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Guideline No. 447: Diagnosis and Management of Endometrial Polyps

(En français : Diagnostic et prise en charge du vasa prævia)

The English document is the original version; translation may introduce small differences in the French version.

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KEY MESSAGES

1. Endometrial polyps are common and can present with abnormal uterine bleeding, postmenopausal bleeding, infertility, or may be asymptomatic.
2. Transvaginal ultrasound should be first-line investigation in patients suspected to have endometrial polyps.
3. Risk of malignancy in an endometrial polyp is estimated to be between 0.5% and 5% and is higher in older patients (>60 years), postmenopausal patients, and in those experiencing postmenopausal bleeding or using tamoxifen.
4. Patients with polyps who are asymptomatic and assessed to be at low risk for malignancy can be offered expectant management.
5. Hysteroscopic polypectomy is the surgical treatment of choice to completely remove the polyp and obtain tissue for histologic assessment. This procedure can be achieved using a variety of techniques and instruments and performed in different settings. Choice of polypectomy technique should consider the following: patient factors, local access to instruments and operating room time, setting, fluid management, cost, and surgeon preference.

ABSTRACT

Objective: The primary objective of this clinical practice guideline is to provide gynaecologists with an algorithm and evidence to guide the diagnosis and management of endometrial polyps.

Target population: All patients with symptomatic or asymptomatic endometrial polyps.

Options: Options for management of endometrial polyps include expectant, medical, and surgical management. These will depend on symptoms, risks for malignancy, and patient choice.

Outcomes: Outcomes include resolution of symptoms, histopathological diagnosis, and complete removal of the polyp.

Benefits, harms, and costs: The implementation of this guideline aims to benefit patients with symptomatic or asymptomatic endometrial polyps and provide physicians with an evidence-based approach toward diagnosis and management (including expectant, medical, and surgical management) of polyps.

Evidence: The following search terms were entered into PubMed/Medline and Cochrane: endometrial polyps, polyps, endometrial thickening, abnormal uterine bleeding, postmenopausal bleeding, endometrial hyperplasia, endometrial cancer, hormonal therapy, female infertility. All articles were included in the literature search up to 2021 and the following study types were included: randomized controlled trials, meta-analyses, systematic reviews, observational studies, and case reports. Additional publications were identified from the bibliographies of these articles. Only English-language articles were reviewed.

Validation methods: The authors rated the quality of evidence and strength of recommendations using the Grading of Recommendations Assessment, Development and Evaluation (GRADE) approach. See Appendix A (Tables A1 for definitions and A2 for interpretations of strong and weak recommendations).

Intended audience: Gynaecologists, family physicians, registered nurses, nurse practitioners, medical students, and residents and fellows.

Tweetable Abstract: Uterine polyps are common and can cause abnormal bleeding, infertility, or bleeding after menopause. If patients don't experience symptoms, treatment is often not necessary. Polyps can be treated with medication but often a surgery will be necessary.

SUMMARY STATEMENTS:

1. Endometrial polyps are a common diagnosis in both pre- and postmenopausal patients (*high*).
2. Patients with endometrial polyps may present with abnormal uterine bleeding, postmenopausal bleeding, infertility, or may be asymptomatic (*high*).
3. Transvaginal ultrasound is associated with a wide range of accuracy in diagnosing endometrial polyps; however, it remains a good first-line investigation because of safety, availability, and patient acceptance *(high).*
4. In situations where the diagnosis of polyp on transvaginal ultrasound remains in question, consideration of saline-infused sonohysterography or 3D ultrasound, if available, can be considered as alternative diagnostic imaging techniques (*moderate*).
5. Hysterosalpingography, CT scanning, and MRI are not useful in the diagnosis of endometrial polyps (*high*).
6. Hysteroscopy with guided biopsy remains the gold standard for diagnosis of endometrial polyps (*high*).
7. Patients at highest risk for premalignant or malignant endometrial polyps are older (≥60y), postmenopausal, symptomatic with postmenopausal bleeding, and take tamoxifen (*high*).
8. Patients at intermediate risk of premalignant or malignant endometrial polyps are postmenopausal with no symptoms or premenopausal with abnormal uterine bleeding (*moderate*).
9. Polyp size alone has not consistently been associated with an increased risk of malignancy (*low*).
10. There are limited data to guide the management of patients with atypical or malignant pathology diagnosed within an endometrial polyp and normal or atrophic endometrium (*low*).
11. Hysteroscopic polypectomy is the most effective option for both diagnosis and treatment. The goals of hysteroscopy are three-fold: 1) complete resection, 2) minimize recurrence, and 3) obtain a pathology specimen *(high).*
12. Hysteroscopic polypectomy can be achieved using a variety of techniques and instruments, and it can be performed in different settings. Choice of polypectomy technique should consider the following: patient factors, local access to instruments and operating room time, setting, fluid management, cost, and surgeon preference (*low*).
13. Risks related to hysteroscopic polypectomy are estimated to occur in less than 3% of cases and should be discussed with the patient *(high).*
14. Endometrial polyps of any size treated with hysteroscopic polypectomy appear to improve pregnancy outcomes among those who conceive naturally or with intrauterine insemination (*high*).
15. Management of a newly diagnosed polyp during in vitro fertilization stimulation is influenced by patient prognosis, number of freezable embryos, laboratory-specific frozen embryo success rates, and accessibility of hysteroscopy (*moderate*).
16. There appears to be an association between endometrial polyps and recurrent pregnancy loss, but to date, data supporting polypectomy to reduce the risk of subsequent pregnancy loss is lacking (*low*).

