MSQC Hysterectomy Care Pathway

PreOp

Patient Education/Prehabilitation
-Surgery goal/expectation setting
-Opioid use assessment and pain management
-Nutrition assessment and counseling
-Functional status and exercise guidance
-Incentive spirometer education
-Mental health assessment
-Menopause if ovaries are removed

PRN Preadmission:
-Tobacco cessation if smoking within 1 month before surgery
-Weight loss counseling if BMI ≥ 40

Preoperative Planning
-Evaluate for use of alternative treatments
-Utilize surgical approach algorithm [see next sheet] and MIS approach when expertise available and appropriate
-Anticipate discharge needs/care coordination
-PCN allergy: Conduct thorough review of reported reaction to evaluate if alternative regimen necessary. Consider allergy testing to confirm.
-Alternative treatments offered/ tried/ declined, or contraindications documented for these diagnoses: Adenomyosis, chronic pelvic pain, endometriosis, Abnormal uterine bleeding, uterine fibroids, Prolapse

Labs
-CBC
-Type and Screen
-HbA1C or glucose if indicated

Consider:
-BMP
-BV screening

Glycemic Control
-**HgbA1c** screening for diabetic patient or patient with history of diabetes (including gestational diabetes)
-**Blood glucose** screening for all non-diabetic high risk patients: age ≥ 45 and/or BMI ≥ 30

Preop Referral If:
-**HbA1c 6.5%-8%:** Consult PCP or endocrinology for glycemic control
-**HbA1c ≥ 8% or glucose > 250 mg/dL:** Consult PCP or endocrinology for glycemic control AND consider postponing surgery date

Immediate PreOp

Shower
-Shower with soap or antiseptic agent on at least the night before surgery

Carbohydrate Loading
-Carb loading in all patients except type 1 diabetics

Reduced Fasting
-Clear liquids up until 2 hours prior to surgery

Glycemic Control
-if age ≥ 45 and/or BMI ≥ 30 and blood glucose was not obtained within 90 days of surgery, obtain blood glucose in preop holding
-if preop blood glucose > 200 treatment is advised

Oral Antibiotics with Mechanical Bowel Prep
(Surgeon discretion; cases with planned bowel resection)
-Oral antibiotics with mechanical bowel prep
Example: Nulytely 420g solution; Neomycin 500mg tab; Metronidazole 500mg tab
-Zofran prn for nausea

Appropriate IV Prophylactic Antibiotics
-MSQC Recommendation:
Cefazolin 2g IV for patients <120kg
Cefazolin 3g IV for patients ≥120kg
AND
Metronidazole 500mg IV
-Administer 15 to 60 minutes before incision
-See ASHP guidelines in resources for other acceptable antibiotic regimens and beta-lactam alternatives

Multimodal Analgesia
-Administer ≥2 non-opioid analgesia strategies
Examples:
-Open: Epidural vs. TAP block vs. local infiltration
-Lap: TAP block vs. local infiltration
-Robotic: RUQ TAP block vs. local infiltration
Vaginal: No epidural or TAP block vs. local infiltration
-Acetaminophen, Gabapentin, Celecoxib
-Review pain management plan before anesthesia induction

Prevention of PONV
-Administer more than **two** antiemetic agents.
Examples:
-Scopolamine patch applied at least 2 hours before induction
-Dexamethasone 4-8mg IV after induction
-Ondansetron 4mg IV at the end of case

IntraOp

Alcohol-based Skin Preparation
-Abdominal: CHG Alcohol-based prep unless contraindicated (ex. Chloraprep)
-Vaginal: Povidone-iodine vs. 4% CHG with 4% isopropyl alcohol (ex. Hibiclens)

Glycemic Control
-DM: Check glucose every 1-2 hours
-NDM: Consider at discretion of preop glucose/HbA1c
-Goal <200 mg/dL
-Treat with subcutaneous rapid acting insulin or IV insulin infusion

Normothermia
-Maintain body temperature of 96.8°F (36°C)

Avoidance of Hemostatic Agents
-Hemostatic agents should be used more judiciously owing to associations with increased post-operative readmissions and reoperations
-See resources for details

Lung Protective Ventilation
-For patients with normal pulmonary function undergoing general anesthesia with endotracheal intubation, administer increased Fio2 during surgery and after extubation in the immediate postoperative period.
-To optimize tissue oxygen delivery, maintain perioperative normothermia and adequate volume replacement

Euvolemia
-Avoid excess fluid administration. Discuss minimal fluid strategy with anesthesia.

