

Chapter 8

Preoperative Care of the Gynecologic Patient

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Preoperative care is a critical factor in achieving successful outcomes of both emergent and scheduled gynecologic surgical procedures. This chapter is designed to address the essential features of preoperative care from the preoperative examination in the office, or emergency room, to the time of surgery. Included are suggestions relating to appropriate preoperative testing and evaluation. Foremost, it is essential to keep in mind that each woman must be considered individually, based on her medical findings and needs, and that no suggestions can be completely adapted to all women preparing for gynecologic surgery.

The goals of the preoperative evaluation are to answer the following three questions, as outlined by Roizen:

1. Is the patient in optimal health?
2. Can, or should, the patient's physical or mental condition be improved before surgery?
3. Does the patient have health problems or use any medications that could unexpectedly influence perioperative events?

PREOPERATIVE COUNSELING

It is most important to dedicate a portion of the preoperative care time to a discussion with the patient of options for management of her gynecologic problem, including both short and long-term potential complications. All patients must be given sufficient medical information to allow them to make an educated decision about whether to proceed with the planned surgery. Not only is the discussion time useful in fostering a good physician-patient relationship, but it becomes extremely important if outcomes of surgery are less than expected, particularly if the discussion was documented in the patient's record. The informed consent process should include patient education regarding the goals of the planned surgery, the alternatives, and the possible hazards. The preoperative discussion is also an opportunity to discuss expectations for the recovery period, including the expected duration of hospitalization and recommended activity restrictions for the postoperative period. This is also an opportunity to review the patient's wishes regarding advanced directives.

SCREENING FOR PERIOPERATIVE RISK

Once a decision has been made to proceed with surgery, it is the responsibility of the surgeon to assess the patient for medical and surgical conditions that could increase her risk of complications. The most important part of the evaluation is the history. A screening questionnaire may also be of value ([Table 8.1](#)). The goal is to detect preexisting conditions shown to be associated with perioperative adverse events. Women with these risk factors should be further evaluated. Depending on the complexity of the situation, the surgeon may partner with the patient's primary physician or with consultants to provide additional evaluation and management.

The risks of perioperative morbidity and mortality are strongly associated with the type of surgery planned. For example, the risk of cardiac death or myocardial infarction is 1% to 5% after major intraperitoneal surgery but less than 1% for ambulatory surgeries. Thus, the extent of the planned surgery, the nature of the pathologic condition indicating surgery, and the impact of any planned adjuvant treatments should be considered.

Risk factors for major cardiac complications (including myocardial infarction, pulmonary edema, ventricular fibrillation, cardiac arrest, and complete heart block) are well established. These risk factors include history of prior myocardial infarction, heart failure, cerebrovascular disease, insulin-dependent

diabetes, and serum creatinine >2.0 mg/dL. Among gynecologic surgery patients with none of these risk factors, the risk of a major cardiac complication is less than 1%. Other important factors include the age of the patient, dependent functional status (defined as unable to perform activities of daily living without assistance), and American Society of Anesthesiologists' class (**Table 8.2**). The patient's exercise tolerance can be used as a guide: Poor exercise tolerance is defined as inability to walk four blocks or to climb two flights of stairs as a part of normal daily activities. A more diligent preoperative evaluation is appropriate for women at high risk, possibly including exercise stress test and referral for cardiology evaluation.

TABLE 8.1 Preanesthetic Screening Questionnaire

1. Do you usually get chest pain or breathlessness when you climb up two flights of stairs at normal speed?
2. Do you have kidney disease?
3. Has anyone in your family (blood relatives) had a problem following an anesthetic?
4. Have you ever had a heart attack?
5. Have you ever been diagnosed with an irregular heartbeat?
6. Have you ever had a stroke?
7. If you have been put to sleep for an operation, were there any anesthetic problems?
8. Do you suffer from epilepsy or seizures?
9. Do you have any problems with pain, stiffness, or arthritis in your neck or jaw?
10. Do you have thyroid disease?
11. Do you suffer from angina?
12. Do you have liver disease?
13. Have you ever been diagnosed with heart failure?
14. Do you suffer from asthma?
15. Do you have diabetes that requires insulin?
16. Do you have diabetes that requires tablets only?

