

HYSTERECTOMY

The following Clinical Practice Guideline has been reviewed by the Clinical Practice Gynaecology Committee and approved by Executive Committee and Council of the Society of Obstetricians and Gynaecologists of Canada.

PRINCIPAL AUTHORS

Guyline Lefebvre, MD, FRCSC, Toronto ON
 Catherine Allaire, MD, FRCSC, Vancouver BC
 John Jeffrey, MD, FRCSC, Kingston ON
 George Vilos, MD, FRCSC, London ON

CLINICAL PRACTICE GYNAECOLOGY COMMITTEE

Guyline Lefebvre, MD, FRCSC, Toronto ON (Chair)
 Catherine Allaire, MD, FRCSC, Vancouver BC
 Jagmit Arneja, MD, FRCSC, Winnipeg MB
 Colin Birch, MD, FRCSC, Calgary AB
 Michel Fortier, MD, FRCSC, Québec QC
 John Jeffrey, MD, FRCSC, Kingston ON
 George Vilos, MD, FRCSC, London ON

Abstract

Objective: To identify the indications for hysterectomy, preoperative assessment, and available alternatives required prior to hysterectomy.

Patient self-reported outcomes of hysterectomy have revealed high levels of patient satisfaction. These may be maximized by careful preoperative assessment and discussion of other treatment choices. In most cases hysterectomy is performed to relieve symptoms and improve quality of life. The patient's preference regarding treatment alternatives must be considered carefully.

Options: The areas of clinical practice considered in formulating this guideline are preoperative assessment including alternative treatments, choice of method for hysterectomy, and evaluation of risks and benefits. The risk-to-benefit ratio must be examined individually by the woman and her health practitioners.

Outcomes: Optimizing the decision-making process of women and their caregivers in proceeding with a hysterectomy having considered the disease process, and available alternative treatments and options, and having reviewed the risks and anticipated benefits.

Evidence: Using Medline, PubMed, and the Cochrane Database, English language articles were reviewed from 1996 to 2001 as well as the review published in the 1996 SOGC guidelines. The level of evidence has been determined using the criteria described by the Canadian Task Force on the Periodic Health Examination.

Benefits, harms, and costs: Hysterectomy is the treatment of choice for certain gynaecologic conditions. The predicted

advantages must be carefully weighed against the possible risks of the surgery and other treatment alternatives. In the properly selected patient, the result from the surgery should be an improvement in the quality of life. The cost of the surgery to the health care system and to the patient must be interpreted in the context of the cost of untreated conditions. The approach selected for the hysterectomy will impact on the cost of the surgery.

Recommendations:

Benign Disease

- 1. Leiomyomas:** For symptomatic fibroids, hysterectomy provides a permanent solution to menorrhagia and the pressure symptoms related to an enlarged uterus. (I-A)
- 2. Abnormal uterine bleeding:** Endometrial lesions must be excluded and medical alternatives should be considered as a first line of therapy. (III-B)
- 3. Endometriosis:** Hysterectomy is often indicated in the presence of severe symptoms with failure of other treatments and when fertility is no longer desired. (I-B)
- 4. Pelvic relaxation:** A surgical solution usually includes vaginal hysterectomy, but must include pelvic supporting procedures. (II-B)
- 5. Pelvic pain:** A multidisciplinary approach is recommended, as there is little evidence that hysterectomy will cure chronic pelvic pain. When the pain is confined to dysmenorrhea or associated with significant pelvic disease, hysterectomy may offer relief. (II-C)

Preinvasive Disease

- 1. Hysterectomy** is usually indicated for endometrial hyperplasia with atypia. (I-A)

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2. Cervical intraepithelial neoplasia in itself is not an indication for hysterectomy. (I-B)
3. Simple hysterectomy is an option for treatment of adenocarcinoma *in situ* of the cervix when invasive disease has been excluded. (I-B)

Invasive Disease

1. Hysterectomy is an accepted treatment or staging procedure for endometrial carcinoma. It may play a role in the staging or treatment of cervical, epithelial ovarian, and fallopian tube carcinoma. (I-A)

Acute Conditions

1. Hysterectomy is indicated for intractable postpartum hemorrhage when conservative therapy has failed to control bleeding. (II-B)
2. Tubo-ovarian abscesses that are ruptured or do not respond to antibiotics may be treated with hysterectomy and bilateral salpingo-oophorectomy in selected cases. (I-C)
3. Hysterectomy may be required for cases of acute menorrhagia refractory to medical or conservative surgical treatment. (II-C)

Other Indications

1. Consultation with an oncologist or geneticist is recommended when considering hysterectomy and prophylactic oophorectomy for a familial history of ovarian cancer. (III-C)

Surgical Approach

1. The vaginal route should be considered as a first choice for all benign indications. The laparoscopic approach should be considered when it reduces the need for a laparotomy. (III-B)

Validation: Medline searches were performed in preparing this guideline with input from experts in their field across Canada. The guideline was reviewed and accepted by SOGC Council and Executive.

Sponsor: The Society of Obstetricians and Gynaecologists of Canada.

INTRODUCTION

Hysterectomy is the most frequently performed major surgical procedure in gynaecology.¹ In Health Canada statistics, between 1981 and 1997 the hysterectomy rate decreased from 937 to 628 per 100,000 women over age 35.² In 1998–99, 462 hysterectomies were performed per 100,000 women age 20 or older. The rate varies per region from a low of 434 in British Columbia to a high of 750 in Newfoundland. Within each province, the rate fluctuates significantly by region. No relationship has been established between these differences and patient outcomes or satisfaction.²

Hysterectomy has a wide range of indications which may not be amenable to confirmation by the pathologic examination of the specimen.^{3,4} It is thus difficult to define objective markers for validation of indication. New technologies are emerging for conservative surgical management of abnormal uterine bleeding and fibroids, but there is a paucity of Level I evidence comparing these new technologies to the gold standard of hysterectomy, particularly in terms of long-term outcome and quality of life improvements.