RECOMMENDATIONS:

1. Transvaginal ultrasound should be used as initial investigation in patients suspected to have endometrial polyps (*strong, high*).
2. Patients who present with features suspicious for endometrial polyps and who would benefit from subsequent polypectomy should be directed toward hysteroscopy, with a plan for operative management should a polyp be diagnosed (*strong, moderate*).
3. Blind sampling to diagnose endometrial polyps via endometrial biopsy or dilation and curettage should not be performed (*strong, high*).
4. Patients with endometrial polyps who are older ($\geq$60 y), menopausal, have symptoms of postmenopausal bleeding, or are taking tamoxifen should be referred to a gynaecologist for further investigation and consideration of polyp resection (*strong, high*).
5. Referral to a gynaecologist can be considered in premenopausal patients who are symptomatic or attempting to conceive. (*conditional, moderate*).
6. A gynaecologic oncologist should be involved in managing the care of patients with premalignant or malignant lesions confined to an endometrial polyp, particularly in cases of uterine preservation (*strong, low*).
7. Expectant management can be considered for asymptomatic patients and those with a low risk of malignancy (*conditional, moderate*).
8. Polypectomy should be performed via direct hysteroscopic visualization, as this approach decreases the risk of complications, incomplete removal, and recurrence (*strong, high).*
9. Bipolar energy should be used preferentially over monopolar energy, as it reduces the risk of electrosurgical burns and fluid overload. Tissue removal systems also reduce the risk of fluid overload and avoid the risk of electrosurgical burns altogether but have functional and cost limitations (*strong, high).*
10. Patients diagnosed with an endometrial polyp should be offered hysteroscopic resection to improve their fertility potential if they are experiencing infertility, regardless of polyp size (*strong, high*).
11. When a new endometrial polyp is diagnosed during in vitro fertilization stimulation, the following options should be discussed with the patient: 1) cycle cancellation, 2) freeze-all, and 3) transfer. There is no evidence to support need to cancel the cycle (*conditional, low*).

INTRODUCTION

Endometrial polyps are a common gynecological presentation, both in pre and postmenopausal patients. They may be identified incidentally on imaging, or patients may present with abnormal uterine bleeding, postmenopausal bleeding, or infertility. The risk of malignancy in an endometrial polyp is generally low, but each patient should be individually evaluated. Treatment options include expectant, medical and surgical options. Surgical excision of a polyp is often favoured to ensure symptom resolution and obtain histological assessment. The objective of this guideline is to summarize the available evidence on the diagnosis and management of endometrial polyps for obstetrician gynaecologists in Canada. The scope of this guideline is limited to patients presenting with endometrial polyps. This guideline does not address the management of malignant endometrial polyps.

EPIDEMIOLOGY

Endometrial polyps, defined as a localized intrauterine lesion consisting of endometrial glands, stroma, and blood vessels covered by epithelium, are common.[1] Although the exact pathophysiology of polyp development is still under investigation, evidence suggests that their growth is stimulated by estrogen.[2,3] Endometrial polyps contain both estrogen and progesterone receptors at higher concentrations than found in normal endometrium.[4,5]

The prevalence of endometrial polyps varies by the demographic characteristics of the population studied, as well as by patient's clinical presentation and diagnostic investigations performed. Approximately 10%–20% of patients presenting with abnormal uterine bleeding will have an endometrial polyp.[6-8] In the infertile population, the reported prevalence of endometrial polyps varies widely, ranging from 6% to 32%.[9,10] The prevalence of polyps in asymptomatic premenopausal women is approximated 0.5%–12.1%.[6,11] Endometrial polyps are found in up to 60%–70% of postmenopausal patients with asymptomatic thickened endometrial lining (≥6mm), representing the most common cause of the condition.[12-14] Clinical risk factors for developing endometrial polyps include age, menopausal status, obesity, hypertension, polycystic ovary syndrome, and use of tamoxifen.[6,15-18] Estrogen and progesterone therapy use post menopause has been demonstrated to increase the risk of polyps in some studies,[4,6,19] but not others.[15,20,21]

