

**Review Article***Copyright © All rights are reserved by Juana Hutchinson-Colas*

# Benign Gynecologic Surgery in the Elderly Patient

**Leah Goldberg, Aileen Baffo and Juana Hutchinson-Colas\****Rutgers Robert Wood Johnson Medical School, USA*

**\*Corresponding author:** Juana Hutchinson-Colas, Department of Obstetrics, Gynaecology and Reproductive Sciences, Rutgers Robert Wood Johnson Medical School, USA.

**Received Date:** March 18, 2020**Published Date:** April 16, 2020**Abstract**

Benign Gynecologic surgery for the elderly patient has certain considerations for the provider to be aware of. As the population ages, more women require benign gynecologic procedures. To date, there are no guidelines regarding pre-operative, intra-operative, and post-operative care specific to this patient population. This outline provides a reference for providers when approaching the elderly patient in need of benign gynecologic surgery.

**Introduction**

The need for surgical treatment of benign gynecological conditions will increase as women are living longer and the incidence of pelvic floor disorders increase with aging. Pelvic floor disorders such as prolapse and urinary incontinence cause significant physical and emotional distress and sometimes require surgical management.

When preparing a patient for benign gynecologic surgery, there are certain chronic health issues to consider. For all patients, one must take into account the overall health of the patient, pre-operative workup, surgery itself, and post-operative recovery. In the elderly patient, there are additional considerations to keep in mind. For many reasons including patient safety, the elderly should not be grouped into the same category as a younger, healthier patient when preparing for surgery. To date, there are no universal guidelines to assist the provider in preparing the elderly patient for benign gyn surgery. This paper outlines the pre-operative, intra-operative, and post-operative practices to optimize this surgical care.

The most common conditions for benign gynecologic surgery in the elderly population include post-menopausal bleeding, pelvic organ prolapse, urinary incontinence, and benign tumours such as persistent ovarian cysts. Surgical treatment for the above conditions include dilation and curettage, diagnostic and operative laparoscopy, vaginal and abdominal hysterectomy, laparoscopic hysterectomy, uterine/vaginal suspension procedures, vaginal

obliteration, and mid-urethral retro pubic or trans-obturator slings. Most of these procedures are minimally invasive in nature or can be performed by minimally invasive techniques. According to the American College of Obstetrics and Gynaecologists (ACOG), when feasible a vaginal approach is the preferred route for hysterectomy since there are demonstrated improved patient outcomes, shorter operative time, and faster recovery. Also, vaginal approach allows for various anaesthesia techniques including regional, which is beneficial for the elderly patient. When vaginal approach cannot be achieved, laparoscopy should be considered. Both of these minimally invasive techniques are preferred over abdominal approach in the elderly population [1].

**Pre-Operative**

The pre-operative workup of an elderly patient undergoing benign gynecologic surgery should follow certain guidelines. As in all medical conditions, the most important first step is a thorough history and physical. Knowing the elderly patient's medical history provides important information to be able to optimize her for elective surgery and minimize potential complications. The history of present illness, past medical and surgical history is primary areas of focus as we begin her workup.

The history of present illness lets the patient tell her story in her own words. It is essential to elicit the most bothersome symptoms since many benign gynecologic interventions in the

elderly population are driven by the patient's discomfort. Personal or familial history of thrombo-embolic events is important to consider so that deep venous thrombo-embolic prophylaxis can be offered. One important aspect of the history is the social history because many elderly depend on their family or health care proxy for immediate post op care and recovery assistance. This can identify any areas that need to be addressed before surgery, such as, social services, visiting nurses and rehabilitation facilities.

