

Clinical Efficacy Analysis of Different Surgical Modalities in the Treatment of Endometrial Polyps Under Hysteroscopy

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Abstract: *Objective:* To investigate the clinical effects of hysteroscopic electrosurgery and hysteroscopic diagnostic scraping on the treatment of endometrial polyps. *Methods:* Clinical data from 128 patients with endometrial polyps included in the study were collected and randomly divided into two groups, with 64 cases each in the electrodesiccation group and diagnostic scraping group. The electrodesiccation group underwent hysteroscopic electrodesiccation, while the diagnostic scraping group underwent hysteroscopic diagnostic scraping. Clinical indicators were combined to compare the efficacy of the two groups. *Results:* (1) Following treatment, the hemoglobin level in the electrodesiccation group was significantly higher than that in the diagnostic curettage group, and the endometrial thickness was significantly lower than that in the diagnostic curettage group ($P < 0.001$); (2) After treatment, the serum VEGF level in the electrodesiccation group was significantly lower than that in the diagnostic curettage group ($P < 0.001$); (3) Operative time and operative bleeding in the electrodesiccation group were significantly lower than those in the diagnostic scraping group ($P < 0.001$); (4) The complication rate was significantly lower in the electrodesiccation group (4, 6.251%) compared to the diagnostic scraping group (12, 18.751%), with a P value less than 0.05 ($P = 0.033$). *Conclusion:* Hysteroscopic electrosurgery demonstrates superior efficacy in the treatment of endometrial polyps compared to hysteroscopic curettage.

Keywords: Hysteroscopy; Electrosurgery; Curettage; Endometrial polyp; Clinical efficacy

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1. Introduction

Endometrial polyps, as a common benign uterine disease, manifest as multiple or solitary growths resulting from localized endometrial hyperplasia. They can lead to various clinical symptoms, including irregular vaginal bleeding, menstrual abnormalities, leucorrhea, infertility, and dysmenorrhea^[1], significantly impacting women's quality of life and reproductive health. With the development of society and the increasing concern for women's health, there exists a pressing clinical necessity to diagnose and treat endometrial polyps effectively, aiming to

alleviate patient discomfort and restore reproductive function.

Hysteroscopic surgery has emerged as the primary treatment modality for endometrial polyps due to its minimally invasive nature, precision, and direct visualization capabilities ^[2,3]. In this paper, the efficacy of two commonly employed hysteroscopic treatment methods for endometrial polyps was analyzed: electrodesiccation and diagnostic scraping. The goal is to offer clinicians a clearer foundation for selecting appropriate surgical techniques and to provide patients with insights for developing personalized treatment plans. Through this, it aims to enhance therapeutic outcomes, reduce the likelihood of complications, and improve overall patient well-being.

2. Materials and methods

2.1. General information

Clinical data from 128 patients with endometrial polyps included in the study were collected and randomly divided into two groups: the electrosurgery group and the diagnostic scraping group, each comprising 64 cases. Inclusion criteria were as follows: (1) patients diagnosed with endometrial polyps (EP) confirmed by pathological histology; (2) aged between 18 and 60 years old; (3) presence of three or fewer endometrial polyps, with a maximum diameter not exceeding 2 cm; (4) provision of signed informed consent and willingness to undergo hysteroscopic surgical treatment; (5) availability of complete clinical data. Exclusion criteria included: (1) comorbidities with other gynecological diseases such as uterine fibroids, adenomyosis, etc.; (2) receipt of other endometrial surgery or hormone therapy within the last 3 months; (3) presence of serious heart, liver, lung, kidney, and other organ diseases rendering patients unable to tolerate surgery; (4) contraindications to hysteroscopic surgery, such as acute reproductive tract infection, cervical stenosis, etc.; (5) failure to meet inclusion criteria or inability to complete the experimental observation.

2.2. Methods

The electrosurgery group underwent hysteroscopic electrosurgery. A negative pressure suction device was utilized to remove tissue from the body; electrocoagulation or laser irradiation was employed for hemostasis to ensure no active bleeding postoperatively. Hemostasis was further managed with indwelling uterine drainage tubes or uterine gauze tamponade, and antibiotics were administered to prevent infections as required.