Endometrial polyps may be asymptomatic and incidentally identified either on imaging or on histologic or hysteroscopic assessment of the endometrial cavity.[6,11-14] When symptomatic, they most commonly present with abnormal uterine bleeding or postmenopausal bleeding, [6] but can also be present in the context of infertility.[10]

Summary Statements 1 and 2

DIAGNOSIS

Endometrial polyps can be diagnosed via imaging studies or direct visualization, typically with pathologic confirmation following tissue sampling. Transvaginal ultrasound is commonly used as an initial investigation. Ultrasonographic features in keeping with a diagnosis of endometrial polyps are nonspecific and include hyperechoic focal endometrial mass with or without vascularity and distortion of the endometrial contour (interrupted mucosa sign).[22-24] Less commonly, cystic spaces corresponding to dilated glands filled with proteinaceous fluid may be seen within the polyp, or the polyp may appear as a nonspecific endometrial thickening within the endometrial cavity. The accuracy of transvaginal ultrasound in diagnosing endometrial polyps varies widely in the literature, with sensitivity and specificity reported from 19% to 96% and 53% to 100%, respectively.[23,25] This is likely due to the limited sample sizes of the included studies as well as heterogeneity stemming both from the patient populations and variability in sonographic operator proficiency. Patient factors, such as timing in the menstrual cycle and menopausal status, affect the accuracy of ultrasound findings, with performance improved during the follicular phase[4] and in postmenopausal patients.[26]

To improve the accuracy of transvaginal ultrasound in diagnosing endometrial polyps, 3D and power Doppler applications have been studied. 3D ultrasound can provide additional information regarding endometrial contour and thickness, which can be particularly helpful in cases of intrauterine anomalies.[27] These 3D measurements have been demonstrated to increase the sensitivity and specificity of transvaginal ultrasound to 65.6% and 89%.[28] The addition of power Doppler studies to transvaginal ultrasound allows for observation of abnormal vascular

ABBREVIATIONS

IUI	Intrauterine insemination
IVF	In vitro fertilization
LNG-IUS	Levonorgestrel-releasing intrauterine system
SIS	Saline-infused sonohysterography
TRS	Tissue removal system

patterns that can differentiate an endometrial polyp from leiomyoma or hyperplasia.[29] In the case of endometrial polyp, a single feeding "sentinel" vessel is considered characteristic.[30] The inclusion of power Doppler at the time of transvaginal ultrasound has been shown to increase the sensitivity and specificity of transvaginal ultrasound to 81.2%–97% and 88.2%–100%, respectively.[25,30,31] The addition of 3D and power Doppler studies to standard 2D transvaginal ultrasound requires additional training to perform accurately. In situations where an endometrial polyp is suspected based on 2D transvaginal ultrasound, the option of repeating the ultrasound with these adjuncts in order to diagnose an endometrial polyp should be weighed against the option of moving forward with a diagnostic and therapeutic procedure, particularly in situations where treatment of pathology would be indicated.

Saline-infused sonohysterography (SIS), which defines the polyp as an echogenic mass outlined in fluid,[22] has a sensitivity of 87%–93% and a specificity of 81%–91% in diagnosing endometrial polyps.[32,33] A Cochrane review evaluated the addition of 3D technology to SIS; however, it was unable to show significant improvement in the diagnosis of endometrial polyps, as 2D SIS was already very accurate.[15] When a transvaginal ultrasound suggests a polyp, additional imaging such as SIS or 3D transvaginal ultrasound may be considered if available, or the provider can move on to direct visualization via hysteroscopy.

Hysterosalpingography can identify polyps as nonspecific filling defects within the endometrial cavity with a sensitivity of 98% but a specificity of only 35%, compared with hysteroscopy.[34] Disadvantages of this technique include exposure to ionizing radiation and patient discomfort. Contrast-enhanced CT scanning has been found to identify thickened endometrium with a sensitivity of 53% and a specificity of 94%, compared with ultrasound[35]; however, CT scanning also involves exposure to ionizing radiation and is not able to differentiate between pathologies that can present with a thickened endometrium. Diffusion-weighted MRI identifies polyps as low-signal-intensity intracavitary masses and can differentiate polyps from malignant endometrial pathology[36]; however, it is associated with high cost and limited availability. Because of these disadvantages, hysterosalpingography, CT scan, and MRI are not recommended for the diagnosis of endometrial polyps.

