

Bigatti Shaver versus Bipolar Electrocautry for the Treatment of Endometrial Polyps in Infertile Women

Raya Muslim Al Hassan ✉

Obstetrics and Gynecology department, Al Zahraa College of Medicine, University of Basrah, Basrah, Iraq

Azhar Mousa Al-Turaihi

Department of Obstetrics and Gynecology, Medical College, Kufa University, Al-Najaf, Iraq

Dalal Mahdi Jarrah

Al-Hayat IVF center, Najaf, Iraq

Ali Ibrahim Rahim

Faculty of Medicine, University of Kufa, Iraq

Abstract

Background: Heavy vaginal bleeding associated with endometrial polyps requires surgical treatment, including bipolar electrocautery. Although a resectoscope is often used for excision, this method has several problems, including inadequate imaging, incomplete removal, fluid intolerance, and uterine or bowel injury. Complete resection, constant fluid intake and deficit, direct visualisation and infrequent recurrence define the mechanical shaver, which is the new intrauterine shaver (IUS). **Aim:** To evaluate the safety and utility of the intrauterine Bigatti shaver as a hysteroscopic treatment for endometrial polyps compared with resectoscopic hysteroscopy. **Methods:** Between October 2023 and October 2024, sixty individuals underwent the study. All demographic and operative details - including set-up time, resectoscopic hysteroscopy and set-up time - were assessed; endometrial polyps were removed by two techniques - Bigatti shaver and resectoscopic hysteroscopy. Data were collected and analysed. **Results:** Two groups of sixty patients were formed for Bigatti shaver and resectoscope hysteroscopy. Apart from large differences in fluid consumption (1108.06 ± 250.03 , 1803.45 ± 431.14 respectively), Bigatti shaver and resectoscope have quite different running times: 2.46 ± 0.65 respectively. In contrast to the resectoscope, no patient experienced bleeding as a side effect with the Bigatti shaver. **Conclusion:** The Bigatti shaver is a highly effective tool for the removal of endometrial polyps and offers a minimally invasive alternative to traditional methods. It combines mechanical tissue resection with continuous visualisation, reduces the risk of uterine perforation and minimises trauma to surrounding tissue, promoting faster recovery and improved patient outcomes.

Introduction

Endometrial polyps (EPs) are focal growths of the endometrium caused by hyperatrophy of the endometrial glands and stroma surrounding a vascular core [1,2]. EP affect 7.8-34.9% of women and are more common in postmenopausal women (11.8%) than in premenopausal women (5.8%) [3,4]. They range in size from a few millimetres to several centimetres and are usually benign. Typical hyperplasia or endometrial

tumour is present in 3.8% of postmenopausal cases [5]. Several risk factors are associated with the development of EP, including age, family history, chronic diseases (diabetes, hypertension, obesity), hyperestrogenism and tamoxifen therapy [6]. EP are often asymptomatic [7,8], but may present as abnormal uterine bleeding (AUB) or infertility in 3.7%-65% of cases [9]. EP are often found in infertile women during gynaecological examinations or investigations related

More Information

How to cite this article: Al Hassan RM, Al-Turaihi AM, Jarrah DM, Rahim AI. Bigatti Shaver versus Bipolar Electrocautry for the Treatment of Endometrial Polyps in Infertile Women. Eur J Med Health Res, 2025;3(1):155-60.

DOI: 10.59324/ejmhr.2025.3(1).22

Keywords:

Endometrial Polyps,
Bigatti Shaver,
Resectoscope.



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to infertility [10]. Polypectomy has been shown to improve fertility [11-16]. Management focuses on symptoms, risk of malignancy and fertility issues. Small asymptomatic EP may heal without treatment, but larger polyps require surgical intervention [17]. Diagnosis by hysteroscopy has shown that 16.5%-26.5% of patients with infertility have EP, with malignancy in polyps ranging from 0.5%-4.8% [18]. Currently, hysteroscopy is the gold standard for EP management due to its direct visualisation and high accuracy [19]. The resectoscope has been widely used for operative hysteroscopy, although it has a relatively high complication rate [20-22]. The new intrauterine Bigatti shaver (IUS) is an innovative hysteroscopic technique that uses a rotating blade to shave and selectively remove endometrial polyps from their edge to their base, with a small 8.5 mm sheath diameter that facilitates continuous saline inflow and tissue outflow for improved visualisation. The IBS does not cause thermal injury, minimising damage to the healthy endometrium and preventing adhesions [23]. The aim of this study is to evaluate the safety and value of the Bigatti intrauterine shaver as a hysteroscopic mechanical removal procedure for the management of endometrial polyps compared to hysteroscopic resectoscopy.

