Endometrial polyps are a localized endometrial intrauterine overgrowth that may be single or multiple, may measure from a few millimeters to centimeters, and may be sessile or pedunculated [1]. Endometrial polyps consist of endometrial glands, stroma, and blood vessels [2]. Risk factors for the development of endometrial polyps include age, hypertension, obesity, and tamoxifen use [3,4]. Endometrial polyps may be asymptomatic [5], and when symptoms occur they most commonly include abnormal (including postmenopausal) uterine bleeding [5,6] and less commonly infertility [7]. Malignancy is uncommon and occurs in 0% to 12.9% of endometrial polyps, depending on the population studied [6].

Identification and Assessment of Evidence

This AAGL practice guideline was produced with the following search methodology; electronic resources including Medline, PubMed, CINAHL, the Cochrane Library (including the Cochrane Database of Systematic Reviews), Current Contents and EMBASE were searched for all publications in relation to Endometrial polyps (1951 to week 30 2010). The MeSH terms included all subheadings and keywords included “endometrial polyps,” “intrauterine pathology,” “endometrial polyp and malignancy,” “diagnosis of endometrial polyps,” “management of endometrial polyps,” “intrauterine surgery,” “intrauterine pathology and infertility.”

The search was not restricted to English language, with committee members fluent in languages other than English reviewing relevant publications and providing related information to the committee, translated into English. The full text of all publications was retrieved, abstracted, and tabulated. Relevant publications were then reviewed and
Endometrial polyps are a common gynecologic disorder whose incidence is unknown because many polyps are asymptomatic [8–11]. The prevalence is reported to be between 7.8% to 34.9%, depending on the population studied [5,12–14].

Risk factors for the development of endometrial polyps include age, hypertension, obesity, and tamoxifen use [3,4]. Increasing age appears to be the best-documented risk indicator for endometrial polyps. The prevalence of endometrial polyps appears to increase by age during the reproductive years, but it is not clear whether it continues to rise or decreases after menopause [5,14–18]. It is accepted that the evidence to reliably arrive at this information is difficult to obtain. There appears to be an association between the finding of endometrial polyps and other benign diseases including myomas, cervical polyps, and endometriosis [11,18–20].

Women using tamoxifen are at specific risk for development of polyps, with Class II studies reporting up to 30% to 60% prevalence [17,21–23]. Data regarding an eventual relationship between hormone therapy and endometrial polyps are contradictory, as some studies report higher prevalence of endometrial polyps in women using hormone therapy [24,25], whereas others do not [26–30]. A progestogen with high antiestrogenic activity, as well as use of oral contraceptive pills may have a protective effect on the development of endometrial polyps [24,31]. The use of the levonorgestrel-releasing intrauterine devices as a treatment for endometrial polyps or to prevent their development in a low-risk population has not yet been evaluated.

Most women with symptomatic endometrial polyps present with abnormal uterine bleeding, and this has been recently classified AUB-P for premenopausal women endorsed by FIGO [32]. Polyps are found in 10% to 40% of women suffering from premenopausal bleeding [14,16,20], and symptoms do not correlate with polyp number, diameter or location [33].

The prevalence of endometrial polyps appears to be increased in infertile women. In a large prospective trial including 1000 infertile women scheduled for in vitro fertilization, the prevalence of endometrial polyps was found to be 32% [7]. The high prevalence of endometrial polyps in infertile women suggests a causative relationship between the presence of endometrial polyps and infertility. However, a causal relationship between endometrial polyps and infertility appears to have been confirmed in only one randomized trial [34].