When performing a physical examination on the elderly patient, there are certain areas on which to focus. First, we note the general ambulation and nutritional status of a patient. For example, can she walk from the waiting room into the examination room? Does she need assistance with a walker or wheelchair? These initial observations give us a useful overview of the general health and performance status. The physical exam continues with a cardiopulmonary exam including heart, lung, and pulses. Next, joint mobility is determined as this may be limited in the elderly patient with history of arthritis. Joint mobility and limitation are important considerations during patient positioning in the operating room. Many gyn procedure are performed in dorsal lithotomy where hip and knee mobility, or lack thereof, can affect successful set up and surgery. Patients may need to be positioned in dorsal lithotomy prior to anesthesia induction to maximize patient comfort and safety. Throughout the history and physical examination, the neurologic status of the patient can be determined. If there is a question of the patient's neurologic status, the mini-mental state examination, a 30-point questionnaire assessing cognitive function, can be employed. This may be helpful in determining capacity and ability of patient to fully understand informed consent.

### Cardiovascular risk calculators

According to the most recent Centres for Disease Control and Prevention (CDC) guidelines, heart disease is the leading cause of death in women of all races and origins in the United States [2]. Therefore, when preoperatively evaluating the elderly gyn patient for surgery, cardiovascular risk assessment is essential. There is several cardiovascular risk calculators used preoperatively to predict certain cardiac events.

The revised cardiac risk index (RCRI) by Lee et al. has been validated and used for over 20 years to assess preoperative cardiac risk. The RCRI takes into account the patient's history, current medical health condition, and type of surgery to stratify patient's risk for a cardiac complication during a non-cardiac surgery. This tool provides the health care provider with the risk of a cardiac complication and can assess the need for further cardiac testing, but it does not identify non-cardiac risks for patients [3]. Another method is the National Surgical Quality Improvement Program (NSQIP) risk prediction calculator, which has been validated in over 1.5 million patients. This web-based decision-support tool estimates risk to patient and has proven accuracy in predicting morbidity and mortality [4]. Based on one of the above risk calculators, a provider will obtain a risk of cardiovascular event for

a patient. If the risk is <1%, the patient is considered to be low risk and no further cardiac workup is needed. If the risk score is >1%, then the patient is considered higher risk and further testing may be necessary.

High risk cardiac patients should be considered for further cardiovascular evaluation. The 2014 American College of Cardiology/American Heart Association (ACC/AHA) is an important guide to determine the functional status of a patient. If she is able to complete four or greater metabolic equivalents (METs) without symptoms, no further cardiac testing is needed. For example, if she can climb one flight of stairs without shortness of breath, she may not need a comprehensive cardiac workup. If she is unable to do so, additional testing should be ordered [5].

### Diabetes

In the elderly population, diabetes is a common condition that should be addressed since perioperative hyperglycaemia poses a significant infection risk and can delay wound healing. Elective surgery should only be performed when the patient's HgbA1C is below 7 as this has been proven to decrease postoperative wound infection [6]. In addition, patients with a history of diabetes are also at increased risk of coronary heart disease, hypertension, obesity, all which increase perioperative risk. Early surgical start time (before 9AM) may present an additional advantage to the diabetic patient and minimizes disruption of management of glucose control.

### Medications

A complete review of all medications both prescribed and over the counter is important. Some medications should be discontinued weeks before surgery, while others should be continued until the morning of the procedure. For patients with hypertension, beta, alpha and calcium channel blockers should be continued as prescribed and taken the morning of surgery with a sip of water. In particular, stopping beta blockers prior to surgery has proven to increase cardiac morbidity and mortality [7-9]. Because of the risk of rebound hypertension with acute cessation of alpha-2 blockers such as clonidine, these medications should also be continued pre-operatively. Continuing calcium channel blockers during perioperative period has no proven contraindications.

Angiotensin-converting enzyme (ACE) inhibitors and angiotensin-2 receptor blockers (ARBs) are common anti-hypertensive that should be used with caution preoperatively. Patients taking either ACE inhibitor or ARB in combination with a diuretic are at risk for intraoperative hypotension [10]. Therefore, these medications should not be taken the morning of surgery. ACE inhibitors, ARBs, and diuretics may be resumed within 48 hours postoperatively. Patients taking statins should continue this therapy. In fact, in one international prospective cohort study, the use of statins in patients undergoing non-cardiac surgery was associated with a lower risk of cardiovascular outcomes 30 days after surgery [11]. However, no studies exist that suggest starting routine statin use in a patient not already using this medication.