In 1981–82, 22 percent of hysterectomies were performed vaginally. In 1999–2000, the proportion of vaginal hysterectomy

had increased to 32 percent of all hysterectomies in Canada.² The average length of stay for abdominal hysterectomy decreased from 9.7 days in 1981–82 to 4.4 days in 1999–2000.² While choice of approach for the surgery is discussed in this document, ultimately it remains a decision for the individual surgeon in concert with his or her patient.

This guideline presents considerations involved in the decision-making process of choosing hysterectomy or alternative therapies for each of the more common indications. The decision to proceed to a hysterectomy rests with the woman who has been fully educated to the risks and expected benefits of this procedure. The quality of evidence reported in this guideline has been described using the Evaluation of Evidence criteria outlined in the Report of the Canadian Task Force on the Periodic Health Exam (Table 1).⁵

INDICATIONS

BENIGN DISEASE

a) Abnormal Uterine Bleeding

Evaluation of a woman with abnormal uterine bleeding (AUB)⁶ should rule out non-gynaecologic etiologies, reproductive tract problems such as cervical polyps, endometrial neoplasia and pregnancy-related causes. Hysteroscopy is particularly useful in the diagnosis of endometrial polyps and submucosal fibroids, which can easily be missed at the time of an office biopsy or curettage.⁶

One or more “medical” options should be presented to women with AUB prior to considering surgical treatment: these are reviewed in the SOGC guideline on the management of abnormal uterine bleeding.⁶ Depending on the severity of the disease, the age of the patient, her cultural beliefs, and her desire to preserve fertility, an endometrial ablation or a hysterectomy can also be considered. Appendix A and B highlight the decision-making process.

The surgeon or gynaecologist who is prepared to perform a hysterectomy to treat AUB must be fully knowledgeable about all the medical alternatives and surgical management options and inform the patient of her choices of treatment. In patients where medical treatment or conservative surgery has failed to reduce and improve the bleeding, hysterectomy is associated with a high level of satisfaction.^{7–11}

b) Uterine Leiomyomas

Uterine leiomyomas are the most common gynaecological tumour and are present in 30 percent of women of reproductive age.¹² Treatment must be individualized based on symptoms, the size and rate of growth of the uterus, and the patient's desire for fertility.

The indications for hysterectomy in a completely asymptomatic patient are few and include rapidly enlarging fibroids or enlarging fibroids after menopause when concerns of leiomyosarcoma are raised.¹²

A recent study shows no increase in perioperative complications in women with a uterus greater than 12-week size compared to women with a small uterus.¹² Hysterectomy need not be recommended as prophylaxis against increased operative morbidity associated with future growth.¹² In patients who have completed childbearing, hysterectomy is indicated as a permanent solution for leiomyomas causing substantial bleeding, anemia, or pelvic pressure.

When considering hysterectomy for menorrhagia presumed related to fibroids, other causes of menorrhagia should be ruled out. Endometrial sampling, when indicated, should be performed to exclude endometrial lesions. The possibility of a coagulopathy or thyroid dysfunction should be considered. Since leiomyomas rarely cause pain, other causes of pelvic pain should be excluded. Removing a fibroid uterus should not be expected to alleviate symptoms of incontinence.¹³

GnRH agonists have been shown to shrink fibroids to 50 percent of their initial volume, with the greatest effect apparent after 12 weeks of treatment. However, the use of GnRH agonists is limited due to their cost and hypoestrogenic side effects, including a decrease in bone mineral density. Treatment should be restricted to a three- to six-month interval, following which regrowth of fibroids is expected within 12 weeks.¹⁴ The use of GnRH agonists along with estrogen replacement is still considered investigational. GnRH agonists may be given preoperatively to decrease the size of the fibroids, reduce symptoms, and increase the patient's hemoglobin preoperatively.¹⁴

The advantage of myomectomy is the preservation of the uterus. The desire for children is the most common indication for myomectomy instead of hysterectomy. Most patients presenting with infertility and associated uterine fibroids are found

by additional investigations to have other causes for the infertility. A higher risk of blood loss and greater operative time can be expected with myomectomy than hysterectomy, although the risk of ureteric injury may be decreased with myomectomy. There is a 15 percent recurrence rate of fibroids, and 10 percent of women undergoing a myomectomy will eventually require a hysterectomy within 10 years.¹⁵ In discussing the planned myomectomy, patients should be informed about the risk of eventually requiring a hysterectomy, dependent on intraoperative findings and course of surgery. In view of the increased morbidity of an abdominal approach for myomectomy, there are very limited indications for this operation.¹⁵ Hysteroscopy has been proven effective for diagnosis and management of submucous fibroids. As with other approaches for myomectomy, there appears to be a 10 to 20 percent risk of requiring further intervention within five to 10 years of resection.¹⁶

Myolysis refers to the technique where an attempt is made to disrupt, diminish or abolish the blood supply to the fibroids in order to deprive them of nutrients, sex hormones, and growth factors, and cause shrinkage or complete degeneration of the myomas. Several techniques have been used since 1986, including the Nd:YAG laser and bipolar or monopolar electrocautery. These procedures work best in the presence of fewer than three fibroids, where the largest fibroid measures less than 10 centimetres in diameter, and when the patient has been pretreated with a GnRH agonist for three months prior to surgery.¹⁷ Treatment is more effective when performed with concomitant endometrial ablation, and is not recommended for women who wish to retain their fertility. At least three uterine ruptures in pregnancy following laparoscopic electromyolysis have been reported.¹⁷