Materials and Methods

This prospective study was conducted on sixty patients diagnosed with endometrial polyps by 3D ultrasound or office hysteroscopy. Patients were divided into two groups: Thirty-one underwent Bigatti shaver (IBS) polypectomy and twenty-nine underwent resectoscopic polypectomy. All procedures were performed between October 2023 and October 2024. Operative time is the time from insertion of the Bigatti shaver or resectoscope to completion of the resection. The resection time is the time from the appearance of the shaver tip or resectoscope to the completion of the resection, in addition to the total procedure time recorded. Demographic information, operative time, fluid use, fluid deficit and operative complications (bleeding, infection, uterine perforation) were calculated. Inclusion criteria were women with infertility, undergoing diagnostic office hysteroscopy, with polyps 1 cm or more in length, and who gave informed consent. Patients with genital tract infections were excluded from the study. All patients received preoperative cervical preparation with 400 mcg misoprostol two hours before the procedure, followed by cervical dilation using a Hegar dilator up to size 8-9.

Bigatti Shaver (IBS) Approach

The IBS assembly consisted of an operating channel for the mechanical shaving mechanism and a 6° scope with a continuous flow sheath. The sheath was connected to

an irrigation pump and a suction pump to facilitate dilation of the uterine cavity and removal of tissue fragments and fluid. A drainage bag was placed under the patient to collect any extra fluid. A 24Fr outer sheath was used in all cases along with standard saline irrigation. To maintain uterine pressure in the range of 100-150 mmHg, the suction pressure was set at 250 ml/min with a maximum flow of 600 ml/min.

Resectoscope Approach

The procedure was performed using a 22 Fr resectoscope with 30° optics and bipolar energy. A conventional bipolar loop electrode was used throughout the procedure. The uterine canal was dilated with 0.9% sodium chloride solution and irrigated continuously with an automated fluid pump set at 80-100 mmHg.

Data Collection and Follow Up

Patient data, including procedural and follow-up outcomes, were systematically collected and analyzed by ANOVA test, T and Chi square test.

Results

Results were calculated for both the Bigatti shaver and resectoscopic polypectomy groups. Operating time and fluid consumption were significantly shorter in the Bigatti shaver group, indicating a statistically significant difference. However, the fluid deficit did not show statistically significant differences between the two methods (see Table 1 and Figures 1-3).

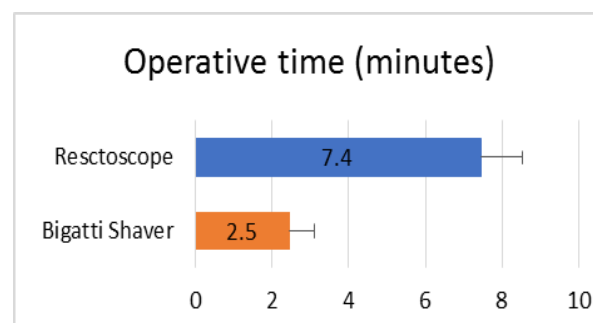


Figure 1: The Operative Time for Bigatti and Resectoscope Polypectomy

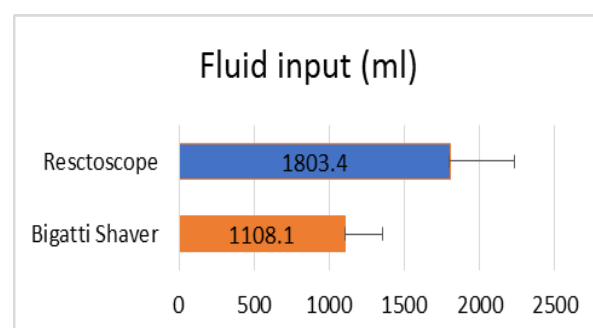


Figure 2: The Fluid Input between Bigatti and Resectoscope Polypectomy



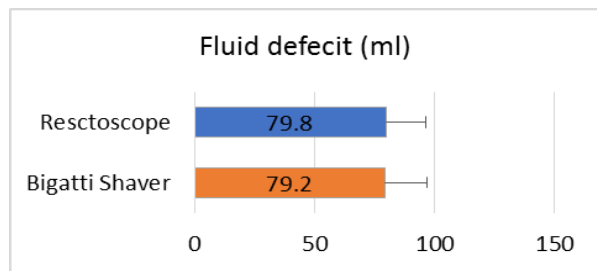


Figure 3: Fluid Defecit between Bigatti and Resectoscope

There were no infections or uterine injuries in either group, with no statistically significant differences between the methods. Bleeding occurred in 2 cases (6.9%) in the resectoscope group and none in the Bigatti shaver group, which was not significant (p -value > 0.05) (see Table 2).