Although uncommon, both atypical hyperplasia and endometrial cancer may originate from endometrial polyps. The results of previous case series indicate that malignancy occurs within 0% to 12.9% of endometrial polyps [14,35–41]. Most authors agree that the risk of malignancy in endometrial polyps increases with age and that the risk of malignancy in premenopausal women appears to be low. The presence of symptoms (abnormal uterine bleeding) has been identified as a possible risk indicator of malignancy within endometrial polyps [37,39,42–44]. Polyp size also appears to be a risk indicator for malignant endometrial polyps [36,37]. Although the reports are not consistent, other known risk factors for endometrial carcinoma, such as obesity, diabetes mellitus, and hypertension have also been reported to increase the risk of malignancy within endometrial polyps [14,40,45]. The use of tamoxifen appears to increase the risk of atypical hyperplasia and malignancy in endometrial polyps [3,45,46].

The knowledge regarding the natural history and clinical consequences of endometrial polyps without treatment is limited. In one class II study, 27% of the endometrial polyps regressed spontaneously during a 1-year follow-up [11]. Polyps that regress tend to be smaller compared with polyps that persist [11,47].

### Guidelines for Recognizing the Presence of Endometrial Polyps

1. Increasing age is the most common risk factor for the presentation of an endometrial polyp (Level B).

### Table 1

<table>
<thead>
<tr>
<th>Level</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td>Evidence obtained from at least one properly designed randomized controlled trial.</td>
</tr>
<tr>
<td>II-1</td>
<td>Evidence obtained from well-designed controlled trials without randomization.</td>
</tr>
<tr>
<td>II-2</td>
<td>Evidence obtained from well-designed cohort or case-control analytic studies, preferably from more than one center or research group.</td>
</tr>
<tr>
<td>II-3</td>
<td>Evidence obtained from multiple time series with or without the intervention. Dramatic results in uncontrolled experiments also could be regarded as this type of evidence.</td>
</tr>
<tr>
<td>III</td>
<td>Opinions of respected authorities, based on clinical experience, descriptive studies, or reports of expert committees.</td>
</tr>
</tbody>
</table>

On the basis of the highest level of evidence found in the data, recommendations are provided and graded according to the following categories:

- **Level A**—Recommendations are based on good and consistent scientific evidence.
- **Level B**—Recommendations are based on limited or inconsistent scientific evidence.
- **Level C**—Recommendations are based primarily on consensus and expert opinion.
2. For women with symptoms with a polyp, abnormal uterine bleeding is the most common presenting symptom (Level B).

3. Infertile women are more likely to be diagnosed with an endometrial polyp (Level B).

4. Polyps may naturally regress in up to 25% of patients, with small polyps more likely to resolve spontaneously (Level A).

5. Medications such as tamoxifen may predispose to the formation of endometrial polyps (Level B).

Malignancy arising in polyps is uncommon with increasing age; symptoms of abnormal bleeding and tamoxifen use increase this possibility (Level B).

**Diagnosis**

**Imaging**

On transvaginal ultrasonography (TVUS) an endometrial polyp typically appears as a hyperechoic lesion with regular contours within the uterine lumen, surrounded by a thin hyperechoic halo [10]. Cystic spaces may be seen within the polyp [48], or the polyp may appear as a nonspecific endometrial thickening or focal mass within the endometrial cavity [49]. These sonographic findings are not specific and may be found with other diseases such as myomas [50]. Performance of TVUS in the proliferative phase of the menstrual cycle is likely to provide the most reliable results [51]. Repetition of ultrasonography in the postmenstrual phase may help to differentiate “polypoidal endometrium” from a true polyp, the ultimate diagnosis being histologic.

TVUS has a reported sensitivity of 19% to 96%, specificity of 53% to 100%, positive predictive value (PPV) of 75% to 100%, and negative predictive value (NPV) of 87% to 97% to diagnose endometrial polyps compared with hysteroscopy with guided biopsy [13,52–58]. A paucity of level I evidence may explain this wide range of data, as well as studies describing a small number of patients. In a single, large, level II-2 study the reported sensitivity, specificity, PPV, and NPV of TVUS was 86%, 94%, 91% and 90%, respectively [55].