TABLE I QUALITY OF EVIDENCE ASSESSMENT ⁵	CLASSIFICATION OF RECOMMENDATIONS
<p>The quality of evidence reported in these guidelines has been described using the Evaluation of Evidence criteria outlined in the Report of the Canadian Task Force on the Periodic Health Exam.</p> <p>I: Evidence obtained from at least one properly randomized controlled trial.</p> <p>II-1: Evidence from well-designed controlled trials without randomization.</p> <p>II-2: Evidence from well-designed cohort (prospective or retrospective) or case-control studies, preferably from more than one centre or research group.</p> <p>II-3: Evidence obtained from comparisons between times or places with or without the intervention. Dramatic results in uncontrolled experiments (such as the results of treatment with penicillin in the 1940s) could also be included in this category.</p> <p>III: Opinions of respected authorities, based on clinical experience, descriptive studies, or reports of expert committees.</p>	<p>Recommendations included in these guidelines have been adapted from the ranking method described in the Classification of Recommendations found in the Report of the Canadian Task Force on the Periodic Health Exam.</p> <p>A. There is good evidence to support the recommendation that the condition be specifically considered in a periodic health examination.</p> <p>B. There is fair evidence to support the recommendation that the condition be specifically considered in a periodic health examination.</p> <p>C. There is poor evidence regarding the inclusion or exclusion of the condition in a periodic health examination, but recommendations may be made on other grounds.</p> <p>D. There is fair evidence to support the recommendation that the condition not be considered in a periodic health examination.</p> <p>E. There is good evidence to support the recommendation that the condition be excluded from consideration in a periodic health examination.</p>

Uterine artery laparoscopic occlusion with clips or by trans-femoral embolization to treat symptomatic fibroids was introduced during the last decade. Small series addressing the feasibility, complication rates, clinical outcome and patient satisfaction have been in general encouraging, although follow-up is limited. However, the durability of the treatment, the effect on hysterectomy rates, and the cost-benefit of the procedure and its impact on fertility and hormone homeostasis have not yet been established.¹⁶

c) Endometriosis

Medical treatment of endometriosis is frequently associated with metabolic and symptomatic side effects and has limited success in controlling symptoms due to adhesive disease or damaged pelvic organs.

Conservative surgery, with minimal disruption of the pelvic organs, may be relevant where fertility is a consideration, but has limited effect in long-term control of symptoms as indicated by cumulative recurrence rates of 13 percent at three years and 40 percent at five years.¹⁸ There is Level I evidence that conservative ablative surgery is helpful for treatment of infertility in patients with minimal to mild endometriosis¹⁹ and control of pelvic pain in patients with minimal to moderate endometriosis.²⁰

The ultimate goal of treatment of endometriosis is the relief of symptoms, without incurring side effects. The decision to proceed to hysterectomy is a major step. This decision should be guided by three factors: 1) the presence of severe symptoms, particularly intractable pain, after other possible causes of pain have been treated or ruled out; 2) the failure of other treatments or intolerance to their side effects; 3) future pregnancy is no longer possible or desired.

Whether to preserve the ovaries when performing a hysterectomy for endometriosis is controversial. A large retrospective study compared recurrence of symptoms after hysterectomy with or without ovarian conservation with a mean follow-up of 58 months. In women with ovarian conservation, 62 percent had recurrent symptoms and 31 percent required further surgery, versus 10 percent and 3.7 percent in women who had had bilateral oophorectomies.²¹ Several studies have found higher reoperation rates associated with more severe disease.²²⁻²⁴ Women who have recurrent symptoms after hysterectomy and castration are likely to have persistent disease, most often involving the bowel.²⁵ In patients with severe disease who request definitive treatment for their symptoms, it is generally recommended that both ovaries and all visible endometriosis be removed, including bowel disease if symptomatic.²⁶ Bilateral oophorectomy cannot, however, be routinely recommended when performing a hysterectomy for earlier stage endometriosis after all visible lesions have been removed and the remaining ovarian tissue appears to be normal.

The effects of bilateral oophorectomy should be discussed pre-

operatively, along with the issue of symptom recurrence if ovaries are preserved, so that a surgical plan can be developed with the patient's input. If bilateral oophorectomy is performed, immediate hormonal replacement therapy should then be given in adequate dosage without fear of exacerbation of the disease.^{21,24,26}

A thorough review of medical and surgical treatments can be found in the Canadian Consensus Conference on Endometriosis.^{18,27}

d) Pelvic Relaxation

Symptoms attributable to prolapse include a sensation of protrusion, pelvic pressure, urinary incontinence, rectal discomfort, and discomfort related to the irritation of externalized mucosal tissues. Mild to moderate degrees of prolapse in the absence of complaints should rarely be corrected. The primary objectives of surgical treatment for symptomatic genital prolapse are the relief of symptoms, the reconstruction of pelvic supports, and the restoration of normal anatomy.²⁸ Removing the uterus is only part of any surgical procedure for pelvic relaxation. Concomitant correction of any cystocele or rectocele must be undertaken to restore support of the vagina. Attention to support of the vagina and obliteration of a potential enterocele will minimize the risks of post-hysterectomy vault prolapse.²⁹ Preoperative assessment should include careful physical examination to exclude intra-abdominal and pelvic lesions. The extent of the pelvic relaxation may then be evaluated. Urinary incontinence should be assessed.

Therapeutic alternatives may include estrogen replacement, pelvic floor exercises, and pessaries. The patient should be presented with options as alternatives, understanding the limitations of medical management. The long-term use of a vaginal pessary may be associated with vaginal erosion. Such patients should be monitored carefully with regular vaginal examinations.