Women who are taking hormone replacement therapy (HRT) are encouraged to stop prior to surgery. HRT increases the risk of venous thromboembolism (VTE), and since surgery alone also increases this risk, the compounded effect of HRT in a surgical patient should be avoided [12]. Many women on HRT are perimenopausal or at the start of menopause. The elderly patient population is usually not on HRT, so this becomes less of a consideration. On the other hand, selective estrogen receptor modulators (SERM) may more commonly be used in the elderly gynecologic population in treatment of breast cancer (tamoxifen) or osteoporosis (raloxifene). SERMs increase the risk of VTE and care must be taken prior to surgery. Raloxifene should be stopped 3 days prior to surgery. Tamoxifen as a breast cancer prevention strategy should be stopped 2 weeks prior to surgery. However, when tamoxifen is being used for breast cancer treatment, one can consider continuation of the drug with additional measures for VTE prophylaxis [13].

### Prevention VTE

All surgical patients are risk stratified for risk of VTE. The American College of Chest Physicians Caprini score is universally used as a preoperative assessment tool for VTE during surgery and guides intra-operative prevention. Women aged 61-74 years old receive 2 points on the risk score model, while women aged 75 years and older receive 3 points. Other points that apply to the elderly gyn population include cancer, prior VTE, estrogen use, smoking, and obesity. Low risk patients (Caprini score 1-2) have 1.5% estimated baseline risk of VTE should have mechanical prophylaxis during surgery. Moderate risk patients (Caprini score 3-4) should have intermittent pneumatic compression device applied and can be considered for chemical prophylaxis with low molecular weight heparin or low dose unfractionated heparin if they do not have a bleeding risk. Finally, high risk patients (Caprini score greater than or equal to 5) have a 6% estimated baseline risk of VTE and should receive chemical VTE prophylaxis intraoperative in addition to mechanical prophylaxis [14].

### Informed consent

Informed consent begins with a discussion regarding the nature of the patient's problem and degree of bother. It continues with reviewing treatment options and desired outcomes. Once preoperative assessment is completed, a surgeon is better able to provide the patient with specific benefits and risks of various treatment options. Having a family member present for preoperative consent can be helpful for the patient in recalling the discussion and the salient points critical to informed consent. Also, the pre-operative visit can be an overwhelming experience for any patient. Being accompanied by a trusted confident, family member or friend may alleviate some anxiety while providing a personal witness to the conversation. We encourage having a family member or care provider present because they will also be involved in peri-operative instructions and post-op care.

## Intra-Operative

### Immediate preop

Intraoperative considerations for the elderly patient undergoing benign gynecological surgery must first involve a multi-disciplinary team. Adherence to preadmission testing instructions should be confirmed upon patient's arrival to the surgical unit. Today, many hospitals and physicians have adapted enhanced recovery after surgery (ERAS) protocols to promote faster healing and recovery. Preoperatively, it is expected that patient use chlorhexidine bath on the skin and drink the 6-hour carbohydrate loading drink. Bowel preparation and hair removal is avoided. Especially in the elderly population where dexterity may be limited, there is an increased risk of injury and breaks to skin during self-hair removal. On arrival to the surgical unit, confirmation of current medications and whether these medications have been continued should be asked [15].

Furthermore, ERAS protocols encourage pre-surgical pain relief with celecoxib, acetaminophen, and gabapentin given 30 minutes prior to operating room entry [15]. However, in the elderly patient, consideration should be given to dosage adjustment based on comorbidities. For example, a decreased dose of celecoxib or avoidance in patients with GI medical problems and decreased dosage of gabapentin in the elderly patient is important.

OR staff, nursing, and members of both gynecologic and anaesthesia teams all serve important roles in the preparation of both the patient and operating room on the day of surgery. When the patient is in the immediate pre-op stage, safety checklist by anaesthesia including assessment of vitals, resuscitation status, and any nerve block sites are reviewed prior to induction of anaesthesia. Prior to positioning, OR staff and members of gynecologic team can ensure excess padding is available in room for use under pressured areas when positioning the patient.

