input type="checkbox"/> Glycopyrrolate Pre oxygenate with O2 face mask	Block none	Lines 1 well-running IV pre-induction Consider 2 nd IV if running Vancomycin



INTRA-OPERATIVE		
Induction <input type="checkbox"/> Ketamine 0.5mg/kg (actual body weight) <input type="checkbox"/> Propofol <input type="checkbox"/> Lidocaine 1.5mg/kg bolus (ideal body weight) <input type="checkbox"/> Rocuronium <input type="checkbox"/> Succinylcholine <input type="checkbox"/> Esmolol 0-50mg <input type="checkbox"/> Decadron 4mg <input type="checkbox"/> Droperidol 0.625mg	Maintenance <input type="checkbox"/> Magnesium 2g over 15 minutes <input type="checkbox"/> Lidocaine infusion 2g/250mL, 2mg/min <input type="checkbox"/> Total IV anesthesia (Multimodal anesthesia, avoid or minimize opioids during case)	Emergence <input type="checkbox"/> Discontinue lidocaine when trocars are removed <input type="checkbox"/> Sugammadex- full reversal dose <input type="checkbox"/> Ketorolac 15mg (consult surgeon) <input type="checkbox"/> Ondansetron 4 mg



POST-OPERATIVE		
Limit opioids in PACU as possible		

Case Specifics

Airway – Consider video laryngoscopy for anticipated difficult airway.

Pre-O2 with face mask in prep & holding.

DO NOT PLACE ESOPHAGEAL TEMPERATURE PROBE (Potential for probes to be stapled), use skin temperature monitor only.

Positioning – If using sniffing position with blankets, wrap blankets with sheet on outside so that blankets can easily be removed prior to the start of the case. Also, Ok to use the Troop elevation wedge (found in the core). The troop elevation wedge is designed to slide easily in and out so, sheets are not needed.

Steep reverse Trendelenburg with foot board attached to bed.

Opioid free/Opioid sparing - Desflurane preferred to TIVA and other volatile agents.

Hypotension is common in this patient population, ensure adequate IV access & hydration. Communicate any need to initiate pressors to surgical team.

See surgeon specifics for OG tubes. DO NOT PLACE ORAL GASTRIC (OG) TUBE UNLESS INDICATED FOR SURGEON PREFERENCE.

Special Cases

Gastric sleeve: 45-90 minutes, Gastric bypass: 60-90 minutes

Laparoscopic Adjustable Band: 45 minutes, Duodenal switch: 120-180 minutes

Surgeon Specifics

Dr. Halbert, Dr. Tascone, Dr. Ni:

- **Do not place OG tube.** Surgeon will specify Visigi (obtain from circulator) or surgeon will place endoscope. Surgeon will show anesthesia provider how to manipulate scope and indicate when needed.

Dr. Goldberg:

- 18 French OG for initial gastric decompression, **remove per surgeon direction.**
- Dr. Goldberg also requests a bougie and will indicate when to place bougie.
- Kerlix around each arm and arm board to secure arms.
- IRON intern at the head of the bed. Once the patient is prepped and draped, he will make a hole in drape and ask the anesthesia provider to attach the intern to the metal attachment at the head of the bed.
- **Band Explant with conversion: DO NOT PLACE OG** until instructed by surgeon (to avoid disrupting suture lines).

Dr. Wynn, Dr. Irgau, Dr. Peters, Dr. Ibrahim, Dr. Singh:

- **Gastric Bypass-** 18 French OG tube for initial gastric decompression. 60 ml irrigating (Toomey) syringe (obtain from circulator), one liter of sterile saline for irrigation mixed with 10 ml vial methylene blue (pharmacy).
- **Gastric Banding-** 18 French OG for initial gastric decompression (located in anesthesia closet in room).

- **Band Explant with conversion: DO NOT PLACE OG** until instructed by surgeon (to avoid disrupting suture lines).
- **Gastric Sleeve-** 18 French OG for initial gastric decompression (located in anesthesia closet in room). Also 40 French bougie (obtained from circulator, used as a guide during gastric sleeve modeling).
- **One Stage Duodenal Switch-** 18 French OG for initial gastric decompression (located in anesthesia closet in room). Potential to use 40 French bougie (obtained from circulator).
- **Two Stage Duodenal Switch-** Previous sleeve gastrectomy at prior operation. **DO NOT PLACE OG** unless instructed to do so by the surgeon to avoid disrupting suture lines.

