Endometrial polyps (EPs) are a common cause of abnormal uterine bleeding (AUB) in perimenopausal and postmenopausal women and are typically suggested by a screening transvaginal ultrasound. In addition, the increasing use of pelvic imaging often discloses asymptomatic EPs. In the past, saline infusion sonography (SIS) has been advocated in order to triage patients to undergo a blind curettage or a diagnostic or operative hysteroscopy.

The introduction of small diameter hysteroscopes and resectoscopes—often no larger than a SIS catheter—now allows most women with abnormal ultrasound findings to undergo a single-stage “see-and-treat” hysteroscopy for the management of endometrial polyps. In order to provide optimal management of endometrial polyps, however, a variety of known and unknown factors must be considered prior to “see-and-treat” hysteroscopy. For a woman wishing to preserve or enhance her fertility, hysteroscopic polypectomy—with care to avoid collateral endometrial damage—remains the standard of care.

However, the literature reveals three issues that are important to address. First, that many premalignant and malignant lesions are found at the polyp base. Second, that there is a significant recurrence risk following simple polypectomy; this is especially true in tamoxifen-treated women. Third, that polypectomy alone is often insufficient for the satisfactory management of AUB.

By offering a variety of options to women undergoing hysteroscopic polypectomy—including partial or total endomyometrial resection—the author addresses many of the limitations of traditional polypectomy. Moreover, the use of small diameter hysteroscopes and resectoscopes allow these procedures to be performed as a single stage “see-and-treat” hysteroscopy in the comfort and safety of an office-based setting.
Endometrial Polyps (EP) are commonly associated with abnormal pre- and post-menopausal bleeding, infertility, as well as pre-malignant and malignant intrauterine lesions. Many asymptomatic polyps are discovered as incidental findings during imaging studies. Histologically speaking, an EP is a hyperplastic overgrowth of endometrial glands and stroma around a vascular core. Hysteroscopically, polyps appear as nodular or fingerlike projections of varying dimensions that occur in any portion of the endometrial cavity. EPs can be single or multiple, sessile, or pedunculated and are generally covered with a smooth endometrial layer (Fig. 1), though they are sometimes surrounded by a delicate vascular lattice-work (Fig. 2). Polyps vary from several millimeters to several centimeters, occasionally prolapsing through the cervix becoming grossly indistinguishable from those of endocervical origin. While the cause and pathogenesis of endometrial polyps is incompletely understood, they are believed to be a risk factor for the development of hyperplastic changes of the endometrium as well as endometrial cancer.

The evaluation and management of endometrial polyps is the subject of an evolving debate as knowledge and technology advance. The advent of small diameter hysteroscopes (SDHs), resectoscopes, and morcellators enable physicians to manage most EPs in either an outpatient or office setting. The author has over 28 years of operative hysteroscopy experience—much of it in an accredited office-based surgery setting in Rochester, New York. Our approach has been to minimize the steps necessary to diagnose and treat EPs incorporating a “see-and-treat” approach. This paper will review our current understanding of EPs and summarize the factors that determine our individualized approach to treating this common gynecologic lesion.

**RISK FACTORS**

Endometrial polyps are estrogen-sensitive neoplasms whose prevalence increases with age, hormone replacement therapy, infertility, and tamoxifen use. Obesity appears to be an independent risk factor for EPs even when controlled for serum estradiol levels. Onalan et al. studied 263 women who
underwent office hysteroscopy prior to in vitro fertilization and discovered that women with a BMI $\geq 30$ had a greater number of endometrial polyps compared to those with a BMI $< 30$.

Although many EPs are asymptomatic, they are generally found in the evaluation of abnormal uterine bleeding or infertility. Polyp-related bleeding is thought to result from stromal congestion causing venous stasis and apical necrosis (Fig 3). The reported prevalence of endometrial polyps varies from 7.8–34.9% depending on the diagnostic method employed, the population under study, and the histologic criteria.\textsuperscript{3} Valle\textsuperscript{8} observed that endometrial polyps account for 39% of all abnormal vaginal bleeding in premenopausal women. Among postmenopausal women, polyps are responsible for 21–28% of all causes of uterine bleeding.\textsuperscript{5,9}

### Risk of Malignancy

The majority of endometrial polyps are benign, but have the potential to become hyperplastic and even malignant. Ben-Arie et al.\textsuperscript{10} reviewed 430 consecutive cases of hysteroscopic polypectomies and reported complex hyperplasia in 11.4%, atypical complex hyperplasia (Fig 4) in 3.3%, and carcinoma in 3.0%. The greatest potential for malignancy appears to be in symptomatic, post-menopausal women and in polyps greater than 1.5 cm long.\textsuperscript{10,11} Savelli et al.\textsuperscript{12} noted that, in addition to age and menopausal status, hypertension appears to be an independent risk factor for malignancy. Lastly, the use of tamoxifen is associated with an increased probability of malignancy within EPs.\textsuperscript{6}