### Anaesthesia

The physiology of the elderly patient is important to keep in mind when deciding the type and dosing of anesthetic medications. Aging is associated with a decline in the reserve of all organ systems, most notably the central nervous system, pulmonary, cardiac, hepatic, and renal systems. Increased brain sensitivity, decreased hepatic clearance, and increased body fat leading to increased volume of distribution are all contributing factors which may make medications more potent in older individuals [16].

There may be significant preoperative anxiety prior to operating and often times a benzodiazepine such as midazolam may be administered. Although there is a concern with respiratory depression with the use of midazolam in the elderly population, we do not recommend withholding this drug when it is essential. Gonzalez Castro et. al specifically highlighted anticipated respiratory changes which were mostly attributed to decreased tidal volume, more so in comparison to respiratory rate and minute ventilation.

With this in mind, similar to pre-operative pain medications, the dosage of benzodiazepines may have to be decreased and adjusted in the elderly population [17].

When addressing anaesthesia and its effects on the elderly, one must address post-operative cognitive dysfunction (POCD), which is defined as a transient state of cognitive decline, usually resolving within three months. POCD has been described clinically in noncardiac and neurologic surgical procedures for over 50 years. However, specific findings of POCD are less concrete compared to post-op delirium and the clinically significant degree of cognitive decline should be assessed. Additionally, a chronically ill elderly patient may also exhibit cognitive decline that can be difficult to diagnose from their chronic illness. A gradual resolution of this decline can be noted over the post-operative period. For example, 25% of patients compared with controls showed cognitive decline at 2–10 days, 10% at 3 months, 5% at 6 months, to levels nearly indistinguishable (1%) from control subjects by approximately 1 year [18]. While exposure to general anaesthesia alone is not associated with risk of developing Alzheimer's disease or dementia, in patients with underlying cognitive impairment, exposure to general anesthesia can make symptoms worse [19].

Regional or neuraxial anaesthesia has become the preferred method as these techniques reduce risk of the aforementioned postoperative complications. Employment of regional anaesthesia in a multimodal fashion, including opioid sparing medications is the preferred approach for elderly patients going to the operating room. Regional anaesthesia can even be considered with major abdominal surgery. Additional benefits of epidural with local anaesthesia, compared to systemic opioid therapy, include quicker return of bowel function, improved pain scores, reduced cardiac and respiratory failure, reduced gastrointestinal complications, and reduced renal failure [20]. Intra- and post-operative use of opioids in the elderly are twice as potent and overdose can lead to respiratory depression, cognitive dysfunction, and can worsen underlying delirium [21].

### Patient positioning

Gynecologic surgery is primarily performed in lithotomy or supine position. Due to poor peripheral circulation, friability of skin, and concern for nerve compression, extra care is taken during positioning for the elderly patient to prevent tissue and nerve injury. Safeguards include extra cushioning in areas of concern, such as extra padding around the legs and sacrum. Restraints in other areas of the body, i.e. arms when tucked, should be secure but not too tight and include padding when needed. Although elderly patients may be at risk for pressure ulcers especially with poor positioning and lengthy cases, the advantage of benign gynecologic surgeries are the minimally invasive techniques used, which are usually less morbid overall. That is, operating time is reduced and anesthetic choices optimized by increased use of regional anaesthesia, overall decreasing perioperative anesthetic related morbidity.

## Post-Operative

The main goal of post-operative care for the elderly patient is to get her back to baseline functioning. Since most of the benign gynecologic surgery for elderly patients is performed by minimally invasive techniques, these patients are usually discharged home the same day after their surgery. In accordance with ERAS protocols, multi-modal nausea medications are administered to prevent nausea and vomiting, the most common complaint post operatively.