Bariatric Procedures

Gastric Bypass, Gastric Sleeve, Laparoscopic Adjustable Gastric Banding
Conversions to Bypass or Sleeve, Duodenal Switch

Anesthetic Technique

General Endotracheal Anesthesia with ERAS (Avoid / minimize narcotics)

Monitoring

Standard ASA monitors

Five lead EKG

Consider alternative locations for blood pressure cuff (forearm, calf) if unable to obtain accurate measure due to arm circumference

Patient Profile

Bariatric surgery patients have comorbidities associated with morbid obesity. This patient population is likely to have obesity related respiratory changes, obstructive sleep apnea, hypertension, diabetes, gastroesophageal reflux disease, asthma, deep vein thrombosis, depression, hypothyroidism.

- **Obesity related respiratory changes-** Increased oxygen consumption, decreased functional residual capacity (FRC), decreased expiratory reserve volume (ERV). Preoxygenate preoperatively, consider sniffing position, obtain necessary difficult airway equipment, ensure that videoscope is readily available in room.
- **Obstructive Sleep Apnea-** Pre- O₂ with face mask, observe closely with preoperative sedation. Avoid or minimize opioids. Consider shorter acting and minimally fat-soluble agents to allow for rapid recovery of consciousness, protective reflexes, and mobility.

Prior to surgery these patients have participated in an 3-6 month long extensive, multidisciplinary program for education and counseling prior to the surgical date and are prepared prior to surgery. These patients are seen by the Center for Surgical Optimization and have a full workup preoperatively.

Preoperative Considerations

- **Difficult IV access-** Utilize ultrasound, if necessary, to ensure adequate IV access. Consider two IVs especially if Vancomycin is ordered.
- **Airway Obstruction**
 - Apply **O₂ face mask**, prior to sedating and be aware of increased potential for airway obstruction.
- **Glycopyrrolate** preoperative to counteract side effect from ketamine.

- **Midazolam** start with small dose and titrate as needed

Multimodal opioid sparing approach to analgesia should be used.

- Acetaminophen & Gabapentin ordered by surgeons and administered by prep and holding RN. These medications are given in the liquid form so that pills and capsules do not interfere with stapling the stomach.

Induction

Pre-oxygenate

Head of bed elevated, reverse Trendelenburg, or semi-fowlers position (reduces pressure on the chest wall and diaphragm)

Have alternative airway equipment available, including LMA, oral airways, video scope
Rapid sequence induction may be necessary. Consider succinylcholine to shorten the interval for mask ventilation.

Be aware of gastroesophageal reflux.

Avoid narcotic, utilize ketamine and esmolol.

Maintenance

Hypotension:

- Administer IV fluids to help with hypotension. Ensure adequate IV access.
- If hypotension after steep reverse Trendelenburg, notify surgeon immediately, decrease steep Trendelenburg.
- If patient insufflated, ask surgeon to decrease insufflation.
- Make surgeon aware if pressors are administered.
- Avoid pressor infusions if possible.
- Surgeon may consider cancelling procedure if unable to maintain adequate blood pressure without pressors.

TIVA:

- Total IV anesthesia

Consider lung protective strategies for **ventilation**:

- low Tidal Volume 6 to 8 ml/kg (Ideal body weight)
- low levels of O₂ (as tolerated) Fio₂ below 0.5-0.8 to prevent resorption atelectasis and oxygen toxicity.
- PEEP
- Recruitment maneuvers.

Hydration:

Patients must be adequately hydrated to prevent pre-renal insufficiency –for the “bypass” and “sleeve” patients - the surgeons request a liter an hour as a minimum. These patients have completed a two-week very low calorie diet and are sometimes on the “dry” side.

Revised by Stacey Fletcher 2/15/2022

However, patients with cardiomyopathy, CHF history, etc. are exceptions and fluid management should be discussed with the surgeon.

Foley Catheters:

The Bariatric Surgical service has limited the use of urinary catheters and most patients will NOT have a Foley catheter placed.

Use of the Bair Hugger is recommended. Remember **Do not use esophageal temperature probe.**

Emergence

The trocar sites are infiltrated with bupivacaine by the surgeon at the end of the case to help with pain management.

Turn off Lidocaine infusion.

Administer Ondansetron 4mg IV near the end of the case for PONV prophylaxis.

Check with surgeon about Ketorolac (15mg) administration.

Plan to have the patient wide awake for extubation and ensure adequate reversal of neuromuscular blockade. (Sugammadex preferred).

Head-up position is preferred for emergence and extubation.

Airway equipment should be readily available. Be prepared to rapidly re intubate if the patient cannot maintain adequate oxygenation/ventilation spontaneously.

Always transport to PACU with O2 by face mask.

Patients with obstructive sleep apnea with CPAP at home. Bring CPAP equipment to PACU for recovery.