Blind sampling, either through endometrial biopsy or dilation and curettage, is ineffective at diagnosing endometrial polyps, with a sensitivity of 8.4–46%.[37,38] Microscopically, endometrial polyps are composed of a mixture of stroma, vascular channels, and glandular spaces covered by a surface epithelium.[39] A useful histologic feature in diagnosing an endometrial polyp is the parallel arrangement of the endometrial glands' long axis to the surface epithelium.[40] This arrangement of glands to surface epithelium is best seen when polyps are removed intact. Blind sampling may miss pedunculated polyps or result in fragmented or incomplete removal of an endometrial polyp, limiting the utility of this approach for diagnosis and treatment of endometrial polyps.

Hysteroscopy with guided biopsy remains the gold standard for the diagnosis of endometrial polyps. In addition to allowing direct visualization of endometrial polyps for diagnostic purposes, hysteroscopy facilitates the appraisal of size, number, location, consistency, characteristics of the base, and vascularity of polyps.[41] This information is valuable when considering therapeutic approaches. Hysteroscopy has traditionally been performed in operative settings; however, several studies suggest that in-office hysteroscopy is a feasible alternative, associated with reduced need for anaesthesia and its associated risks, improved recovery, and better time- and cost-effectiveness.[22,23,25]

Summary Statements 3, 4, 5, 6 and Recommendations 1, 2, 3

RISK OF MALIGNANCY

While most endometrial polyps are benign, premalignant and malignant lesions can be found in 0.5% to 3.4%–5.4% of endometrial polyps.[42-44] Rates of malignancy as high as 12%–13% have been reported, depending on the patient population under review.[45,46] It is important not to underestimate this possibility and recognize clinical risk factors for malignancy to guide patient counselling, investigation, and treatment plans. Age greater than 60 years,[43,44,46-51] postmenopausal status,[42-44,47-54] and the presence of abnormal uterine bleeding (including postmenopausal bleeding)[42-44,49-53,55] are consistently associated with higher prevalence of premalignant or malignant pathology within endometrial polyps. Other risk factors that are less reliably correlated with increased rates of premalignant or malignant pathology include polyp size,[44,49,55,56] obesity,[43,47,49] systemic arterial hypertension,[43,47-49] and diabetes mellitus.[43,47] While some studies suggest that menopausal hormonal therapy may be associated with the development of endometrial polyps in postmenopausal women,[6,57] menopausal hormonal therapy does not increase the risk of malignancy in polyps.[43,44,47,49-52]

Tamoxifen therapy is linked to an increased risk of endometrial polyp malignancy regardless of years of use. [43,58-61]

The highest risk group for premalignant or malignant endometrial polyps are older patients, postmenopausal patients, and those experiencing postmenopausal bleeding. These patients should be referred to a gynaecologist for further assessment. Patients on tamoxifen should also be given special consideration as an at-risk group, and polyp resection should be planned regardless of menopausal status. Premenopausal patients with endometrial polyps are at higher risk for premalignant or malignant lesions if symptoms of abnormal uterine bleeding are present, and referral to a gynaecologist should be considered. Patients who have additional risk factors for endometrial cancer or are seeking treatment for infertility should also be referred to a gynaecologist. In the studies that found that polyp size correlated with premalignant or malignant pathology, malignancy risk was increased with lesions greater than 10 mm.[44,49,55,56]

Endometrial polyps can be associated with an increased risk of malignancy within subgroups of patients. However, polyps are not generally considered a precursor to cancer.[62] Cases of premalignant or malignant pathology confined to an endometrial polyp can pose a challenge for practitioners and patients in deciding on further management. In a study of women desiring to preserve their fertility, resectoscopic treatment of the polyp without other treatment did not lead to higher recurrence rates of atypical polyps.[63] In a small study of postmenopausal women with atypical endometrial polyps, hysteroscopic resection alone was not associated with a risk of recurrence when the polyp base and surrounding endometrium were benign.[64] A 2016 systematic review conducted by de Rijk and colleagues evaluated incidence endometrial cancer when atypia is diagnosed within an endometrial polyp.[62] They noted a 5.6% risk of concurrent endometrial cancer on the final hysterectomy specimen after atypia was diagnosed in a polyp; however, the authors cautioned that the small number of studies included and heterogeneity in study characteristics could have led to bias when interpretating results. There is insufficient evidence to determine whether hysteroscopic resection in isolation is adequate for treating atypia or endometrial carcinoma confined to an endometrial polyp. In cases where the treatment plan is to only resect the atypical polyp, for example in patients desiring to preserve fertility or who are poor surgical candidates, the polyp base and surrounding endometrium should be free of cancer. This would not be considered standard of care, and consultation with the gynaecologic oncology team would be recommended.