There are no successful surgical alternatives to advanced uterine prolapse, other than hysterectomy and pelvic floor repair. Uterine suspension has been found generally ineffectual.²⁹ In patients with an isolated cystocele, coincidental hysterectomy for the removal of a non-prolapsing uterus is of uncertain benefit.²⁸

e) Benign Adnexal Mass

A thorough examination of the medical literature reveals a lack of data addressing the use of incidental hysterectomy when removing a benign adnexal mass.

If a bilateral oophorectomy is indicated for a benign ovarian condition such as endometriosis, the possibility of hysterectomy should be discussed with the patient before the surgery and a management plan established. Whether there are any benefits of concomitant hysterectomy at the time of bilateral oophorectomy for conditions other than ovarian cancer, where no other indications exist, remains unknown. Options must be individualized.

The added surgical risks of hysterectomy in addition to the

removal of the adnexal mass include infection, ureteral trauma, and blood loss. The patient's desire for future fertility, previous menstrual history, and potential implications of hormone replacement therapy are other important factors to be considered and discussed with the patient.

f) Chronic Pelvic Pain

Pelvic pain should be carefully investigated prior to considering a hysterectomy. Investigations should include a careful gynaecologic examination, pelvic ultrasound, and evaluation of urinary, gastrointestinal, and musculoskeletal sources for pain as indicated by the presenting symptoms. A multidisciplinary approach should be undertaken. Psychiatric evaluation should be offered, as there is an association between psychosomatic factors and a history of sexual abuse.³⁰⁻³²

Medical management may include use of non-steroidal anti-inflammatory drugs, oral contraceptives, danazol, high-dose progestins or GnRH analogues. Laparoscopy should be considered to document and treat identifiable causes of pain. Any underlying cause should be addressed specifically. Treatment should be individualized. There is a case for hysterectomy when an underlying disease, amenable to hysterectomy, is demonstrated and the patient has completed her family. In the patient suffering exclusively from dysmenorrhea, hysterectomy may offer relief. There is little evidence to support the indications for hysterectomy in a patient with idiopathic pelvic pain and a high likelihood that the pain will persist following surgery.³³

PRE-INVASIVE NEOPLASTIC DISEASES

a) Endometrial Hyperplasia

Endometrial hyperplasia is usually diagnosed because of a complaint of abnormal uterine bleeding which leads to either office endometrial sampling or a D & C. The most significant histological finding is the presence or absence of cytologic atypia.^{34,35} The majority of patients without atypia will respond to hormonal manipulation in the form of progestin.^{34,36} Endometrial hyperplasia with cytologic atypia on an endometrial biopsy warrants a hysteroscopy and D&C to rule out concomitant endometrial adenocarcinoma, which is present in 17 to 25 percent of cases.³⁷ Up to 25 percent of atypical endometrial hyperplasia may progress to endometrial cancer despite progestin therapy, with an average time of progression of four years.^{34,36} For endometrial hyperplasia with atypia, either progestin therapy or simple hysterectomy are initial treatment options. When progestin therapy is chosen, patients should undergo a repeat endometrial sampling within six months. For patients with persistent endometrial hyperplasia or in patients who continue to experience irregular bleeding, a hysterectomy is recommended. Patients without atypia but with persistent hyperplasia on follow-up endometrial sampling despite a trial of both low and high dose progestin therapy may be treated by hysterectomy.³⁸

b) Cervical Squamous Intraepithelial Neoplasia

Cervical squamous intraepithelial neoplasia (CIN) in itself is not an indication for hysterectomy. Hysterectomy is indicated only if there are other gynaecologic conditions that on their own justify the operation. However, it is important to exclude invasive cervical cancer prior to hysterectomy. Cervical squamous intraepithelial neoplasia should be treated by a conservative technique such as cryotherapy, laser, electrosurgical excision, or cone biopsy. Hysterectomy is indicated for failure of conservative therapy.³⁸

c) Adenocarcinoma *in situ*

Adenocarcinoma *in situ* accounts for approximately two percent of *in situ* carcinomas of the cervix. Fifty percent of adenocarcinomas *in situ* will have an associated squamous lesion.³⁹⁻⁴¹ Prior to performing a hysterectomy, a cylindrical-shaped cone biopsy is necessary to rule out invasive adenocarcinoma.^{42,43} For women who have completed their families, a simple hysterectomy is a treatment option. If the cone biopsy margin, however, is positive for *in situ* disease, a repeat cone biopsy is necessary to rule out invasive adenocarcinoma of the cervix.

INVASIVE DISEASE

a) Uterine Carcinoma

Endometrial cancer is the most common gynaecologic malignancy and it accounts for over 95 percent of uterine cancers, while uterine sarcomas are much less common.³⁸ Both endometrial cancer and uterine sarcomas are best treated by hysterectomy. In the case of sarcomas, hysterectomy is the only treatment that offers a chance of cure.

Laparotomy for endometrial cancer should include full surgical staging. If surgery is not possible, usually because the woman is medically unfit for surgery, alternative therapy includes pelvic radiotherapy and/or progestin treatment. Radiation therapy is less likely to be curative and progestin therapy is only palliative.³⁸

b) Cervical Carcinoma

Cervical cancer can be treated equally well by either surgery or radiotherapy, the identical cure rate being 85 percent five year survival for stage 1 disease. Radiotherapy and concurrent chemotherapy is appropriate for more advanced stage disease.⁴⁴ Surgery is usually the option when the patient is in good physical condition; age in itself is not an exclusion criterion. Bladder and bowel injuries as a consequence of surgery are uncommon and without long-term sequelae.⁴⁵ Bowel and bladder injuries secondary to radiotherapy are more difficult to treat and also relatively uncommon.