17. Do you suffer from bronchitis?

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TABLE 8.2 Classification of Physical Status, Established by the American Society of Anesthesiologists

CLASS	DESCRIPTION
P1	A normal healthy patient
P2	A patient with mild systemic disease
P3	A patient with severe systemic disease
P4	A patient with severe systemic disease that is a constant threat to life
P5	A moribund patient who is not expected to survive without the operation
P6	A declared brain-dead patient whose organs are being removed for donor purposes

Excerpted from ASA Manual for Anesthesia Department Organization and Management, American Society of Anesthesiologists, Park Ridge, IL, 2003-2004. A copy of the full text can be obtained from ASA, 520 N. Northwest Highway, Park Ridge, IL 60068-2573.

Diabetes mellitus is a potential risk factor for cardiovascular morbidity and perioperative infections. The risk of surgical site infection is higher among women with preoperative serum glucose >200 mg/dL. The risk of infection is also significantly increased by postoperative hyperglycemia. In addition, an assessment for end-organ failure (such as renal or cardiac disease) is appropriate for women with long-standing diabetes, and especially those with a history of poor control and those with other sequelae from their diabetes.

Clinically significant pulmonary complications occur in 5% to 10% of surgeries. In a systematic review, Smetana and colleagues found that risk factors for pulmonary complications include age over 50 years, functional dependence (requiring assistance to perform activities of daily living), obstructive sleep apnea, surgery lasting greater than 3 hours, and cigarette smoking. Smoking duration is also a risk factor for perioperative complications. Well-controlled asthma is not a risk factor for perioperative pulmonary complications.

VALUE OF SCREENING LABORATORY STUDIES AND OTHER TESTING

The practice of a routine battery of preoperative laboratory tests is no longer recommended. Using data from National Surgical Quality Improvement Program, Benarroch-Gampel and colleagues demonstrated that the patient's medical history, age, and the type of surgery planned are better predictors of surgical complications than are the results of laboratory tests. Similar findings were obtained by Fritsch and colleagues. The indiscriminate use of "routine" preoperative tests not only fails to identify high-risk patients but also leads to

unnecessary costs. Also, false-positive results can lead to unnecessary surgical delays and interventions. Thus, preoperative tests should not be ordered routinely but should be based on the characteristics of the patient and the planned surgery.

Preoperative testing recommendations at Johns Hopkins Bayview Medical Center are summarized in [Table 8.3](#). Testing recommendations for gynecologic surgery are based on the patient's risk factors, which are derived from the history and physical examination. Coagulation studies are rarely recommended prior to gynecologic surgery but may be considered for those with menorrhagia, if clinically indicated. Chest x-ray is indicated only if the patient has experienced a recent acute episode of respiratory distress or flare of chronic pulmonary disease. A urine pregnancy test is obtained on the day of surgery for women who, by history, may be pregnant. Tests that have been performed recently (within 6 months) should not be repeated if the patient's condition has not changed. This is because the result is unlikely to be different; Macpherson and colleagues found a less than 1% probability of an abnormal laboratory test result in an adult with a normal value within the past year.

Preoperative hematocrit (or complete blood count) is probably the most commonly used preoperative laboratory study. Baseline hemoglobin can be useful in the interpretation of postoperative anemia and the management of patients with acute surgical blood loss. Therefore, a preoperative hematocrit should be ordered if the planned surgery is likely to result in substantial blood loss or if the patient's history suggests a high risk for preoperative anemia.

Serum electrolytes should not be ordered routinely but may be useful in women on diuretics or with a history that suggests an electrolyte imbalance is likely. A routine BUN and creatinine are appropriate for women with diabetes or hypertension. Routine BUN and creatinine may also be useful in older patients. Serum glucose is recommended for women on chronic corticosteroids.