In a situation where a polyp cannot be resected in a patient deemed to be at higher risk for malignancy, a hysterectomy may be considered for definitive treatment. The surgical risk of hysterectomy must be weighed against the risk of malignancy.

Summary Statements 7, 8, 9, 10 and Recommendations 4, 5, 6

TREATMENT

Treatment options for endometrial polyps include expectant and medical management, as well as surgical excision. The choice of treatment should be guided by the patient's symptomatology (or lack thereof) as well as the risk of malignancy.

If a patient meets criteria for endometrial biopsy sampling (e.g., experiencing postmenopausal bleeding), it should be performed without delay for hysteroscopic assessment of a polyp.

Expectant

The natural history of endometrial polyps can be difficult to predict. Approximately 25% of polyps regress spontaneously within one year, with higher likelihood in those measuring <10 mm.[11] Spontaneous regression is more common in premenopausal patients.[65] Expectant management may be considered in asymptomatic patients who are assessed to have a low risk of endometrial malignancy.[66]

There is currently a paucity of evidence to guide expectant management, with respect to the need for further repeat imaging or assessment. Patient characteristics and risk of malignancy must be considered. Repeat imaging in 6—12 months may be considered if the patient remains asymptomatic but has risk factors for uterine malignancy. Imaging results should record the polyp's characteristics, surrounding endometrial thickness, and any concerning changes in appearance.

Medical

Primary Treatment

Several studies testing progesterone treatment of polyps have shown promising results. Administration of 25 mg of subcutaneous progesterone for 7 days during the luteal phase demonstrated polyp regression in 47.5% of the treatment group versus 12.5% of the control group after 3 months.[67] Similarly, an open-label, single-arm trial of oral

dydrogesterone 10 mg twice daily administered on days 15–24 of the menstrual cycle found an overall efficacy rate of 51.67% in terms of symptomatic and sonographic improvement, with 95.1% symptom improvement and 55% improvement in ultrasound findings after 3 months of treatment.[68] Efficacy was positively correlated to age, polyp size, and blood flow.[68] Chowdary and colleagues[69] performed a pilot study wherein patients with a confirmed polyp diagnosed at outpatient hysteroscopy received a 52 μg levonorgestrel-releasing intrauterine system (LNG-IUS).[69] Upon return for operative hysteroscopic polypectomy, the researchers found polyps in only 37% of the intervention group versus 80% of the control group, with an absolute risk reduction of 43%.[69] While all medical options are in early phase trials, they represent promising future directions.

Prevention

Like polyp regression, LNG-IUS can be considered for prevention of endometrial polyps in select, high-risk populations.[66] A Cochrane review reported that in tamoxifen users the LNG-IUS reduced the incidence of polyps in both short- (12 mo) and long-term (24-60 mo) follow-up.[70] If polyp incidence is assumed to be 23.5%, the LNG-IUS would reduce it to 3.8%–10.7%. However, it should be noted that the incidence of abnormal bleeding was increased with the LNG-IUS at both time periods.[70]

Surgical

Surgical management is the most effective treatment for endometrial polyps. This can be divided into conservative and radical management. Conservative management can be subdivided into blind and hysteroscopic methods.

Conservative

Blind Resection. The sensitivity of blind dilation and curettage to detect endometrial polyps is only 8.4%.[16] The addition of polyp forceps increases this number to 41%[71] but brings with it the risk of incomplete removal, recurrence, and rare but serious complications, including uterine and visceral trauma.[66] Blind techniques are therefore not recommended. If hysteroscopy is not available, patients should be referred to access this intervention.[5]

Hysteroscopic Polypectomy. Hysteroscopic polypectomy is the most effective option for both diagnosis and treatment. The goals of hysteroscopy are three-fold: 1) complete resection (to the level of the endometrial basalis), 2) minimize recurrence, and 3) obtain a pathology specimen.[72] Depending on the pathology results and patient characteristics, polyp visualization, excision, and removal can be achieved using either mechanical or electrosurgical approaches, in the office, outpatient clinic, or operating room setting (Table 1).[66]

Table 1. Hysteroscopic approaches to polypectomy

Mechanical	Electrosurgical
Scissors/graspers	Monopolar
Cold loop	Bipolar
Tissue removal systems	

Mechanical Instruments. Classic polyp removal involves reusable scissors and graspers.[73] This low-cost intervention can be used in any procedural setting but is limited by the fragility of the instruments and inability to control bleeding. Its use should be limited to smaller, glandular polyps [66,71]

The use of polyp forceps followed by immediate repeat hysteroscopy has also been used. In a study by Gebauer and colleagues, blind dilation and curettage was performed.[71] After repeat hysteroscopy, a second curettage and forceps resulted in complete polyp extraction in 23/27 (85%) patients, with the 4 remaining patients requiring either direct visualization and removal with biopsy forceps or resectoscopy. Although this approach is an option, given its lower rates of complete resection, it is not recommended.