Microinvasive squamous cell carcinoma of the cervix is classified as a depth of invasion less than 0.3 mm with no capillary or lymph vascular space involvement. A simple hysterectomy or cone biopsy is adequate treatment for microinvasive

disease, with patient choice usually dependent on the woman's desire for fertility preservation. More advanced lesions require radical hysterectomy and pelvic lymphadenectomy.³⁸ A definition of microinvasive adenocarcinoma of the cervix that precludes any significant risk of metastatic disease has not been reached.⁴⁶

Conventional therapy for invasive adenocarcinoma of the cervix includes either modified radical hysterectomy plus bilateral pelvic lymphadenectomies or pelvic radiotherapy. Any other form of treatment must be individualized after appropriate consultation.

c) Epithelial Ovarian Cancer

Epithelial ovarian cancer usually presents in advanced stages. Fifty to 60 percent of women diagnosed with ovarian cancer and appropriately treated will die of this disease.³⁸ Although the treatment of advanced epithelial ovarian cancer includes hysterectomy, there is no data to show that this alters prognosis. After hysterectomy, a mass palpable at the vault will represent disease and may be used to evaluate response to adjuvant chemotherapy. In cases of advanced stage carcinoma, hysterectomy can facilitate debulking of disease from the pelvis. Concomitant hysterectomy is recommended by most oncologists.

The uterus and contralateral ovary may be retained to preserve fertility in a woman who has undergone a full surgical staging procedure and is found to have stage Ia, grade 1 or grade 2 disease. However, once her family is complete an oophorectomy should be performed and hysterectomy may be offered (see "Prophylaxis"). In non-epithelial ovarian cancers the need for hysterectomy should be individualized.

d) Germ Cell Tumours of the Ovary

Germ cell tumours tend to occur in young women and are usually unilateral. Surgery should include removal of the affected ovary and staging for ovarian cancer. A hysterectomy and contralateral oophorectomy is usually not indicated.

e) Fallopian Tube and Primary Peritoneal Papillary Serous Carcinoma

Hysterectomy is indicated in the case of fallopian tube cancer to ensure all of the fallopian tube has been removed and to ensure accurate follow-up. In primary peritoneal papillary serous carcinoma, total abdominal hysterectomy and bilateral salpingo-oophorectomy is necessary to exclude a primary malignancy in the endometrium, fallopian tube, or ovaries.

ACUTE CONDITIONS

a) Pregnancy Related Hemorrhage

Emergency peripartum hysterectomy is generally performed in the setting of life-threatening hemorrhage. The incidence of emergency hysterectomy is 1.55 per 1,000 deliveries.^{47,48} This procedure is performed more often after Caesarean section

(0.7%) than vaginal delivery (0.02%).⁴⁸ In one study, abnormal placentation was the most common cause (64%) followed by uterine atony (21%). Other etiologies included uterine rupture, fibroids, and extension of a uterine scar.⁴⁷

When intractable obstetric hemorrhage is caused by any of these conditions, immediate and deliberate action is mandatory and may be lifesaving. However, it must be emphasized that conservative measures to control obstetric hemorrhage remain the mainstay of therapy. In the management of hemorrhage caused by uterine atony, a medical stepwise approach is recommended.⁴⁹ The obstetrician must assure that the products of conception are totally removed.

Different therapeutic agents such as oxytocin, methyl-ergonovine-maleate, and PGF 2-alpha must be used to control hemorrhage. Surgery is reserved for cases refractory to non-surgical treatment. Embolization of uterine arteries can be used in the stable patient. Ligation of hypogastric or uterine arteries may be attempted to control hemorrhage prior to resorting to a hysterectomy.^{29,50,51}

Hysterectomy for the control of obstetric hemorrhage is clearly a procedure associated with significant morbidity and mortality.^{47,48}

When required, the obstetrician should usually plan to perform a total hysterectomy. In some circumstances, subtotal hysterectomy may be the procedure of choice if the medical condition of the patient is unstable.

b) Severe Infection

With the development of broad-spectrum antibiotics, the management of tubo-ovarian abscess (TOA) has changed from total abdominal hysterectomy and bilateral salpingo-oophorectomy to a medical approach. Now there are three main indications for surgical intervention in patients with a suspected TOA: intra-abdominal rupture of TOA, suspicion of other surgical emergencies (such as appendicitis), and failure to respond to appropriate antibiotic therapy within 48 to 72 hours.⁵²

Rupture of TOA is a life-threatening condition requiring urgent surgical management. Generalized peritonitis may occur. Death is usually due to the resulting sepsis. The traditional approach has been a complete hysterectomy with bilateral salpingo-oophorectomy. Even with the help of antibiotics, it seems that complete gynaecologic extirpation is the treatment of choice when there is extensive bilateral involvement. However, when unilateral disease is demonstrated, broad-spectrum intravenous antibiotic therapy with unilateral adnexectomy appears to be a safe alternative in patients who desire to preserve reproductive capability and ovarian hormone production.^{53,54}

The surgical management of unruptured TOA is less clear. Surgical drainage can be done by laparotomy, posterior colpotomy, operative laparoscopy^{55,56} or with interventional radiologic technique.⁵² The clinical situation will guide the physician for the choice of the best surgical approach. Total abdominal

hysterectomy with bilateral salpingo-oophorectomy is an option that may be considered by the surgeon.⁵⁵

OTHER INDICATIONS

a) Prophylaxis

The term “prophylactic hysterectomy” describes hysterectomy performed at the time of other surgery for benign pelvic disease. Infectious morbidity will almost certainly be increased as the result of entering the vagina. The medical literature has not quantified the level of the increased morbidity. Vaginal cuff cellulitis and wound infection are specifically likely to be increased.

