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Review Article

Resectoscopic Surgery for Polyps and Myomas: A Review of the Literature

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ABSTRACT Resectoscopic surgery is routinely performed to remove endometrial polyps and uterine myomas. A search of Medline, PubMed, and the Cochrane Library was conducted through November 2016 for studies written in English, regardless of sample size or study type. The studies were then filtered by selecting those evaluating resectoscopic surgery. An analysis of peer-reviewed, published literature was performed to examine the clinical application of this treatment modality on patients requiring polypectomy and myomectomy. Different surgical techniques were also compared: hysteroscopy with scissors, forceps, or a cold loop; resectoscopy with radiofrequency energy; and mechanical resection. The literature finds that operative time during resectoscopic surgery is significantly longer than with mechanical resection. Resectoscopic myomectomy, however, may be necessary for removal of larger or more deeply embedded myomas. Ultimately, both techniques result in symptom resolution and a low recurrence rate. Journal of Minimally Invasive Gynecology (2017) 24, 1104–1110 © 2017 AAGL. All rights reserved.

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Endometrial polyps are defined as localized endometrial overgrowth of glands, stroma, and blood vessels [1]. The reported prevalence of endometrial polyps varies from 7.8% to 34.9%, depending on the population studied [2,3]. In this article myomas are defined as benign tumors of the myometrium [4]. Submucosal myomas (International Federation of Gynecology and Obstetrics types 0, 1, and 2) have an endometrial component and thus have the potential to cause abnormal uterine bleeding. A type 0 myoma is completely within the intrauterine cavity, type 1 is ≥50% within the uterine cavity, and type 2 is <50% within the cavity [5]. Frequency of myomas by age 50 is greater than 80% in black women and 70% in white women [4].

Most patients with polyps are asymptomatic, and conservative management is reasonable [2]. In women with abnormal uterine bleeding, 10% to 40% were found to have polyps and 23.4% were found to have myomas [2,5]. Furthermore, removal of polyps and submucosal myomas has been shown to confer a fertility benefit [6,7].

Transvaginal ultrasound is the first-line modality to detect polyps and myomas [3]. Intrauterine contrast or saline further enhances the ability to detect intracavitary pathology [2]. The use of ultrasound is equal to the use of magnetic resonance imaging in diagnosing myomas. However, magnetic resonance imaging may better delineate location and proportion of myomas in the uterine cavity [5]. Diagnostic hysteroscopy is another approach used to identify polyps and myomas. However, this modality also provides an opportunity for polyp and myoma removal at the same time because it is a surgical approach.

Surgical intervention provides definitive treatment for women symptomatic from intrauterine polyps and intracavitary myomas. Other indications for surgical management include contraindications to or lack of response to medical management, patient instability, recurrent pregnancy loss, and infertility. In this article we review the current literature to provide an overview of the various available devices and to

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present the currently published results comparing these devices on intraoperative and postoperative outcomes to treat intrauterine polyps and myomas.

Methods

A literature search was performed by reviewing peer-reviewed publications found in Medline, PubMed, and the Cochrane Library in relation to the topic. The following medical subject headings alone or in combination were searched: resectoscope, hysteroscope, gynecology, polypectomy, myomectomy, endometrial polyps, and submucous myomas. The search was then filtered by selecting relevant articles published in English from the 1970s through November 2016. Relevant articles included those evaluating resectoscopic surgery with results verified in a peer-reviewed journal. The 3 investigators read and independently verified the chosen articles to be included in this review.

Overview of Surgical Techniques to Remove Polyps and Myomas

Hysteroscope with Scissors and Grasper

Direct visualization of the uterine cavity is ideal when identifying and treating intrauterine pathology. The less invasive hysteroscopic approach is preferred over the abdominal approach because of decreased morbidity, reduced cost, and a more rapid recovery [2]. Contraindications to hysteroscopic surgery include an active pelvic infection, suspected or confirmed cancer, or pregnancy [8]. Several hysteroscopic techniques exist for intrauterine polypectomy or myomectomy, with the simplest technique using a hysteroscope with scissors and grasper. It is a well-tolerated and low-cost procedure used to remove polyps [9]. Video S1 shows a hysteroscopic polypectomy.

Hysteroscope with Monopolar Radiofrequency Energy

Radiofrequency energy is another modality used in the removal of polyps and myomas. The modern resectoscope is an endoluminal device made up of an endoscope (hysteroscope or cystoscope), sheaths for inflow and outflow, and an "element" that interfaces a specially designed electrode with a radiofrequency electrosurgical generator [10]. The first reported hysteroscopic myomectomy was performed in 1976 by Neuwirth and Amin [11] using a urologic resectoscope and a monopolar loop. This technique was further specialized for gynecology and in 1995, when Hallez [12] reported on the first gynecologic resectoscope that included continuous flow to allow constant flushing of blood and debris, thus improving visualization.

The traditional resectoscope has an outer diameter of 26 or 27 Fr (~8.8 mm), but currently a resectoscope with an outer diameter of 22 Fr is available. However, instruments this size still require cervical dilation. Recently, newer 16 Fr resectoscopes have been introduced.

Historically, the resectoscope used monopolar energy attached to a loop wire electrode. This requires nonconductive fluid media to complete the electrical circuit [10]. A 60-W cutting current can be used, but up to 120 W may be needed to remove calcified myomas. A low voltage cutting current is used to resect strips of the myoma or polyp from cephalad to caudad. Care must be taken to avoid a forward motion with the electrosurgical electrode to avoid perforation [13]. The pieces are subsequently removed transcervically. To overcome the repetitive introduction of the resectoscope after removing chips of the specimen, a resectoscope with an automatic chip aspirator has been developed that can be used with either monopolar or bipolar energy (Resection Master; Richard Wolf, Knittlingen, Germany). Some risks associated with monopolar energy include thermal injury, fluid overload, and hyponatremia [14].

Hysteroscope with Bipolar Radiofrequency Energy

Newer resectoscopic instruments use a bipolar device containing both electrodes on the loop. Video S2 shows a bipolar loop resection. Lieng et al [15] has shown that both monopolar and bipolar devices can be used to resect polyps. Lieng et al [16] then randomized 150 patients to a trial of electrosurgery versus no treatment. A significant difference between groups was observed suggesting that electrosurgery can relieve intermenstrual bleeding. A statistically significant mean difference in periodic blood loss, measured using a visual analog scale (score, .7; 95% confidence interval [CI], .11–1.3; $p = .02$) and occurrence of gynecologic symptoms at follow-up (7 of 75 patients [9.3%] vs 28 of 75 [37.3%]; $p < .001$) was found, favoring electrosurgery over no intervention. However, this study only followed patients to a 6-month endpoint [16]. Longer follow-up would be elucidative. Animal studies have shown that monopolar and bipolar resectoscopes have similar properties. The depth of thermal damage when cutting or desiccating was similar between the 2 modalities [17]. At 1 facility, from 1999 to 2003, resectoscopic removal of myomas with a bipolar device was performed on 123 women. Ninety-nine women (80%) tolerated an in-office procedure without anesthesia [18].

Hysteroscope with Vaporization

Electrosurgical vaporization of myomas uses a large surface electrode to vaporize the myoma completely or to a size that is amenable to removal with another hysteroscopic modality [19,20]. The monopolar or bipolar electrode is moved along the surface of the myoma using a low voltage current and a high power. Vaporization does not create chips of tissue, thus eliminating the need for multiple reinsertions of the hysteroscope (Video S3). However, the vaporized specimen cannot be sent to pathology, so some tissue must be spared if histologic diagnosis is desired [21]. There is also a documented