### Pain control

While opioids were once the mainstay of post-operative pain control, in recent years there has been an effort to decrease the amount of narcotics prescribed. Opioids increases post-operative nausea and vomiting, slow bowel function, and can cause overall drowsiness, which can limit patient mobility. All of these can delay the healing process. In women undergoing total abdominal hysterectomies, use of paracetamol and acetaminophen, gabapentin, NSAIDs, and cox-2 inhibitors lead to improved postoperative pain and satisfaction scores while decreasing the narcotic requirement [22]. The use of intraoperative regional anaesthesia, transverse abdominal plane (TAPS) block, and local anaesthesia infiltration also decreases the severity of postoperative pain and decrease use of narcotics.

### Pulmonary complications

Older patients may be at risk for post-operative pulmonary complications such as atelectasis and more serious complications like hospital acquired pneumonia. Use of incentive spirometry, deep breathing exercises, and even use of epidural analgesia can ameliorate the risk of developing pulmonary complications [20].

### Delirium

Elderly patients are at increased risk for postoperative delirium. This is most likely multi-factorial but can be due to medication or physiologic derangement [23]. Delirium is a transient state and different from dementia or chronic cognitive decline. There are certain precipitating conditions that healthcare providers should be aware of including postoperative pain, hypoxia, infection, urinary retention, and hypoglycaemia. Delirium prevention strategies including cognitive reorientation, bedside presence of a family member, adaptations for visual and hearing impairment, pain management, and appropriate medication use are just a few beneficial strategies to prevent this complication [20].

## Conclusion

The elderly woman undergoing benign gynecologic surgery has special considerations for her provider to consider. First, evaluation begins with a thorough medical history, especially including cardiovascular risks to guide the provider in performing proper preoperative cardiac risk assessment. Her overall well-being, mobility, and physical and mental health status are the next in evaluation. Intraoperative considerations by following ERAS



protocols and adjusting medications as necessary for the elderly population should be applied. Finally, the patient's return to cognitive and physical baseline as soon as possible is prudent.

### Practice Points

- There are special considerations for the elderly patient undergoing benign gynecologic surgery including medical history and physical examination that differ from the younger patient.
- Preoperative screening with cardiac risk calculators, diabetic screening test, and review of all medications should be performed prior to surgery.
- Anesthetic options should be considered with elderly gynecologic patient, especially those with underlying delirium or dementia.
- Adherence to ERAS protocols improve recovery and limit complications.

### Research Agenda

- Standardized pre-operative, intra-operative, and post-operative screening tools and checklists should be studied to optimize health outcomes for the elderly gynecologic patient undergoing surgery for benign disease.
- Future research on optimizing ERAS protocols for the elderly patient is required.

### Acknowledgement

None.

### Conflict of Interest

Authors declare no conflict of interest.