The justification for a prophylactic hysterectomy may be related to hormone replacement therapy and the benefit of estrogen “alone” versus estrogen combined with progestin. Certainly endometrial cancer will no longer be a concern and withdrawal bleeding and other side effects of progestin will not be a factor. The use of hysterectomy in such situations should be individualized, discussed with the patient prior to surgery, and consent for options achieved.

b) Familial Ovarian Cancer

This group of patients may be subdivided into those with site-specific familial ovarian cancer, breast/ovarian familial cancer syndrome, and Lynch II syndrome which is now referred to as hereditary non-polyposis colon cancer (HNPCC). When preventive or prophylactic oophorectomy is planned, a concomitant hysterectomy should be considered.⁵⁷ Women at high risk of developing epithelial ovarian cancer because they carry BRCA1 or BRCA2 mutations are also at high risk for fallopian tube carcinoma and papillary serous carcinoma of the uterus.⁵⁸ In HNPCC Syndrome, depending on the family history, there may be a sufficiently increased risk of endometrial cancer to justify prophylactic hysterectomy as opposed to endometrial monitoring with ultrasound or endometrial biopsies.

c) Extenuating Circumstances

These guidelines have attempted to cover all areas of indications for hysterectomy. It should be realized that all possible indications may not have been covered. There may also be situations not supported by these guidelines. In such circumstances the gynaecologist should consider alternative approaches, and if hysterectomy is still felt to be the best option it may be prudent to have the reasons well documented and to obtain a second opinion of a colleague gynaecologist.

APPROACH FOR HYSTERECTOMY

The approach for hysterectomy depends on the surgeon's expertise, the indication for surgery, the nature of the disease, patient characteristics, and patient choice. Each case must be individualized. Options include vaginal hysterectomy, laparoscopic assisted vaginal hysterectomy (LAVH), laparoscopic supracervical

hysterectomy (LSH), total laparoscopic hysterectomy (TLH), and abdominal hysterectomy (subtotal, total or radical).

Any patient requiring a hysterectomy should be offered the vaginal approach if feasible, as the post-operative rates of morbidity and complications are lower with the vaginal approach than with any other method. Appropriate prophylactic use of antibiotics is recommended to minimize febrile morbidity.

Subtotal hysterectomies were common from 1900 to 1940 as they were judged easier to perform with decreased morbidity and blood loss than when the cervix was removed. The operation fell into disfavour with improvement in surgical technique and anesthesia but is now attracting renewed attention. The prevention of cervical cancer remains the major reason not to do a subtotal hysterectomy. When a hysterectomy is performed for benign disease, subtotal surgery may be preferable to a patient who has always had normal cytological findings and who believes sexual function may be affected by removal of the cervix. There is no evidence that a subtotal hysterectomy reduces the risk of pelvic floor prolapse. As well, there is no evidence that a total hysterectomy will affect sexual function.⁵⁹

LAVH may be chosen instead of an abdominal hysterectomy, but offers no advantage where a vaginal hysterectomy can be performed.^{60,61} Prospective randomized trials comparing LAVH to the abdominal approach have found quicker recovery and less post-operative pain in the laparoscopic group.⁶²⁻⁶⁴ The overall complication rate seems to be similar in both groups. In a Canadian setting, the laparoscopic route is associated with lower overall costs.⁶⁵ In many institutions, LSH is being performed with claims of shorter operating times, lower morbidity, and shorter convalescence.⁶⁶ There is no good prospective evidence that LSH has any advantages over LAVH. The same issues surrounding subtotal abdominal hysterectomy apply to LSH.

The laparoscopic approach does introduce new categories of complications in addition to the potential known complications shared with abdominal and vaginal hysterectomy. Trocar complications have been reported, most commonly abdominal wall vessel injury and intestinal herniation through large trocar sites. Inadvertent cystotomies with laparoscopic dissection and ureteral injuries with stapling devices have been reported more often, though their incidence is unknown. Nevertheless, in well selected cases laparoscopic hysterectomy can be a safe procedure with clear advantages to the patient if an abdominal procedure is avoided, as long as it is performed by a properly trained and skilled surgeon.

COMPLICATIONS OF HYSTERECTOMY

Rates of complications associated with hysterectomy range from 0.5 percent to 43 percent.⁴ Post-operative fever and infection are responsible for the majority of minor complications. Routinely collected administrative data is of limited utility for determining the frequency of complications.⁶⁷ The reported incidence of

complications varies widely. In the four meta-analyses of laparoscopic hysterectomy series published between 1989 and 1995, the major complication rate was three to four percent, the total complication rate was 11.6 to 15.6 percent, and the mortality rate was zero to six per 100,000 cases. Major complications were defined as injuries to other organs or reoperations.⁶⁸

A large analysis of over 160,000 hysterectomies in Ohio reported a complication rate of 9.1 percent for abdominal, 7.8 percent for vaginal, and 8.8 percent for laparoscopic approach to the hysterectomy.⁶⁹ Vesical and ureteric injuries are the most common source of major complications as compiled by the Finnish registry.⁶⁸ In a series of 13,885 hysterectomies,⁶⁸ the incidence of urinary tract injuries is highest with the laparoscopic approach (2.2%) and lowest with the vaginal hysterectomy (0.04%). When considering a hysterectomy, the patient should be informed of the risk of hemorrhage, infection, and damage to surrounding organs. There is no evidence that a hysterectomy leads to psychological distress.^{7,70} Sexual function is unchanged or improved in 80 percent of patients following the operation.⁵⁹ Women suffering from depression prior to their hysterectomy are at greater risk for experiencing dyspareunia, vaginal dryness, and low libido after the hysterectomy.^{70,71} Knowing what aspects may and may not be alleviated by hysterectomy for a particular condition can assist in decision-making and improve patient satisfaction.^{11,70}