### The Diagnosis of Endometrial Polyps—The Present Paradigm

Transvaginal ultrasound (TVUS) is often employed in the initial evaluation of abnormal uterine bleeding (AUB) or infertility. In Scandinavian countries, routine sonography has already been adopted as part of a woman’s annual examination\textsuperscript{11}—a practice that may well gain widespread acceptance. Sonographic findings that suggest an EP include an echogenic halo or a thickened tear-drop-shaped hyperechoic lesion (Fig 5). Other sonographic findings include cystic spaces, and—in the presence of blood—an auto-generated sonohystogram. While TVUS provides a minimally invasive and inexpensive screening tool,\textsuperscript{14} it is insufficient for differentiating thickened endometrium from other intrauterine lesions. Although a negative ultrasound finding may be helpful in evaluating women with AUB, the presence of endometrial thickening, or a heterogeneous endometrial echo, requires additional assessment—saline infusion sonography (SIS), or diagnostic hysteroscopy.\textsuperscript{14,15}

Several authors\textsuperscript{15-17} have advocated SIS to distinguish diffuse endometrial...
thickening from other intrauterine pathology. While SIS provides significant information regarding the size and attachment points of an intrauterine lesion, it is often painful, does not reliably distinguish EPs from submucous leiomyomas, and is insufficient for sorting out the complexities generated by multiple EPs or the coexistence of polyps and submucous leiomyomas. These limitations render SIS as simply another triage tool\textsuperscript{15-17} whose role is limited to determining whether or not a specific case can be managed with a blind endometrial biopsy or will require a diagnostic—and possibly operative—hysteroscopy in an outpatient or office setting.

While the role of SIS could be justified in an era of large diameter hysteroscopes, its current place in gynecology deserves thoughtful reexamination given the proliferation of small diameter hysteroscopes (SDHs) that offer considerably more information in an office setting. By substituting a SDH ($\leq 5$ mm) for a similarly-sized SIS catheter, the operator can easily distinguish thickened endometrium from EPs or submucous leiomyomas and gain essential information in developing a management strategy. The additional data supplied by hysteroscopy includes an understanding of the number and type of EPs, the location and nature of their attachment points, and the degree to which the uterine surface area is involved. Additionally, the coexistence of leiomyomas and the presence of significant intraoperative challenges—such as relative cervical stenosis, a deep uterine septum or a cornual polyp (Fig. 1)—can be readily identified. The wealth of information afforded by SDHs make it a superior triage tool allowing us to decide whether a patient requires additional counseling prior to offering a surgical management strategy or if we can proceed directly to surgical therapy at the time of diagnosis.

"See-and-treat" hysteroscopy in an office setting requires (1) the training and credentialing necessary to administer appropriate analgesia and sedation, (2) a large array of specialized...
Prior to undergoing hysteroscopic polypectomy as part of a “see-and-treat” management scheme, the physician and patient should discuss the following limitations of hysteroscopic polypectomy.

First, endometrial polyps have a significant recurrence risk. Preuthipan et al. and Yang et al. describe the recurrence risk of EPs in pre-menopausal women to vary from 15-43% respectively following hysteroscopic polypectomy. Second, hyperplastic changes within the polyp are often located at its base. Lieng et al. noted that “in about one third of the patients with hyperplasia with atypia and malignancy, the tissue changes were confined to the endometrial biopsy specimens from the base of the polyp.”

The importance of SDRs for managing endometrial polyps cannot be overstated. The challenges of the post-menopausal uterus are three-fold. First, the cervix is often stenotic and precludes the introduction of conventional resectoscopes (22-26 Fr). Second, the uterine cavity is typically small, restricting one’s ability to manipulate larger resectoscopes. Third, the myometrial layer is typically thin, thereby increasing the risk of uterine perforation or rupture. We have enjoyed great success utilizing a 13 Fr (4.3 mm) x 23 cm pediatric resectoscope (Karl Storz Endoscopy, Culver City, California) that allows us to explore and operate within the confines of a small postmenopausal uterus. Figure 8 illustrates the removal of an asymptomatic 15 mm polyp in the uterus of a 77-year-old woman.