### References

1. ACOG Committee Opinion No. 444 (2009) Choosing the Route of Hysterectomy for Benign Disease. *Obstetrics & Gynecology* 114(5): 1156-1158.
2. Heron M (2019) Deaths: Leading causes for 2017. *National Vital Statistics Reports* 68(6), Hyattsville, MD: National Center for Health Statistics.
3. Lee TH, Marcantonio ER, Mangione CM, Thomas EJ, Polanczyk CA, et al. (1999) Derivation and Prospective Validation of a Simple Index for Prediction of Cardiac Risk of Major Noncardiac Surgery. *Circulation* 100(10): 1043-1049.
4. Bilimoria KY, Liu Y, Paruch JL, Zhou L, Kmieciak TE, et al. (2013) Development and Evaluation of the Universal ACS NSQIP Surgical Risk Calculator: A Decision Aid and Informed Consent Tool for Patients and Surgeons. *Journal of the American College of Surgeons* 217(5): 833-842.
5. Chatterjee A, Hage FG (2014) Guidelines in review: 2014 ACC/AHA Guideline on Perioperative Cardiovascular Evaluation and Management of Patients Undergoing Noncardiac Surgery: A Report of the American College of Cardiology/American Heart Association Task Force on Practice Guidelines. *Journal of Nuclear Cardiology* 22(1): 158-161.
6. Dronge AS, Perkal MF, Kancir S, et al. (2001) Long-term  $\beta$  glyceimic control and postoperative infectious complications. *Arch Surg* 141(4): 375-380.
7. Shammash JB, Trost JC, Gold JM, Berlin JA, Golden MA, et al. (2001) Perioperative  $\beta$ -blocker withdrawal and mortality in vascular surgical patients. *American Heart Journal* 141(1): 148-153.
8. Wallace AW, Au S, Cason BA (2010) Association of the Pattern of Use of Perioperative  $\beta$ -Blockade and Postoperative Mortality. *Anesthesiology* 113(4): 794-805.
9. Kertai MD, Cooter M, Pollard RJ, Buhrman W, Aronson S, et al. (2018) Is Compliance With Surgical Care Improvement Project Cardiac (SCIP-Card-2) Measures for Perioperative  $\beta$ -Blockers Associated With Reduced Incidence of Mortality and Cardiovascular-Related Critical Quality Indicators After Noncardiac Surgery? *Anesthesia & Analgesia* 126(6): 1829-1838.
10. Khetarpal S, Khodaparast O, Shanks A, O'Reilly M, Tremper KK (2008) Chronic Angiotensin-Converting Enzyme Inhibitor or Angiotensin Receptor Blocker Therapy Combined with Diuretic Therapy is Associated With Increased Episodes of Hypotension in Noncardiac Surgery. *J Cardiothorac Vasc Anesth* 22(2): 180-186.
11. Berwanger O, Le Manach Y, Suzumura EA, Biccari B, Srinathan SK, et al. (2016) Association between pre-operative statin use and major cardiovascular complications among patients undergoing non-cardiac surgery: The VISION study. *Eur Heart J* 37(2): 177-185.
12. Grady D, Wenger NK, Herrington D, Khan S, Furberg C, et al. (2000) Postmenopausal Hormone Therapy Increases Risk for Venous Thromboembolic Disease: The Heart and Estrogen/progestin Replacement Study. *Annals of Internal Medicine* 132(9): 689-696.
13. Muluk V, Cohn S, Whinney C (2016) Perioperative medication management.
14. Gould MK, Garcia DA, Wren SM, Karanicolas PJ, Arcelus JI, et al. (2012) Prevention of VTE in Nonorthopedic Surgical Patients. *Chest* 141(2 Suppl): e227S-e277S.
15. Anand M, Trabuco E (2017) Enhanced recovery after gynecologic surgery: Components and implementation.
16. Barnett S (2016) Anesthesia for the older adult.
17. Gonzalez Castro LN, Mehta JH, Braynov JB, Mullen GJ (2017) Quantification of Respiratory Depression during Pre-Operative Administration of Midazolam Using a Non-Invasive Respiratory Volume Monitor. *PloS One* 12(2): e0172750.
18. Silverstein JH, Timberger M, Reich DL, Uysal SJeffery (2007) Central Nervous System Dysfunction after Noncardiac Surgery and Anesthesia in the Elderly. *Anesthesiology* 106(3): 622-628.
19. Papon MA, Whittington RA, El-Khoury NB, Planel E (2011) Alzheimer's disease and anesthesia. *Front Neurosci* 4:272.
20. Mohanty S, Rosenthal RA, Russell MM, Neuman MD, Ko CY, et al. (2016) Optimal Perioperative Management of the Geriatric Patient: A Best Practices Guideline from the American College of Surgeons NSQIP and the American Geriatrics Society. *J Am Coll Surg* 222(5): 930-947.
21. Clay SW (2010) Treatment of Addiction in the Elderly. *Aging Health* 6(2): 177-189.
22. Steinberg AC, Schimpf MO, White AB, Mathews C, Ellington DR, et al. (2017) Preemptive analgesia for postoperative hysterectomy pain control: systematic review and clinical practice guidelines. *Am J Obstet Gynecol* 217(3): 303-313.
23. American Geriatrics Society Clinical Practice Guideline for Postoperative Delirium in Older Adults (2015) American Geriatrics Society Abstracted Clinical Practice Guideline for Postoperative Delirium in Older Adults. *100. J Am Geriatr Soc* 63(1): 142-150.