Surgeon Specifics (Detailed)

Dr. Halbert, Dr. Tascone, Dr. Ni

- **Do not place OG tube.** Surgeon will specify Visigi (obtained from circulator), or surgeon will place endoscope. Surgeon will show anesthesia provider how to manipulate scope and indicate when needed. The EGD scope serves as the bougie during the case, thus there is no need for bougie placement.

Dr. Goldberg

- 18 French OG for initial gastric decompression.
- Place bougie when surgeon indicates (obtain from circulator).

Dr. Wynn, Dr. Irgau, Dr. Peters, Dr. Ibrahim, Dr. Singh:

- **Gastric bypass**
 - #18 French OG for initial gastric decompression, and then remove per surgeon.

- Place a second #18 French OG, when surgeon indicates. (#18 French because the surgeon uses the size as a gauge for the anastomotic lumen) test the size of the gastric pouch and the integrity of the staple line.
 - Ensure adequate muscle relaxation when the OG is placed so that manipulation of the OG tube does not produce bucking and coughing.
 - Insert OG while watching the video screen to see the OG pass through the pouch or as the surgeon directs to the first black indicator line.
 - 60 ml. of NSS with methylene blue is injected into the tube (inform the surgeon every 20 ml until 60 ml is reached).
 - Level the table to flat supine, rapidly inject a bolus of 60 ml of air through the OG tube as the surgeon directs.
 - This method may force blue saline up into the pharynx – place a suction catheter in the patient’s mouth to reduce the egress of blue saline.
 - When the surgeon indicates, suction and remove the OG tube
 - The procedure is concluded within 15 - 20 minutes after this.
- **Gastric banding**
 - Place initial OG tube to decompress the stomach and then remove per surgeon.
- **Gastric sleeve**
 - #18 French OG for initial gastric decompression, and then remove per surgeon.
 - Once the OG tube is removed, the anesthesia provider should be prepared to place a 40 Fr. esophageal bougie at the surgeon’s direction.
 - Ensure that the patient is relaxed prior to bougie insertion to prevent bucking and coughing.
 - The bougie is used during gastric sleeve modeling as a guide for the surgeon.
 - DO NOT throw the bougie away when the surgeon asks you to remove it. Return it to the circulating RN. (This procedure involves the surgeon removing a large percentage of the stomach, roughly 60-80%, so that it takes on the shape of a tube or “sleeve”. The tube- shaped stomach that is left is closed with staples).
 - After stapling, an intraoperative EGD is performed by the surgeon and the portion of stomach that is stapled out is removed. Maintain communication with surgeon. On occasion, the surgeon may decide not to do the EGD, decreasing the length of the case by a few minutes.

Duodenal Switch: The duodenal switch may be performed in one or two stages.

- **One Stage:** The single stage technique involves a sleeve gastrectomy, followed by the duodenal switch.
 - #18 French OG for initial gastric decompression, and then remove per surgeon.
 - A sleeve gastrectomy will be performed as the initial step of the procedure. (See gastric sleeve bougie information above.)

- **Two Stage:** (previous sleeve gastrectomy at prior operation): The two-stage procedure involves the patient undergoing a sleeve gastrectomy first, followed by the duodenal switch months to years later. **DO NOT PLACE OG** unless instructed to do so by the surgeon to avoid disrupting suture lines
- **Both One & Two Stage:** A leak test will be performed at the conclusion of the case, to test the duodenojejunal anastomosis. The anastomosis will be tested via Gastric bypass **second #18 French OG tube** instruction or via **endoscopy**:
 - Place a **second #18 French OG**, when surgeon indicates. (#18 French because the surgeon uses the size as a gauge for the anastomotic lumen) test the size of the gastric pouch and the integrity of the staple line.
 - Ensure adequate muscle relaxation when the OG is placed so that manipulation of the OG tube does not produce bucking and coughing.
 - Insert OG while watching the video screen to see the OG pass through the pouch or as the surgeon directs to the first black indicator line.
 - 60 ml. of NSS with methylene blue is injected into the tube (inform the surgeon every 20 ml until 60 ml is reached).
 - Level the table to flat supine, rapidly inject a bolus of 60 ml of air through the OG tube as the surgeon directs.
 - This method may force blue saline up into the pharynx – place a suction catheter in the patient’s mouth to reduce the egress of blue saline.
 - When the surgeon indicates, suction and remove the OG tube
 - The procedure is concluded within 15 - 20 minutes after this.
 - **Endoscopy**- surgeon will insufflate the anastomosis with endoscope while submerging it under saline laparoscopically