RECOMMENDATIONS

BENIGN DISEASE

- 1. Leiomyomas:** For symptomatic fibroids, hysterectomy provides a permanent solution to menorrhagia and the pressure symptoms related to an enlarged uterus. (I-A)
- 2. Abnormal uterine bleeding:** Endometrial lesions must be excluded and medical alternatives should be considered as a first line of therapy. (III-B)
- 3. Endometriosis:** Hysterectomy is often indicated in the presence of severe symptoms with failure of other treatments and when fertility is no longer desired. (I-B)
- 4. Pelvic relaxation:** A surgical solution usually includes vaginal hysterectomy, but must include pelvic supporting procedures. (II-B)
- 5. Pelvic pain:** A multidisciplinary approach is recommended, as there is little evidence that hysterectomy will cure chronic pelvic pain. When the pain is confined to dysmenorrhea or associated with significant pelvic disease, hysterectomy may offer relief. (II-C)

PREINVASIVE DISEASE

- 1.** Hysterectomy is usually indicated for endometrial hyperplasia with atypia. (I-A)
- 2.** Cervical intraepithelial neoplasia in itself is not an indication for hysterectomy. (I-B)
- 3.** Simple hysterectomy is an option for treatment of adenocarcinoma *in situ* of the cervix when invasive disease has been excluded. (I-B)

INVASIVE DISEASE

- 1.** Hysterectomy is an accepted treatment or staging procedure for endometrial carcinoma. It may play a role in the staging or treatment of cervical, epithelial ovarian, and fallopian tube carcinoma. (I-A)

ACUTE CONDITIONS

- 1.** Hysterectomy is indicated for intractable postpartum hemorrhage when conservative therapy has failed to control bleeding. (II-B)
- 2.** Tubo-ovarian abscesses which are ruptured or which do not respond to antibiotics may be treated with hysterectomy and bilateral salpingo-oophorectomy in selected cases. (I-C)
- 3.** Hysterectomy may be required for cases of acute menorrhagia refractory to medical or conservative surgical treatment. (II-C)

OTHER INDICATIONS

- 1.** Consultation with an oncologist or geneticist is recommended when considering hysterectomy and prophylactic oophorectomy for a familial history of ovarian cancer. (III-C)

SURGICAL APPROACH

- 1.** The vaginal route should be considered as a first choice for all benign indications. The laparoscopic approach should be considered when it reduces the need for a laparotomy. (III-B)