Tissue Removal Systems. Tissue removal systems (TRSs) consist of a bespoke 0° or 30° hysteroscope with an operating channel (TRUCLEAR and MyoSure). A disposable cutting handpiece, made of two hollow tubes with a small distal window with rotary blade edges, is inserted through the hysteroscope and attached to external suction. The tissue is aspirated through the window while the blade mechanically cuts the specimen, which gets suctioned inside and trapped into a tissue collector. This continuous suction prevents blood and debris from obstructing visibility.[66] Various sizes of TRSs are available depending on the size and location of the polyp. Manual options are available for these systems, which reduce the cost and complexity of set-up. TRSs avoid electrosurgical risks and are easy to use, with a fast learning curve and shorter operative time. However, the side-cutting window does not function as well at the fundus and cornua, and it is a relatively high-cost technology.[74]

Resectoscope. The larger diameter resectoscope allows for removal of large, more fibrous polyps under general anaesthesia or conscious sedation.[66] Polyps can be removed in strips or by cutting at the polyp base, then removed by grasping it with the loop. The standard

Table 2. Comparison between monopolar vs. bipolar energy use in resectoscopes

Characteristics	Monopolar	Bipolar
Energy	Monopolar	Bipolar
Distension medium	Hypotonic solution: o 1.5% glycine o Sorbitol	Isotonic solution: o Normal saline o Ringer's lactate
Fluid overload, mL	1000	2500
Fluid overload in patients with cardiovascular or renal disease, mL	750	1500
Risks	Risk of: o Electrolyte disturbance o Electrosurgical burns	Lower risk of: o Electrolyte disturbance o Electrosurgical burns

Table References:

Umranikar S, Clark TJ, Saridogan E, et al. BSGE/ESGE guideline on management of fluid distension media in operative hysteroscopy. Gynecological Surgery. 2016;13:289-303. Available at https://doi.org/10.1007/s10397-016-0983-z.

Munro MG, Storz K, Abbott JA, et al. AAGL Practice Report: Practice Guidelines for the Management of Hysteroscopic Distending Media: (Replaces Hysteroscopic Fluid Monitoring Guidelines. J Am Assoc Gynecol Laparosc. 2000;7:167-168.). J Minim Invasive Gynecol. 2013;20:137-48.

resectoscope is composed of a hysteroscope, an inner and outer sheath, and a loop electrode, connected to a radiofrequency electrosurgical generator.[74] Resectoscopic instruments are traditionally 24 and 26 Fr in size, although the newer mini-resectoscope is 16 Fr and can be considered for office use.[73] In general, there is a higher degree of skill required for this approach, and complications include increased trauma from cervical dilation, electrosurgical injury, and fluid overload.[66] Resectoscopes can use monopolar or bipolar energy, as compared in Table 2.

Choice of Technique

Mechanical methods have been shown to be faster than resectoscopic removal.[74] TRSs have a shorter operating time, lower fluid deficits, faster learning curves, and better visualization than the resectoscope.[75,76] However, the cost of polypectomy is significantly higher when using disposable equipment. The cost-effectiveness of the chosen approach should be balanced against the technical expertise required to perform this procedure.[77] Table 3 reviews common considerations in choosing a surgical approach.

Setting

Diagnostic and operative hysteroscopy may be performed in the operating room or outpatient/clinic setting. The safety and feasibility of ambulatory hysteroscopy has been consistently demonstrated in large-scale studies.[78,79] A review and summary of anaesthetic options for hysteroscopy is available in other literature.[80] Analgesia options for patients include oral acetaminophen, non-steroidal anti-inflammatory drugs, nitrous oxide, and opioids if necessary.[81] Local anaesthetic (paracervical block) as well as intravenous sedation may be administered as well.[81] Several other non-pharmacologic practices can help reduce pain and improve the patient experience, including the use of music or conversation in the clinic, proper positioning, using vaginoscopy to gain intrauterine access, and employing smaller hysteroscopes.[82] Hysteroscopic polypectomy may be performed with cold scissors or the TRS in this setting.