A preoperative electrocardiogram should be considered in women with known cardiovascular disease, peripheral artery disease, or cerebrovascular disease. This is because a baseline electrocardiogram can be useful in the management of acute perioperative cardiovascular events. However, an electrocardiogram is a poor screening test and is unlikely to alter management in the asymptomatic patient. Routine preoperative electrocardiogram should be considered in women over age 50.

A cardiac stress test should be considered if the patient reports poor exercise tolerance or if cardiac symptoms are present. Other indications for a preoperative cardiac evaluation include a history of prior myocardial infarction, known or suspected heart failure, cerebrovascular disease, insulindependent diabetes, and serum creatinine >2.0 mg/dL.

Preoperative chest x-ray and pulmonary function tests do not predict postoperative pulmonary complications and therefore should not be routinely ordered before surgery. A thorough clinical assessment will detect most high-risk conditions. Women with dyspnea, poor exercise tolerance, or unexplained cough should be considered for further evaluation.

Cervical cytology should be obtained before hysterectomy for benign disease. The goal is to identify women with cervical cancer, for whom a simple hysterectomy is not appropriate. If the patient is up to date on screening cytology and the last study was normal, cytology should not be repeated.

**TABLE 8.3 Johns Hopkins Bayview Medical Center Preoperative Evaluation Center
Preadmission Screening Guidelines**

LIVER

MEDICAL CONDITION	CBC	SERUM ELECTROLYTES	PT/PTT	FUNCTION TESTS	EKG
Age >50					X
Hypertension		X			X
Cardiac disease or arrhythmia	X	X			X
Diabetes		X			X
Renal disease		X			X
Diuretic/ACE inhibitor/chemotherapy		X			X
Hematologic or liver disease	X		X	X	
Hysterectomy	X				
Hysteroscopy		X			
Highly invasive procedures:	X	X	X		X
Radical surgery					
Preoperative bowel prep					
Anticipate >500 mL blood loss					

These are screening guidelines only; further testing based on the patient's medical history, surgeon's evaluation, or primary care physician's discretion. Data from Johns Hopkins Bayview Medical Center Preoperative Evaluation Center pre-admission guidelines.

To minimize infectious complications of surgery, active infections (such as urinary tract infection) should be identified and treated completely before surgery unless surgery is urgent. In addition, American College of Obstetricians and Gynecologists recommends screening for and treating bacterial vaginosis before hysterectomy to minimize the risk of cuff infection. However, an alternative is the routine use of preoperative metronidazole. This option may be cost-effective at the time of hysterectomy if the prevalence of bacterial vaginosis is at least 1%.

PERIOPERATIVE MANAGEMENT OF MEDICATIONS TAKEN CHRONICALLY

The management of chronic medications varies by institution, and there is little evidence to guide best practices. However, most medications taken chronically are safely continued in the perioperative period. Cessation should not be recommended for beta-blockers (especially if used to control arrhythmia or angina), statins, alpha 2 agonists, H2 blockers, proton pump inhibitors, and inhaled asthma medications (including steroids, beta-agonists, and anticholinergics).

There is considerable controversy about whether to stop oral contraceptives in the perioperative period. The rationale for stopping hormonal contraception is to minimize phlebitis risk. However, concerns regarding unwanted pregnancy are also valid. Therefore, the most practical option is probably to continue oral contraception.

Medications that should be stopped before surgery include herbal preparations, including Ephedra, Garlic, Ginkgo, Ginseng, Kava, and St. John's Wort.

Typically, warfarin is stopped before elective surgery to minimize the risks of significant bleeding or hematoma formation. However, the risk of thrombosis is increased by cessation of warfarin before surgery. Thus, patients at high risk of thrombosis should be managed by transitioning from warfarin to enoxaparin (Lovenox) 1 mg/kg subcutaneously twice a day in the preoperative period, usually beginning 5 days before elective surgery. Once the international normalized ratio is less than 1.5, the risk of bleeding is further minimized if enoxaparin can be held for 24 hours before surgery. An inferior vena cava filter is an alternative to perioperative enoxaparin. Warfarin can be continued if the planned procedure is such that the risk of surgical bleeding is minimal.