Wound Protector and Clean Closure
-Consider glove change and use of separate instrumentation for fascial closure

Removal of Catheters/Tubes
-Remove catheters and tubes at end of case

Avoidance of Postop Drains/Tubes
-Routine placement of NG tubes and intra-abdominal drains is discouraged unless clinically indicated

VTE Prophylaxis
Within 2 hours before surgery
Examples:
-Heparin 5000 units subcutaneous
-Lovenox
-Place SCD's

Redosing of Antibiotics
-Cefazolin: 4 hour interval
-Metronidazole: If operative time >8 hours consider redosing
-Also redose if EBL >1500mL

Multimodal Analgesia
-Administer ≥2 non-opioid analgesia strategies
Examples:
-IV Lidocaine
-Local wound infiltration with long-acting anesthetic at surgical site
-TAP block if not done preop
-Spinal analgesia with local anesthetic
-Ketamine
-Ketorolac

PostOp	**Multimodal Analgesia** -Follow Michigan OPEN opioid prescribing recommendations: Oxycodone 5mg no more than 15 tablets https://opioidprescribing.info/ -Use opioids for breakthrough pain only -Schedule non-opioid analgesics instead of PRN for first 72 hours: Alternating acetaminophen 650mg with ibuprofen 600mg every 3 hours with 6 hours between dosing of acetaminophen and ibuprofen Other examples: -Gabapentin (use with caution with age > 60) -Ketorolac	**Early Ambulation** -POD 0: OOB >2 hours including ambulation and in chair -POD 1 until discharge: OOB >8 hours including ambulation and in chair	**Early Alimentation** -Clear liquids immediately after surgery -If tolerating, advance to regular diet ASAP within 24 hours of surgery -Up in chair for all meals	**Glycemic Control** -Goal: < 200 mg/dL **NDM patients with elevated glucose before or during surgery:** -Check glucose for 24-48 hours until at or below target goal -If elevated, IV insulin while NPO and basal-bolus insulin regimen once resuming oral nutrition. Consult endocrinology or medicine for diabetic management. **DM patients:** -Standard glucose monitoring -IV insulin while NPO and basal-bolus insulin regimen once oral nutrition resumed. Consult endocrinology or medicine for diabetic management.	
	Incentive Spirometer -Use 10x/hour while awake	**Early Foley Removal (if not in OR)** -Remove within 6 hours after arrival to floor unless otherwise specified/at discretion of surgeon -Ensure voiding protocol in place	**Labs** -CBC -POD 1 only unless indicated	**Minimize IV Fluids** -Minimize (ex. 40 mL) and discontinue fluids early as possible	**Discontinue Prophylactic IV Antibiotics** -Prophylaxis is typically not warranted past surgery end time. -If continued, duration should be no more than 24 hours past surgery end time unless otherwise indicated.
	VTE Prophylaxis -Heparin 5000 units subcutaneous TID -SCDs while in bed -For cancer patients: Lovenox for 28 days for open surgery or 7 days for MIS staging surgery	**Patient Education** -Discharge planning -Encourage clinic contact before presenting to ED -Wound Care -Pain control with multimodal pain management -Straight catheterization if needed	**Normothermia in PACU** -Maintain temperature >96.8°F (36°C) in PACU -Utilize forced air warmer PRN	**Bowel Regimen** -Start scheduled on POD 0 Examples: -Miralax, Simethicone, Colace, Senna -Chewing gum 3-4 times per day	
Post Discharge	**Follow Up Calls** -Contact patient within 72 hours of discharge for phone assessment -Follow up call at 7 days	**Clinic Visit** -Within 4-6 weeks or as clinically indicated -Utilize telemedicine for follow up visit if appropriate			