Office or outpatient hysteroscopy offers a safe, effective, and cost-saving alternative to traditional hysteroscopy performed in the operating room.[83] A 2019 systematic review suggested a potential increase in postoperative pain following office/outpatient hysteroscopy compared with hysteroscopy performed under general anaesthesia;

Table 3. Considerations in choosing surgical technique

Factor	Considerations
Patient	o Polyp size and description o Specific anatomic restrictions (i.e., cervical stenosis) o Comorbidities
Local access	o Instruments o Operating room time
Setting	o Office or outpatient clinic (more suitable for smaller- diameter instruments) o Resectoscopic techniques
Fluid management	o Type of fluid in relation to patient comorbidities o Length of procedure o Chance of reaching maximal fluid deficits
Cost	o Mechanical < resectoscopic < tissue removal system
Surgeon	o Skill level o Comfort o Expertise

however, the authors cautioned the interpretation of this finding given the limited number of studies examining this outcome, as well as the noted study variability.[83]

Complications

Complications associated with hysteroscopic surgery can be classified as intraoperative or postoperative in nature. Intraoperative complications include uterine perforation, fluid overload and subsequent sequalae, hemorrhage, and intraabdominal visceral injury. Some patients experience a vasovagal reaction with cervical dilation. Anaesthetic complications may occur, including local anaesthetic toxicity. Overall, studies suggest that intraoperative complications related to hysteroscopy are low (0.28%−3%) and less likely to occur with polypectomy compared with other procedures such as myomectomy.[73,84-86]

Postoperative complications may include infection and hemorrhage, which typically present in the early recovery period. Later complications can include development of intrauterine adhesions.

Summary Statements 10, 11, 12 and Recommendations 7, 8, 9

SPECIAL CONSIDERATION – FERTILITY

Prevalence

In the infertile population, the reported prevalence of endometrial polyps varies widely, ranging from 6% to 32%, owing to heterogeneity in the diagnostic imaging modality used for diagnosis and characteristics of the study populations.[9,10]

Polyps may impact fertility by hindering movement of sperm through the tubal ostia or by physically or chemically impairing embryo implantation. [87-91]

Clinical Scenarios

Natural Conception

Studies generally demonstrate an improvement in pregnancy rate following hysteroscopic removal of polyps, [92-95] irrespective of the size of the polyp (<1cm or >1cm).

Intrauterine Insemination

A randomized controlled study of 215 patients with infertility who were candidates for intrauterine insemination (IUI) had a 2-fold higher pregnancy rate (51% versus 25%) following hysteroscopic polypectomy compared with diagnostic hysteroscopy. [96] Furthermore, 65% of the pregnancies were conceived in the 3 months following hysteroscopy, before initiating IUI treatment. The improvement in pregnancy rate was irrespective of polyp size.

A prospective comparative study of 110 patients undergoing IUI demonstrated a cumulative pregnancy rate of 38.3% after 4 cycles of IUI in the treatment group (hysteroscopic polypectomy) versus 18.3% in the control group. [97] Similarly, the size of the polyp ($\leq$ 1 cm or > than 1cm) did not impact the cumulative pregnancy rate. [92,97,98] The improvement in pregnancy rate may be directly related to the polyp resection but could also be influenced by the act of cervical dilation or irrigation of the uterine cavity and fallopian tubes at the time of surgery. [99]

In Vitro Fertilization

The removal of polyps identified during the infertility workup has become accepted practice in patients planning in vitro fertilization (IVF), likely because of extrapolation from data in the IUI population, as well as the low risk of surgical complications or postoperative adhesion formation with hysteroscopic polypectomy. The time interval between hysteroscopic polypectomy and subsequent embryo transfer does not appear to impact implantation, clinical pregnancy, miscarriage, or live birth rates, so IVF could be initiated as soon as the next menstrual cycle after polypectomy.[93]

However, the appropriate management of *newly* discovered suspected polyps during the follicular phase of ovarian stimulation for IVF remains uncertain. Management options include[100]:

1) Cancelling the cycle and performing hysteroscopic polypectomy;
2) Continuing ovarian stimulation and egg retrieval, but delaying frozen embryo transfer until after hysteroscopic polypectomy; or
3) Proceed with fresh embryo transfer as planned.