Traditionally, patients have been asked to refrain from using aspirin before elective surgery. The rationale to stop aspirin is the increased risk of hematoma and bleeding complications. However, among women who are on maintenance therapy with aspirin for cardiovascular prevention, aspirin cessation may lead to an increase in thrombosis. Aspirin withdrawal leads to an increase in perioperative risk of cardiac and thromboembolic complications among women who use aspirin for cardiovascular prevention. Therefore, current recommendations are to continue maintenance aspirin therapy for women who use this for cardiovascular prevention. However, casual use of aspirin in the perioperative period should be avoided.

PREOPERATIVE MANAGEMENT OF RISK FACTORS

Women at highest risk for perioperative cardiac events should be considered for treatment with a beta-blocker. A number of large clinical trials have investigated the benefit of perioperative beta-blockers to reduce cardiac events. Based on evidence of benefit, especially for women undergoing cardiac surgery, the American Heart Association has recommended that high-risk patients receive perioperative beta-blockers, beginning at

P.125

least 1 week before surgery (preferably 30 days). Those felt to benefit from this intervention included women with ischemic heart disease, those with heart failure, women with a history of cerebrovascular disease, women with diabetes mellitus, and those with renal insufficiency (serum creatinine >2 mg/dL).

However, the 2008 PeriOperative ISchemic Evaluation (POISE) trial suggested that perioperative beta-blockade was associated with an increased risk of stroke. As a result, enthusiasm for prophylaxis has waned. The current recommendations for perioperative beta-blockade are focus on high-risk groups, with initiation of therapy well before the planned surgery in order to titrate dosage to control heart rate while avoiding bradycardia and hypotension. Beta-blockers should not be initiated on the day of surgery. As previously noted, withdrawal of beta-blockers should be avoided in patients receiving this therapy chronically.

Revascularization, including angioplasty and coronary stents, may be employed as a strategy to reduce risk in women with ischemic heart disease. However, the risk of myocardial infarctions or death is increased in the first few weeks after angioplasty or stenting. Therefore, if possible, elective gynecologic surgery should not be

performed in the first 6 weeks after angioplasty or stenting. For women who have received a drug-eluting stent, elective surgery should be avoided for 1 year.

Optimal control of diabetes should be obtained before elective surgery to reduce surgical complications, especially surgical site infections. The risk of surgical infection is higher in diabetics with poor glucose control before surgery and in the immediate postoperative period. More specifically, among 55,000 diabetics undergoing surgery, King and colleagues found that infection risk was marginally increased for postoperative serum glucose 150 to 250 mg/dL but increased 50% for women with serum glucose greater than 250 mg/dL. Thus, the goal of perioperative management of diabetes is to maintain a serum glucose <200 mg/dL in the perioperative period. Women with diabetes should be assessed preoperatively for renal impairment.

Perioperative adrenal insufficiency can occur among women receiving glucocorticoids. Women who have received more than 20 mg/day of prednisone (or equivalent) for at least 3 weeks over the 6 months preceding surgery should be treated with “stress steroids.” A typical regimen for “stress steroids” would include preoperative administration of 50 mg IV hydrocortisone and postoperative administration of 25 mg IV hydrocortisone every 8 hours for 24 hours.

Women who smoke cigarettes should be encouraged to quit prior to elective surgery. Smoking cessation should be attempted as far in advance of surgery as possible. Risks related to smoking are dramatically reduced by at least 2 months of smoking cessation prior to surgery.

Controversy surrounds the practice of perioperative mechanical bowel preparation. A 2005 meta-analysis demonstrated no benefit to preoperative mechanical bowel preparation. Some surgeons continue the practice for vaginal or laparoscopic surgery with the goal of decompressing the bowel.