The diagnostic scraping group underwent hysteroscopic diagnostic scraping. Local anesthesia was applied to the cervix, and disinfection of the vulva and vagina was performed. Cervical softening and dilation were carried out, followed by hysteroscope insertion to observe the uterine cavity and identify the location, size, number, and shape of uterine polyps, and the structure of the inner lining of the uterine membrane. A spatula was utilized to scrape out the endometrial polyp, with the scraped tissue collected into pathological specimen vials. Postoperative hemostasis was achieved by leaving a uterine drain or gauze tamponade in the uterine cavity, and antibiotics were administered as necessary for infection prevention.

2.3. Observation indicators

Table 1 shows the observation indicators used in this study.

Table 1. Observation indicators

Observation indicators	Instruction
Clinical efficacy	(1) Endometrial thickness; (2) Hemoglobin profile; (3) Note: Vaginal ultrasound and routine blood tests were performed preoperatively and 1 year postoperatively.
Serum VRGF levels	Fasting venous blood was taken from patients preoperatively and 1 year postoperatively, and serum vascular endothelial growth factor levels were measured.
Length of stay and surgical indicators	(1) Length of hospitalization; (2) Duration of surgery; (3) Surgical hemorrhage.
Occurrence of complications	(1) Hyponatremia; (2) Infertility; (3) Uterine adhesions (4) Stenosis of the uterine canal; (5) Infection; (6) Description: Complications with 1-year postoperative follow-up; Total incidence = (number of hyponatremia cases + number of infertility cases + number of uterine adhesions cases + number of uterine stenosis cases + number of infections cases) ÷ total number of cases × 100%

2.4. Statistical analysis

SPSS 19.0 was applied to statistically analyze the data of this study. Measurement data were expressed as mean ± standard deviation (SD) and the *t*-test was used for comparison between the groups. Count data were expressed as [*n* (%)] and the χ^2 test was used for comparison between the groups. A *P* value of less than 0.05 indicates a statistically significant difference between the groups.

3. Results

3.1. Clinical efficacy

Table 2 shows that after treatment, the hemoglobin level of the electrodesiccation group was higher than that of the diagnostic scraping group, and the endometrial thickness was lower than that of the diagnostic scraping group, and the difference between the two groups showed a highly significant relationship ($t = 11.238$, $t = 5.588$, both $P < 0.001$).

Table 2. Comparison of clinical outcomes between the two groups of patients (mean ± SD)

Clinical efficacy indicators	Time	Electrodesiccation group (<i>n</i> = 64)	Diagnostic scraping group (<i>n</i> = 64)	<i>t</i>	<i>P</i>
Hemoglobin (g/L)	Before treatment	77.10 ± 6.68	76.38 ± 6.72	0.608	0.544
	After treatment	105.13 ± 8.67	89.37 ± 7.12	11.238	0.000
Thickness of endometrium	Before treatment	8.44 ± 1.21	8.32 ± 1.19	0.566	0.573
	After treatment	4.61 ± 0.83	5.46 ± 0.89	5.588	0.000

3.2. Serum VEGF levels

As seen in **Table 3**, the serum VEGF level in the electrodesiccation group after treatment was lower than that in the diagnostic scraping group, and the difference between the two groups was highly significant ($t = 58.981$, $P < 0.001$).

Table 3. Comparison of serum VEGF levels between the two groups of patients (mean ± SD)

Indicator	Time	Electrodesiccation group (n = 64)	Diagnostic scraping group (n = 64)	t	P
Serum VEGF levels	Before treatment	130.83 ± 2.70	130.26 ± 2.68	1.199	0.233
	After treatment	35.51 ± 1.22	48.98 ± 1.36	58.981	0.000

3.3. Hospitalization time and surgical indexes of patients

Table 4 shows that the surgical time and surgical bleeding in the electrosurgery group were lower than that in the diagnostic scraping group, and the difference was significant ($t = 6.369$, $t = 11.058$, $P < 0.001$). While the hospitalization time in the electrosurgery group was also shorter than that in the observation group, the difference was not statistically significant ($P = 0.186$).

Table 4. Comparison of hospitalization time and surgical indexes between two groups of patients (mean ± SD)

Indicators	Electrodesiccation group (n = 64)	Diagnostic scraping group (n = 64)	t	P
Duration of hospitalization (d)	4.75 ± 2.10	5.21 ± 1.80	1.331	0.186
Surgical time (min)	27.01 ± 6.38	34.21 ± 6.41	6.369	0.000
Intraoperative bleeding (mL)	19.88 ± 6.34	32.46 ± 6.53	11.058	0.000

3.4. Comparison of the incidence of complications between the two groups of patients

As shown in **Table 5**, compared with the diagnostic scraping group (12, 18.751%), the complication rate was significantly lower in the electrodesiccation group (4, 6.251%), with a P value of 0.033.