The addition of color-flow or power Doppler respectively may improve the diagnostic capability of TVUS. Color-flow Doppler may demonstrate the single feeding vessel typical of endometrial polyps [49]. Power Doppler is reported to increase sensitivity to 91% and 97% in patients with and without symptoms patients, respectively [59]. Specificity and NPV may be increased to 95% and 94%, respectively, when color-flow Doppler is added to grayscale TVUS to identify the feeding vessel [60]. There are limited data to support color-flow or power Doppler aiding in the differentiation of hyperplasia and malignancy in polyps [61–63], with no difference in the histologic grading of polyps on the basis of their resistive index, pulsatility index, or size [64]. Consequently, Doppler examination is not a substitute for surgical removal of polyps followed by pathologic evaluation when malignancy is suspected.

The addition of intrauterine contrast by saline infusion sonography (SIS) or gel installation sonography [65] may outline small endometrial polyps missed on grayscale TVUS and is likely to improve diagnostic accuracy [14,54,66–69]. When compared with hysteroscopy with guided biopsy, SIS has a sensitivity of 58% to 100%, specificity of 35% to 100%, PPV of 70% to 100%, and NPV of 83% to 100% [50,53,54,56,70]. A number of level II studies report no significant difference between SIS and diagnostic hysteroscopy in diagnosing endometrial polyps [54,71]. Advantages of SIS include assessment of both the uterine cavity and other uterine and pelvic structures [71] and the potential to assess tubal patency in patients with infertility [10]. Disadvantages of SIS include an inability to determine final endometrial disease [50], a slower learning curve compared with noncontrast TVUS [67] and patient discomfort caused by fluid leakage or pain during examination [65].

Studies with noncontrast 3-dimensional (3-D) TVUS show limited improvement to diagnosis when compared with 2D TVUS with sensitivity of 100%, specificity of 71% to 99%, PPV 89% to 99%, and NPV of 100% [58]. Adding saline solution contrast to 3-D sonography results in slightly higher specificity (88%–99%) and PPV (97%–100%) for endometrial polyps than those of 3-D ultrasonography, with reasonably high sensitivity of 92–95% and NPV of 97% [58,72]. It appears that the addition of intrauterine contrast allows greater diagnostic accuracy than the addition of 3-D without contrast.

**Blind Biopsy**

Blind dilation and curettage or endometrial biopsy is inaccurate in diagnosing endometrial polyps [73] even with specificity and PPV of 100%. The low sensitivity of 8% to 46% and NPV of 7% to 58% when compared with hysteroscopy and guided biopsy [56,74,75] indicate that this technique should not be used for diagnosis. This technique may also cause polyp fragmentation and make histologic diagnosis difficult [76].

**Hysteroscopic-guided Biopsy**

Hysteroscopy with guided biopsy is the most common comparator for other techniques to diagnose polyps as it offers the highest sensitivity and specificity for conservative measures [77]. Diagnostic hysteroscopy alone only allows subjective assessment of the size and characteristic of the lesion with reported sensitivity of 58% to 99%, specificity of 87% to 100%, PPV of 21% to 100%, and NPV of 66% to 99% when compared with hysteroscopy with guided biopsy [13,54,56,72,78,79]. The choice of inpatient or outpatient diagnostic (and therapeutic) procedures is dependent on instrument availability, patient choice and physician skill, with good success reported in both settings [50,79–81].
Other Diagnostic Tests

Hysterosalpingography has a high sensitivity (98%) but low specificity (34.6%) compared with hysteroscopy for endometrial polyps [70]. The use of ionizing radiation, iodinated contrast materials and patient discomfort, limit the usefulness of this investigation for this indication. Endometrial polyps can be identified on magnetic resonance imaging as low signal intensity intracavitary masses surrounded by high signal intensity fluid and endometrium by T2-weighted magnetic resonance imaging. Very high cost and limited availability with limited advantages over sonography preclude this technique from routine use. Computed tomography scanning has limited role because of its low sensitivity of 53% when compared with TVUS, even with contrast enhancement [82].