RISK REDUCTION ON THE DAY OF SURGERY

Most gynecologic surgeons are familiar with strategies for prevention of deep venous phlebitis. The risk of perioperative phlebitis is influenced by both patient and surgical characteristics. Most women undergoing gynecologic surgery will be classified as moderate or high risk, depending on the duration of the procedure (<30 or >30 minutes) and the age of the patient (<60 or >60 years). For both groups, recommended prophylactic options include heparin (5,000 u SQ q12h), enoxaparin (Lovenox) 40 mg daily, or intermittent pneumatic compression stockings. Prophylaxis should be initiated before surgery and continued at least through hospital discharge. It is not clear whether these measures are beneficial if they are initiated after surgery.

Surgical site infection is defined by the Centers for Disease Control and Prevention (CDC) as infections at or near the surgical incision occurring within 30 days of an operative procedure or within 1 year if an implant is left in place. Surgical site infections can be minimized by preoperative preparation, such as optimal glucose control among diabetics and identification and preoperative treatment of infection. Prevention of surgical site infection includes skin preparation. Hair removal does not reduce surgical site infections. If hair removal at the surgical site is necessary or preferred by the surgeon, the hair should be clipped rather than shaved. Specifically, the risk for surgical site infection is more than doubled by shaving versus clipping.

Traditionally, skin preparation with povidone-iodine has been used to minimize surgical site infection. However, a randomized study by Darouiche and colleagues suggested that chlorhexidine-alcohol is superior to povidone-iodine preparation. Thus, chlorhexidine-alcohol should be preferred for preparation of abdominal skin.

Povidone-iodine remains the standard for vaginal skin preparation. The optimal vaginal preparation for women with iodine allergy is not established. Chlorhexidine has been suggested as an alternative, but the current labeling of chlorhexidine warns of use in genital area, and therefore many surgeons are hesitant to consider the use of this agent in the vagina. Moreover, the value of chlorhexidine preparation was questioned by a recent retrospective cohort study of greater than 7,000 abdominal hysterectomies in Sweden. Kjølhede and colleagues

found no difference between vaginal cleansing with chlorhexidine solution versus no vaginal preparation. In contrast, other studies have suggested a benefit from chlorhexidine vaginal preparation. In summary, povidone-iodine remains the preferred preparation, with some surgeons opting to use chlorhexidine in women who report allergy to iodine.

Preoperative intravenous antibiotics can further reduce surgical site infections in clean-contaminated surgeries, such as hysterectomy. The American College of Obstetricians and Gynecologists recommends antibiotic prophylaxis prior to hysterectomy and urogynecology procedures (including those involving mesh). Cephazolin is recommended, although alternatives include cefotetan, cefoxitin, cefuroxime, or ampicillin-sulbactam. In case of penicillin allergy, clindamycin plus gentamicin is the recommended alternative. Prophylactic antibiotics should be administered within 60 minutes prior to the start of surgery. The goals are to insure serum levels of the drug at the time of incision and to minimize the risk of a severe allergic reaction at the time of induction of anesthesia.

Recommendations have changed for perioperative antibiotics for prevention of endocarditis. The American Heart Association and other international organizations no longer recommend endocarditis prophylaxis for any gynecologic procedures, including hysterectomy.

In contrast, the use of prophylactic antibiotics for women with prosthetic joints undergoing invasive procedures remains controversial. In the past, intravenous antibiotics were recommended to reduce bacteremia at the time of genital tract surgery, in an effort to reduce hematogenous infection of prosthesis. However, in December 2012, The American Academy of Orthopedic Surgeons and the American Dental Association issued a statement recommending against the practice of routinely prescribing prophylactic antibiotics for patients with hip and knee prosthetic joint implants undergoing dental

P.126

procedures. This was after an evidence-based review failed to demonstrate any benefit from antibiotics in this setting. However, it is not clear whether those recommendations represent the best practices for women undergoing gynecologic surgery. For women at highest risk, the gynecologic surgeon might consider administering a single dose of cefazolin, cefoxitin, or ampicillin-sulbactam. Risk factors have been defined as immunosuppression, history of inflammatory arthropathies (e.g., rheumatoid arthritis, systemic lupus erythematosus), history of joint infection, and insulin-dependent (Type 1) diabetes. The value of antibiotic prophylaxis in these groups is unclear.

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P.127

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