Table 5. Comparison of the incidence of complications between the two groups of patients [n (%)]

Indicators	Electrodesiccation group (n = 64)	Diagnostic scraping group (n = 64)	χ^2	P
Hyponatremia	1 (1.563%)	2 (3.125%)	-	-
Infertility	0 (0.00%)	2 (3.125%)	-	-
Uterine adhesions	1 (1.563%)	3 (4.688%)	-	-
Stenosis of the uterine canal	0 (0.00%)	3 (4.688%)	-	-
Infection	2 (3.125%)	2 (3.125%)	-	-
Total incidence	4 (6.251%)	12 (18.751%)	4.571	0.033

4. Discussion

Endometrial polyps represent a common gynecological ailment typically arising from abnormal endometrial proliferation^[4-6]. Various factors contribute to their development, with endocrine disorders being the most prevalent; an imbalance in hormone levels can lead to excessive endometrial growth and polyp formation. Additionally, factors such as inflammation, infection, obesity, and diabetes may elevate the risk of endometrial polyps^[7,8]. These polyps profoundly impact women's health, often accompanied by menstrual irregularities, infertility, miscarriage, irregular vaginal bleeding, and potential malignant changes, underscoring the significance of timely treatment^[9].

Treatment approaches for endometrial polyps hinge on polyp size and symptom severity. While smaller polyps may spontaneously regress, larger ones typically necessitate removal through hysteroscopic surgery. Presently, hysteroscopic electrosurgery and hysteroscopic curettage are commonly employed for this purpose^[10].

Hysteroscopic electrosurgery is suitable for the treatment of endometrial polyps of all sizes, especially for symptomatic polyps such as irregular menstruation and excessive menstrual bleeding. For small asymptomatic polyps, if there are no signs of malignancy, observation, and conservative treatment can be carried out depending on the patient's age and reproductive needs. In the treatment of endometrial polyps, hysteroscopic electrodesiccation is less invasive, has quicker recovery, shorter operation time, is more intuitive to see and remove polyps, and reduces the damage to the endometrium ^[11]. It also reduces intraoperative bleeding and complications ^[12]. This is consistent with the results in this study, hysteroscopic diagnostic curettage is a minimally invasive surgical method that is based on the principle of using a hysteroscope to observe the diseased tissues in the uterine cavity and then using a curette to scrape out the diseased tissues. This method has the advantage of being simple to perform and having a lower risk of uterine perforation. Of course, it is not without disadvantages. Firstly, hysteroscopic curettage has shortcomings in completely removing endometrial polyps, and the inability to completely remove them means that multiple scraping is needed, which is likely to damage the uterine wall and aggravate the postoperative complications; secondly, compared with hysteroscopic electrodesiccation, this procedure requires more surgical time and more surgical blood loss; in addition, this surgical procedure is prone to recurrence ^[13]. This is also consistent with the present study.

This study concluded that patients who underwent hysteroscopic electrodesiccation had better clinical outcomes and lower serum VEGF levels, hospitalization time, surgical indexes, and complication rates compared to those who underwent hysteroscopic diagnostic curettage. Many studies have also proved this, for example, Ji *et al.* ^[14] concluded that the efficacy of hysteroscopic electrodesiccation in the treatment of endometrial polyps was significant, and there were fewer postoperative complications. Zheng *et al.* ^[15] also believed that hysteroscopic electrodesiccation was more effective in the treatment of endometrial polyps.

However, this study has limitations that guide future research directions. The small sample size may affect the stability and reliability of the results, warranting larger studies for improved accuracy. Furthermore, while this study primarily analyzed two hysteroscopic surgical modalities for treating endometrial polyps, a broader exploration of surgical options is needed to provide clinicians with a more diverse treatment arsenal.

In conclusion, hysteroscopic electrodesiccation demonstrates superior therapeutic efficacy compared to hysteroscopic curettage for treating endometrial polyps and merits further adoption in clinical practice.

Disclosure statement

The authors declare no conflict of interest.

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