Guidelines for the Diagnosis of Endometrial Polyps

1. TVUS provides reliable information for the detection of endometrial polyps and should be the investigation of choice where available (Level B).
2. The addition of color or power Doppler increases the capacity of TVUS to diagnose endometrial polyps (Level B).
3. Adding intrauterine contrast to sonography (with or without 3-D imaging) improves the diagnostic capacity for endometrial polyps (Level B).
4. Blind dilation and curettage or biopsy should not be used for diagnosis of endometrial polyps (Level B).

Management

Conservative Management

Given that most polyps are not malignant, there is an option for expectant management with no intervention. There is Class II evidence that polyps may spontaneously regress in approximately 25% of cases, with smaller polyps more likely to regress compared with polyps >10 mm in length [11,47,83]. Asymptomatic postmenopausal polyps are unlikely to be malignant [37] and observation is an option after discussion with the patient.

Medical Management

Medical management has a limited role for endometrial polyps. Although GnRHa could be used as an adjunctive treatment before hysteroscopic resection [84], this must be balanced against medication costs and side effects and excisional surgery alone. There are no data to support use of GnRHa in this setting.

The use of some types of hormonal therapies may have a preventative role for polyp formation [31]. The use of levonorgestrel releasing intrauterine system in women taking tamoxifen is reported to reduce the incidence of endometrial polyps. However, its use for the treatment of polyps should be currently limited to research protocols [85].

Conservative Surgical Management

Blind dilation and curettage has been reported in a class II study to remove endometrial polyps in 4/15 patients (8%), whereas the addition of polyp forceps increases complete extraction to 21/51 patients (41%). Class II-2 and II-3 studies indicate that removal of endometrial disease by blind curettage is successful less than 50% of the time, and in many cases removal is incomplete [74,75,86–88]. When hysteroscopic treatment is available, blind curettage should not be used as a diagnostic or therapeutic intervention. When an endometrial polyp is diagnosed or suspected and hysteroscopy is not available, the patient should be referred for appropriate treatment.

Hysteroscopic Resection

Hysteroscopic polypectomy is effective and safe as both a diagnostic and therapeutic intervention. There are a variety of methods practiced to remove polyps at hysteroscopy; however, there are no comparative studies for these methods with regard to efficacy or costs, and the method of choice is the one with which the clinician is trained in and most familiar.

Hysteroscopy and electrosurgical removal of polyps is both commonly available and of relatively low cost. Visualization and direct removal is reported to be effective and reduces recurrence rate compared with the use of vision and removal by polypectomy forceps [89]. Other instruments include bipolar systems [90,91] and the hysteroscopic morcellator [92,93], although these techniques may be limited by availability and the cost of disposable and specialized equipment.

There are few studies prospectively evaluating the effect of polypectomy on symptoms. In the only class I study on this subject, 150 women with an endometrial polyp were allocated to hysteroscopic removal or observation for 6 months. There was no difference in the volume of menstrual loss between the groups, although symptomatic improvement, such as intermenstrual bleeding, was significantly improved by polyp removal [83].

Intrauterine adhesion risk is low after polypectomy, because the myometrium is not incised [94]. A class I study reports no adhesions after hysteroscopic polypectomy [95].

Radical Surgical Options

Hysterectomy guarantees no polyp recurrence and no potential for malignancy; however, it is a major surgical procedure, with significantly greater costs and potential for morbidity. It should be used judiciously and only after discussion with the patient about its implication. There are no comparative data for conservative and radical treatments.

Clinical Outcomes

Symptomatic polyps should be removed in the premenopausal or postmenopausal woman because evidence reports improvement in symptoms, with abnormal uterine bleeding
after hysteroscopic polypectomy resolving in 75% to 100% of cases [83,96,97]. Because postmenopausal bleeding in women is associated with the highest risk of premalignant and malignant tissue changes, it is especially important to exclude this histologically [39,42–44].