Table 1: Comparison between Bigatti Shaver and Resectoscope Polypectomy Operative Time Fluid Use and Deficit

	Operative method				P-value
	Bigatti Shaver		Resctoscope		
	Mean	SD	Mean	SD	
Operative time (minutes)	2.46	0.65	7.44	1.08	0.000
Fluid input (ml)	1108.06	250.03	1803.45	431.14	0.000
Fluid defecit (ml)	79.19	17.33	79.83	16.28	0.885

Table 2: Comparison between Complications in Bigatti and Resectoscope Polypectomy

	Operative method					P-value
		Bigatti Shaver		Resctoscope		
		Count	%	Count	%	
Bleeding	No	31	100%	27	93.1%	0.137
	Yes	0	0%	2	6.9%	

Table 3: Bleeding Cases, Operative Time, Fluid Input, and Fluid Deficit

	Bleeding				P-value
	No		Yes		
	Mean	SD	Mean	SD	
Operative time (minutes)	4.7	2.6	8.5	0.7	0.048
Fluid input (ml)	1416.4	474.9	2250	353.6	0.017
Fluid defect (ml)	79.5	17.0	80	0	0.966

Resectoscopic cases with bleeding had significantly longer operative times and required significantly more fluid. However, the fluid deficit did not differ significantly between bleeding and non-bleeding cases, as shown in Table 3 and Figures 4, 5 and 6.