MSQC

Michigan Surgical Quality Collaborative

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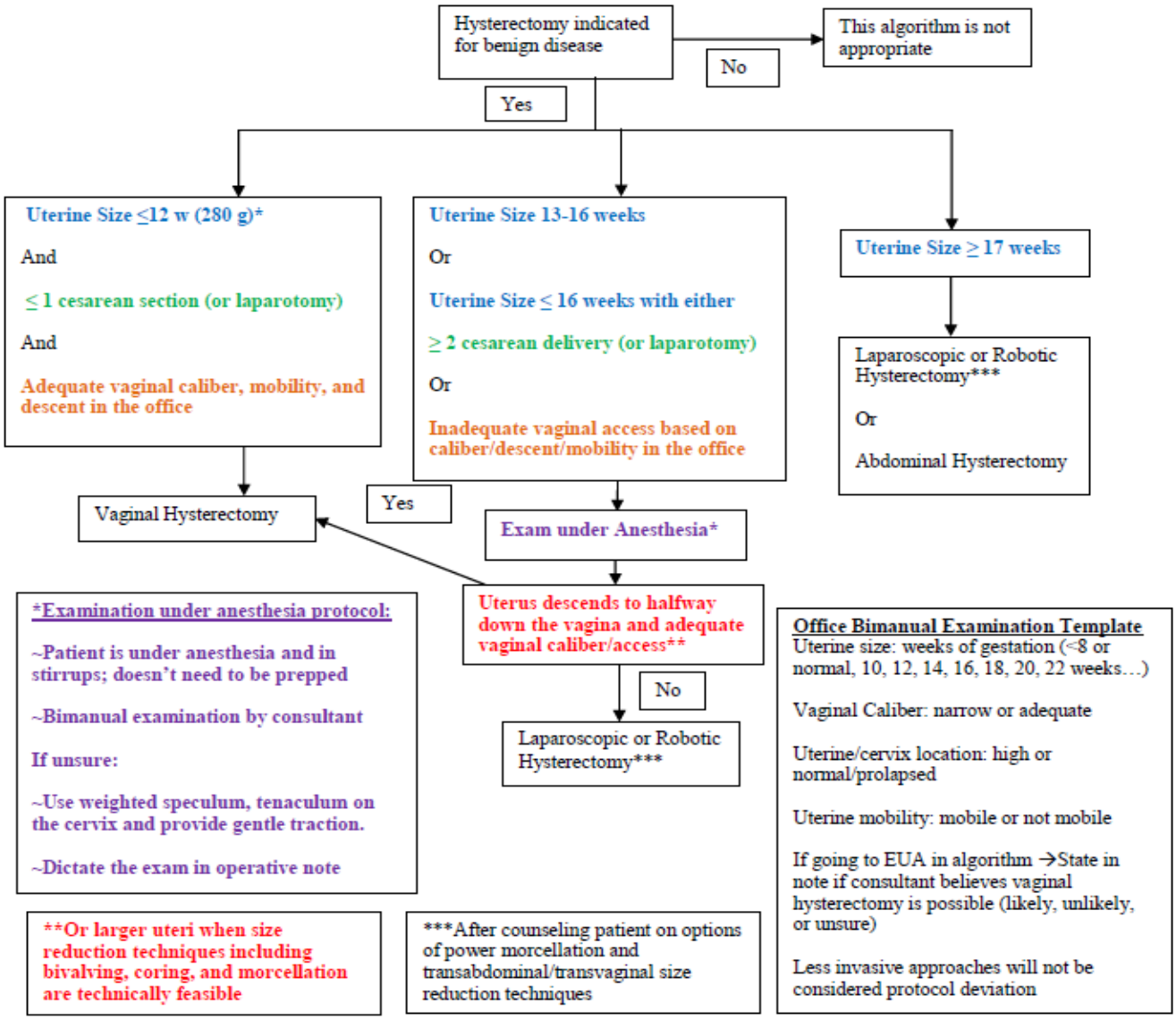
Resources