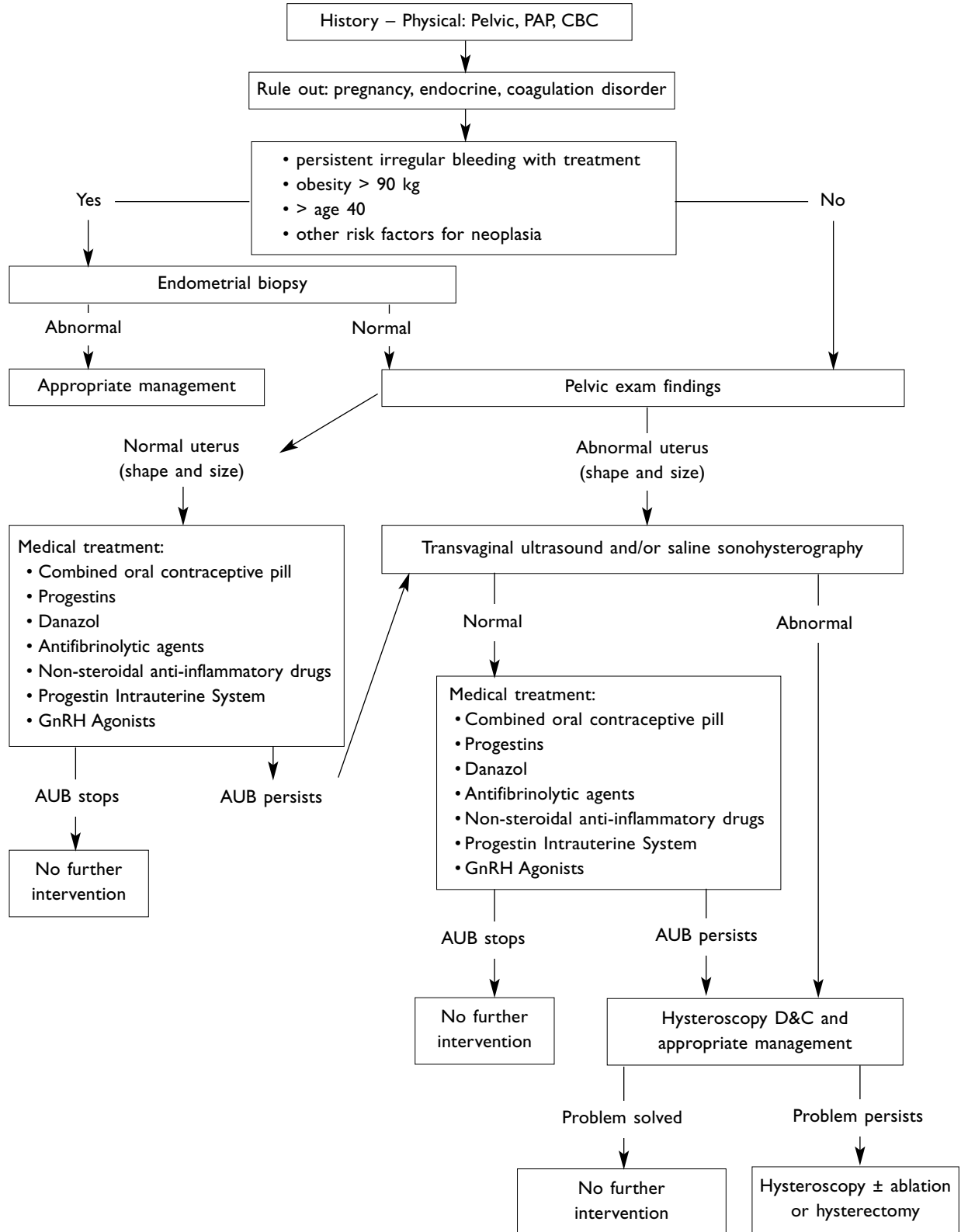
CONCLUSIONS

Important outcomes for patients include relief of symptoms, minimal complications, and optimal quality of life. Hysterectomy is highly effective for relief of symptoms and improvement of quality of life.^{7,68,69} In order to achieve the most favourable outcome, the appropriateness of the surgery must be carefully evaluated along with all available options in the context of the disease process. The patient's preference regarding therapeutic strategy is of major importance.

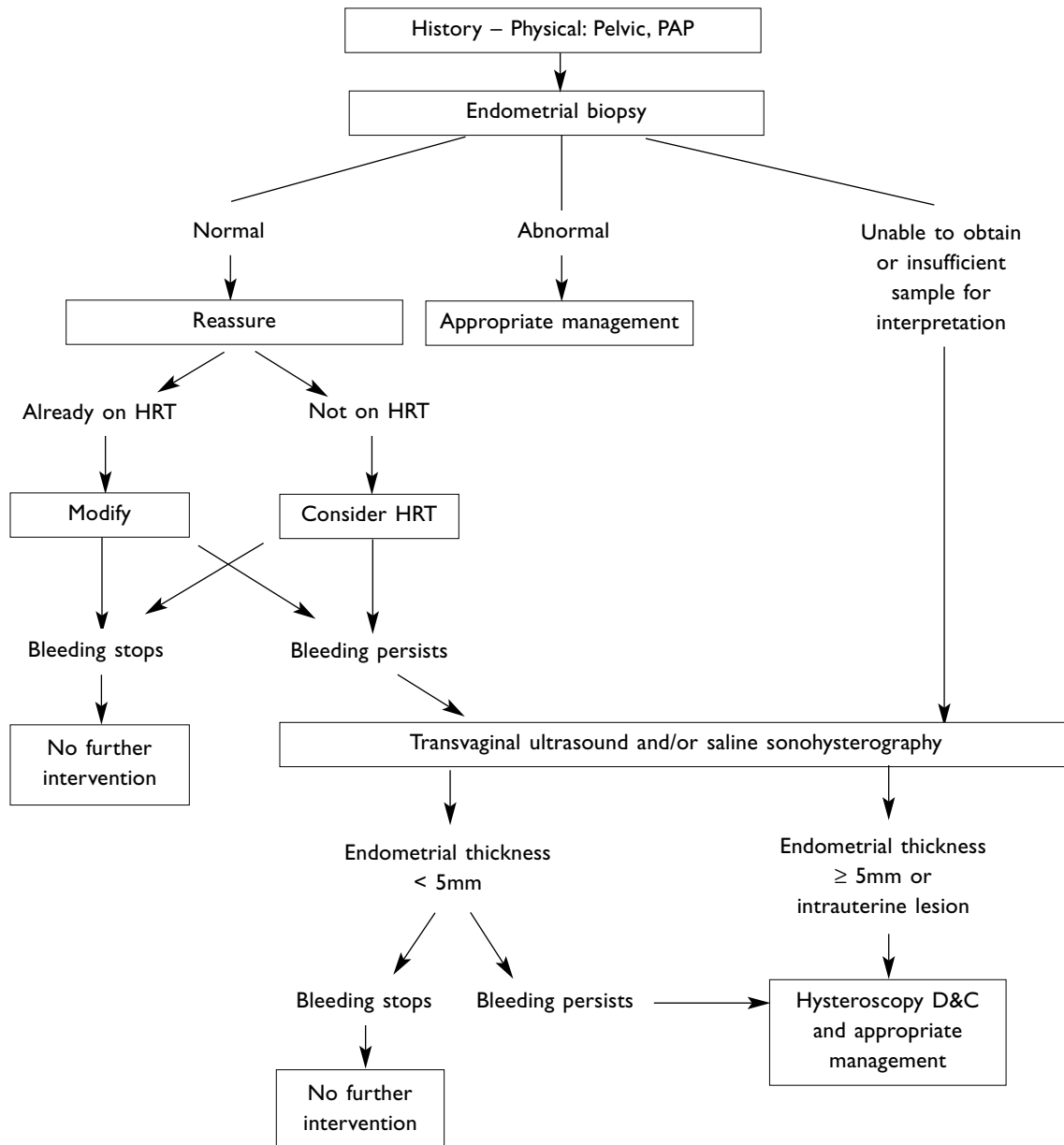
J Obstet Gynaecol Can 2002;24(1):37-48.

**MANAGEMENT OF ABNORMAL UTERINE BLEEDING:
PRE-MENOPAUSE**

Abnormal uterine bleeding is defined as changes in frequency of menses, duration of flow or amount of blood loss. The normal menstrual cycle lasts 28 ± 7 days, the flow lasts 4 ± 2 days, and the average blood loss is of 40 ± 20 ml.



**MANAGEMENT OF ABNORMAL UTERINE BLEEDING:
POST-MENOPAUSE**



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