Patient counseling prior to “see and treat” hysteroscopy can be complex and is influenced by a variety of surgical “knowns” and “unknowns” that determine
the optimal management for a particular woman—these items are summarized in Table I. It must be understood, however, that not all patients with abnormal ultrasound findings can be managed with a “see-and-treat” approach, but whenever possible this modality is presented in order to minimize unnecessary re-interventions.

In order to simplify preoperative counseling following an ultrasound examination that warrants further investigation, we ask women to consider three different intraoperative scenarios at the time of hysteroscopy.

I. **Diffuse endometrial thickening without a discovery of polyps or fibroids.** Not all diffuse endometrial thickening found on TVUS turns out to be an abnormal intrauterine structure. In the absence of polyps or fibroids, our goal is generally to obtain an adequate volume of tissue for diagnosis. We generally perform suction curettage with a small diameter Vacurette—6 mm or smaller—to obtain sufficient tissue for diagnosis. For women who have completed their childbearing and have failed to respond to medical therapy for AUB, it may be appropriate to discuss minimally invasive procedures such as endomyometrial resection.29

II. **Isolated endometrial polyp or small grade 0 submucous leiomyoma.** The management of an isolated polyp or fibroid is fairly straightforward in a woman wishing to retain her fertility—the goal is simply to remove the structure while minimizing any collateral damage to the adjacent endometrium. Figure 9 depicts a 37-year-old nulligravid woman who is about to undergo an excision of an isolated EP with care to avoid collateral thermal injury to the adjacent endometrium. Collateral damage may be obviated by utilizing an inactive loop electrode at the polyp—or myoma—base or by substituting hysteroscopic scissors and graspers. If appropriate, the patient should be given the choice to have a levonorgestrel-containing IUD inserted immediately following her procedure in order to prevent further bleeding symptoms, particularly if they are inconsistent with
the observed pathology.

In women who have completed their childbearing, the author performs a wide local excision of any endometrial polyps along with the adjacent endomyometrium in order to minimize the risk of recurrence and to obtain a sufficient specimen of the base to determine the coexistence of any significant pathology. In the presence of cornual endometrial polyps, it is often necessary to remove some endomyometrium in order to gain sufficient access to the polyp’s base. Consider the 47-year-old woman depicted in Figure 10 with a right cornual EP. Before the base of the polyp could be adequately excised, it was first necessary to remove the endomyometrium from the proximal cornua.

III. Women with multiple endometrial polyps. This scenario is typically found in perimenopausal and postmenopausal women with AUB, as well as those with morbid obesity. Figures 11a to c depict a 70-year-old woman with an incidental finding of endometrial thickening on TVUS. At the time of her “see-and-treat” hysteroscopy, a long delicate endometrial polyp is noted, attached in the lower uterine segment in the region of the right posterolateral wall. After its removal, two other broad-based polyps were noted at the fundus. The literature, to date, has not adequately addressed the management of multiple endometrial polyps or ones that involve much of the endometrial surface. Among the concerns for women with multiple EPs are whether or not they are at increased risk for recurrence. We offer women with multiple EPs a total or partial endomyometrial resection depending on such factors as the anticipated use of HRT or tamoxifen therapy. Women must be cautioned, however, that once a total EMR has been performed, future access to the endometrial cavity for endometrial biopsy, SIS, or hysteroscopy is limited. Rarely, women have an abundance of EPs (Fig. 12a) that can only be managed with a total or near-total EMR (Fig. 12b).

CONCLUSIONS

Endometrial polyps often detected in the evaluation of abnormal bleeding patterns in both pre- and post-menopausal women. With the increasing use of imaging, they are often identified in the asymptomatic patient as well. Whenever possible, we advocate a “see-and-treat” approach in an office-based setting which provides the patient with an expedient means to deliver an accurate diagnosis and treatment. This approach is facilitated by an experienced team working in an accredited office-based setting that provides adequate analgesia, comprehensive patient counseling, and an array of hysteroscopy equipment (including small diameter hysteroscopes and resectoscopes). In addition to providing a complete histologic specimen, our approach also addresses the issue of the high rate of recurrence and re-intervention following simple hysteroscopic polypectomy. Women who have completed their childbearing, have multiple endometrial polyps, or require the use of tamoxifen, may consider partial or total endomyometrial resection along with hysteroscopic polypectomies. However, before offering total endomyometrial resection or any form of endometrial ablation, women must be properly counseled that these procedures will leave the uterine cavity distorted and will obviate future endometrial sampling and assessment by conventional methods.
“See-and-Treat” Hysteroscopy in the Management of Endometrial Polyps

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AUTHOR’S DISCLOSURES

The author has no conflicts of interest to disclose.

REFERENCES