-ACOG Practice Bulletin No. 195: Prevention of Infection After Gynecologic Surgery. (2018). doi:10.1097/AOG.0000000000002670
-Are perioperative bundles associated with reduced postoperative morbidity in women undergoing benign hysterectomy? Retrospective cohort analysis of 16,286 cases in Michigan. (2017). https://www.ncbi.nlm.nih.gov/pubmed/28082214
-ASHP Clinical Practice Guidelines for Antimicrobial Prophylaxis in Surgery (2013). https://www.ashp.org/-/media/assets/policy-guidelines/docs/therapeutic-guidelines/therapeutic-guidelines-antimicrobial-prophylaxis-surgery.ashx?la=en&hash=A15B4714417A51A03E5BDCAC150B94EAF899D49B
-Association Between Preoperative Hemoglobin A1c Levels, Postoperative Hyperglycemia, and Readmissions Following Gastrointestinal Surgery (2017). https://jamanetwork.com/journals/jamasurgery/fullarticle/2645761
-Centers for Disease Control and Prevention Guideline for the Prevention of Surgical Site Infection (2017). https://jamanetwork.com/journals/jamasurgery/fullarticle/2623725
-Determining Optimal Route of Hysterectomy for Benign Indications. (2017). https://www.ncbi.nlm.nih.gov/pubmed/27926638
-Guidelines for perioperative care in gynecologic/oncology: Enhanced Recovery After Surgery (ERAS) Society recommendations—2019 update. http://erassociety.org/guidelines-for-perioperative-care-in-gynecologic-oncology-2019-update/
-Michigan Opioid Prescribing and Engagement Network (2019). https://opioidprescribing.info/
-Perioperative temperature management. (2018). https://www.uptodate.com/contents/perioperative-temperature-managemenxt
-Postoperative Nausea and Vomiting. (2018). https://www.uptodate.com/contents/postoperative-nausea-and-vomiting?search=ponv20screening&source=search_result&selectedTitle=1~115&usage_type=default&display_rank=1#H440882333
-Prophylactic Antibiotic Choice and Risk of Surgical Site Infection After Hysterectomy. (2016). https://www.ncbi.nlm.nih.gov/pubmed/26942361
-Reducing surgical site infections after hysterectomy: metronidazole plus cefazolin compared with cephalosporin alone. (2017). https://www.ncbi.nlm.nih.gov/pubmed/28363438
-A retrospective cohort study of hemostatic agent use during hysterectomy and risk of post-operative complications. (2017). https://www.ncbi.nlm.nih.gov/pubmed/28099744
-Perioperative Hyperglycemia Management: An Update. (2017). doi:10.1097/ALN.0000000000001515
-Pre-operative evaluation of adults undergoing elective noncardiac surgery. (2018). doi:10.1097/EJA.0000000000000817
-Diabetes Mellitus: Screening and Diagnosis. (2016). https://www.aafp.org/afp/2016/0115/p103.html
-Standards of Medical Care in Diabetes—2019 Abridged for Primary Care Providers. (2019). doi.org/10.2337/cd18-0105
-Preoperative A1C and Clinical Outcomes in Patients With Diabetes Undergoing Major Noncardiac Surgical Procedures. (2014). doi:10.2337/dc13-1929

Hysterectomy Algorithm



Schmitt JJ, Carranza Leon DA, Occhino JA, Weaver AL, Dowdy SC, Bakkum-Gamez JN, Pasupathy KS, Gebhart JB. Determining Optimal Route of Hysterectomy for Benign Indications: Clinical Decision Tree Algorithm. Obstet Gynecol. 2017 Jan;129(1):130-138. doi:10.1097/AOG.0000000000001756.