Although studies examining this question have significant limitations due to small sample sizes and potential confounders, they do not suggest that cycle cancellation followed by hysteroscopic polypectomy (option 1) is associated with higher pregnancy and live birth rates.[101-103]

In 1999, Lass and colleagues compared pregnancy rates of those who elected for option 2 over option 3, listed above. There were no statistical differences in pregnancy rates, but the results are limited by the age of the study (and

embryo freezing techniques at the time) as well as by the fact that histological diagnosis of endometrial polyp was only confirmed in 57% of patients in the group that selected option 2. [101] Similarly, a 2006 retrospective study suggested that suspected polyps <1.5cm found at the time of IVF stimulation did not adversely affect pregnancy/implantation rates.[102] However, the power of this study was low owing to small sample size, as it included only 15 patients with a *suspected* polyp. Finally, a cross-sectional study by Ghaffari and colleagues in 2016 suggested that performing hysteroscopic polypectomy for incidental findings of a polyp during IVF stimulation does not improve pregnancy outcomes compared with expectant management without cycle cancellation.[103]

Recurrent Pregnancy Loss

The reported prevalence of acquired uterine anomalies, including endometrial polyps, among patients with recurrent pregnancy loss varies between 6% and 15%, depending on the definition of recurrent pregnancy loss and the diagnostic modality used.[104] An association between endometrial polyps and early pregnancy loss is suspected, but data demonstrating causality is lacking. To date, there is insufficient evidence for international guidelines to recommend hysteroscopic polypectomy for recurrent pregnancy loss. [105-107] The decision to perform hysteroscopic polypectomy for otherwise unexplained recurrent pregnancy loss may be justified by more robust data demonstrating benefit in the infertility literature and the minimal risk of outpatient hysteroscopy.[96]

Summary Statements 13, 14, 15, 16 and Recommendations 10, 11

Conclusion

Endometrial polyps are common, and can present with abnormal uterine bleeding, infertility, or postmenopausal bleeding. Many are found incidentally on imaging. Investigations for endometrial polyps typically start with transvaginal ultrasound, but diagnostic capability may be improved with SIS or 3D ultrasound. Hysteroscopy can offer diagnosis and treatment or removal of polyps.

Treatment or removal of polyps may be indicated for symptom management or if there is a high risk of malignancy. In general, the risk of malignancy in endometrial polyps is estimated at 0.5%–5.5%. Age greater than 60 years, postmenopausal status, and the presence of abnormal uterine bleeding (including postmenopausal bleeding) have been consistently associated with higher prevalence of premalignant or malignant pathology within endometrial polyps. Patients identified to have a high risk of malignancy should be referred to a gynaecologist for assessment and consideration of polyp removal.

Treatment options for endometrial polyps include expectant, medical and surgical management. Hysteroscopic polypectomy is the standard of surgical management and offers the benefit of polyp removal for histopathologic assessment. There are several polypectomy techniques available, including variations in instruments, settings, and analgesia/anaesthesia used. Choice of polypectomy technique should consider the following: patient factors, local access to instruments and operating room time, setting, fluid management, cost, and surgeon preference.

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APPENDIX A

Table A1. Key to Grading of Recommendations, Assessment, Development and Evaluation Quality of Evidence

Grade	Definition
Strength of recommendation	
Strong	High level of confidence that the desirable effects outweigh the undesirable effects (strong recommendation for) or the undesirable effects outweigh the desirable effects (strong recommendation against)
Conditional (weak)[a]	Desirable effects probably outweigh the undesirable effects (weak recommendation for) or the undesirable effects probably outweigh the desirable effects (weak recommendation against)
Quality of evidence	
High	High level of confidence that the true effect lies close to that of the estimate of the effect
Moderate	Moderate confidence in the effect estimate: The true effect is likely to be close to the estimate of the effect, but there is a possibility that it is substantially different
Low	Limited confidence in the effect estimate: The true effect may be substantially different from the estimate of the effect
Very low	Very little confidence in the effect estimate: The true effect is likely to be substantially different from the estimate of effect

Adapted from GRADE Handbook (2013), Table 5.1.
[a]Do not interpret conditional (weak) recommendations to mean weak evidence or uncertainty of the recommendation.

Table A2. Implications of Strong and Conditional (Weak) recommendations, by guideline user

Perspective	Strong Recommendation • "We recommend that…" • "We recommend to not…"	Conditional (Weak) Recommendation • "We suggest…" • "We suggest to not…"
Authors	The net desirable effects of a course of action outweigh the effects of the alternative course of action.	It is less clear whether the net desirable consequences of a strategy outweigh the alternative strategy.
Patients	Most individuals in the situation would want the recommended course of action, while only a small proportion would not.	The majority of individuals in the situation would want the suggested course of action, but many would not.
Clinicians	Most individuals should receive the course of action. Adherence to this recommendation according to the guideline could be used as a quality criterion or performance indicator.	Recognize that patient choices will vary by individual and that clinicians must help patients arrive at a care decision consistent with the patient's values and preferences.
Policy makers	The recommendation can be adapted as policy in most settings.	The recommendation can serve as a starting point for debate with the involvement of many stakeholders.

Adapted from GRADE Handbook (2013), Table 6.1.