In class II-3 studies, recurrence of histologically confirmed polyps after up to 9 years follow-up after hysteroscopic polypectomy is between 2.5% to 3.7% [89,98]. Further long-term, high-quality studies are required to establish recurrence rates.

Polypectomy in the subfertile woman is effective in improving fertility, with reported pregnancy rates varying between 43% to 80% [89,99,100]. Spontaneous pregnancy rates are reported to be increased, as well as those associated with assisted reproductive technology. A class I study of polypectomy before intrauterine insemination showed significantly increased subsequent pregnancy success (RR of 2.1, 95% CI 1.5–2.9, p < .001), with 65% of women in the polypectomy group conceiving spontaneously before assisted reproductive technology [34].

Guidelines for the Management of Endometrial Polyps

1. Conservative management is reasonable, particularly for small polyps and if asymptomatic (Level A).
2. Medical management of polyps cannot be recommended at this time (Level B).
3. Hysteroscopic polypectomy remains the gold standard for treatment (Level B).
4. There does not appear to be differences in clinical outcomes with different hysteroscopic polypectomy techniques (Level C).
5. Removal for histologic assessment is appropriate in postmenopausal women with symptoms (Level B).
6. Hysteroscopic removal is to be preferred to hysterectomy because of its less-invasive nature, lower cost, and reduced risk to the patient (Level C).

For the infertile patient with a polyp, surgical removal is recommended to allow natural conception or assisted reproductive technology a greater opportunity to be successful (Level A).

Recommendations for Future Research

There is a paucity of high-quality data in the subject area of endometrial polyps given the common occurrence of this pathology. The following considerations are proposed for future research:

1. Randomized trials of women with abnormal uterine bleeding to evaluate the clinical outcome of polypectomy.
2. Cost comparisons of different methods for hysteroscopic removal of polyps, including office and outpatient locations.
3. Randomized studies of medical treatments (including the LNG-IUS) for the treatment of women with polyps.
4. Prospective multicenter study including postmenopausal women both with and without symptoms and with endometrial polyps to evaluate the risk of malignancy.

Prospective long-time follow-up studies after hysteroscopic polypectomy to evaluate the recurrence rate of endometrial polyps.

Acknowledgment

This report was developed under the direction of the Practice Committee of the AAGL as a service to their members and other practicing clinicians. The members of the AAGL Practice Committee have reported the following financial interest or affiliation with corporations: Malcolm G. Munro, MD, FRCS(C), FACOG—Consultant; Karl Storz Endoscopy-America, Inc., Conceptus, Inc., Ethicon Women’s Health & Urology, Boston Scientific, Ethicon Endo-Surgery, Inc., Bayer Healthcare, Gynesonics, Aega Medical, Idoman; Jason A. Abbott, PhD, FRANZCOG, MRCOG—Speaker’s Bureau: Hologic, Baxter, Bayer-Sherring; Ludovico Muzii, MD—Nothing to disclose; Togas Tulandi, MD, MHCM—Consultant: Ethicon Endo-Surgery, Inc.; Tommaso Falcone, MD—nothing to disclose; Volker J. Jacobs, MD—Consultant: Top Expertise, Germering, Germany; William H. Parker, MD—Grant Research: Ethicon Consultant: Ethicon.

The members of the AAGL Guideline Development Committee for the Management of Endometrial Polyps have reported the following financial interest or affiliation with corporations: Jason Abbott, PhD, FRANZCOG, MRCOG—Speaker’s Bureau: Hologic, Baxter, Bayer-Sherring; Frank Willem Jansen, MD, PhD—Nothing to disclose; Marit Lieng, MD, PhD—Nothing to disclose; Togas Tulandi, MD, MHCM—Consultant: Ethicon Endo-Surgery, Inc.

References