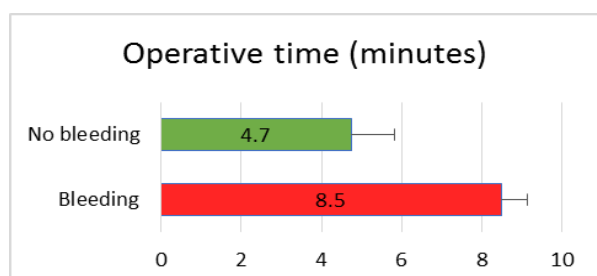


Figure 4: Operative Time in Bleeding Cases

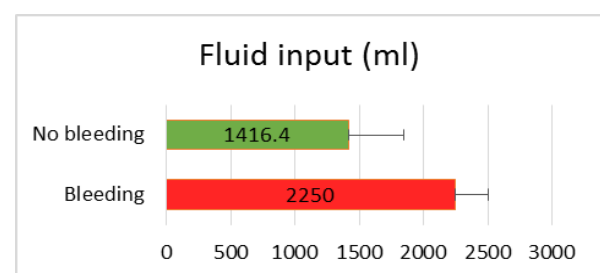


Figure 5: Fluid Input in Bleeding Cases

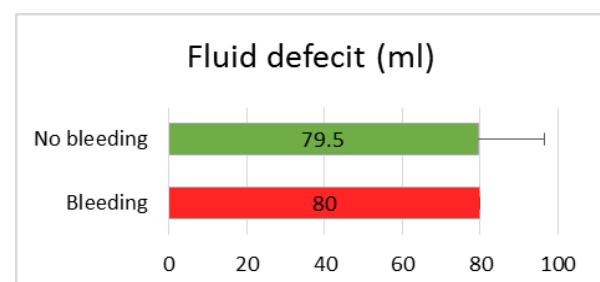


Figure 6: Fluid Deficit in Bleeding Cases



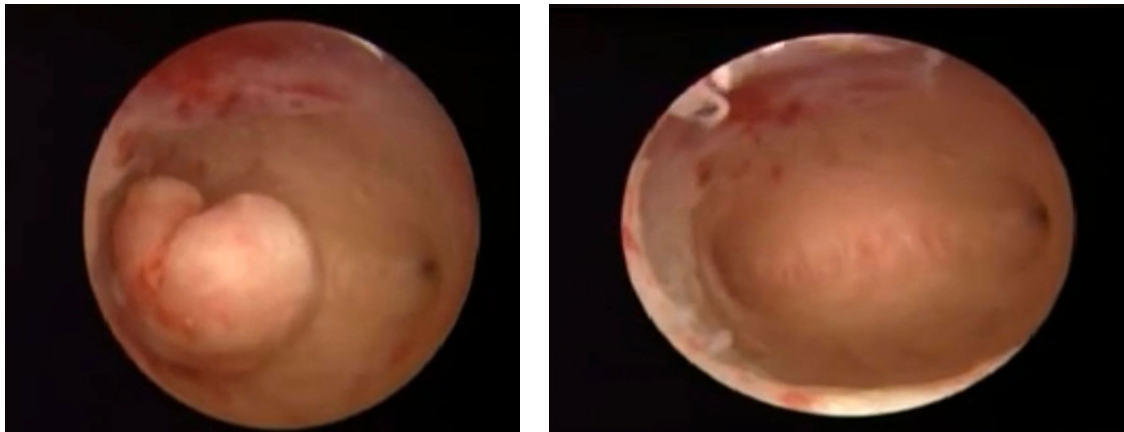


Figure 7: 31-Year-Old Lady 5 Years with Primary Infertility Have 2 cm Endometrial Polyp, Before and After Polypectomy

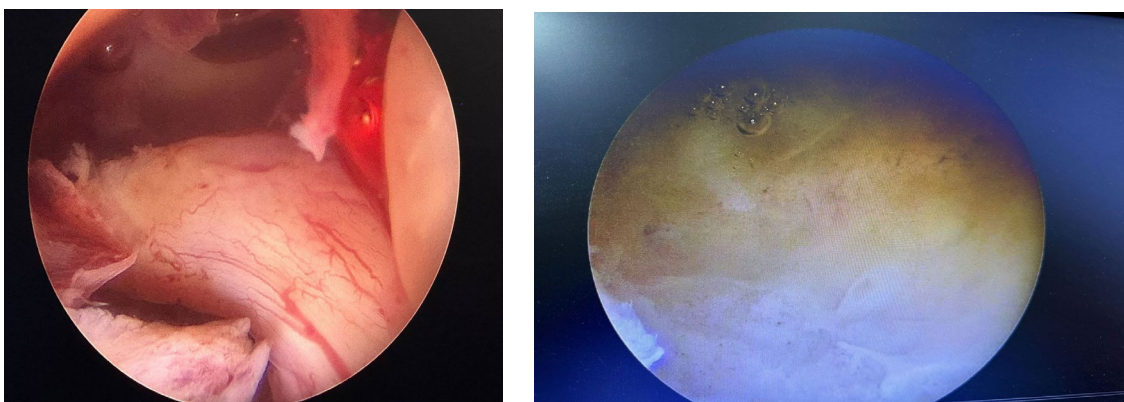


Figure 8: 37-Year-Old Lady P2 Had Abnormal Uterine Bleeding Due to Multiple Polyps Before and After

Discussion

The most appropriate approach to managing an endometrial polyp should be based on a comprehensive assessment of the patient's medical history (including her desire for future pregnancies) and the presence of associated symptoms. Taking these factors into account, clinicians will decide whether to proceed with non-surgical management, conservative surgery or radical surgery. Hysteroscopic polypectomy is a conservative surgical technique that is both effective and safe, providing symptomatic relief in 75% to 100% of patients [24]. Regarding the effect of endometrial polyps and their removal on fertility, several observational studies suggest that endometrial polypectomy may improve natural pregnancy rates in women with unexplained infertility [25,26]. Potential mechanisms linking polyps to infertility include adverse effects on endometrial thickness, local vascular supply, uterine cavity shape and accessibility, suggesting a molecular basis for reduced pregnancy rates in women with endometrial polyps [27]. The results of this study (comparing IBS with resectoscopic polypectomy) are consistent with several relevant articles demonstrating that IBS is more effective than resectoscopic

polypectomy. IBS offers significant advantages including reduced pain, shorter procedure time and minimised fluid use. These benefits are largely due to its combined tissue cutting and aspiration mechanism, which reduces the need for multiple instrument reinsertions through the cervix. The advances in IBS mechanical tissue removal systems represent a significant technical improvement in polyp treatment, consistent with the findings of others [28,29]. In addition, IBS improves efficacy and reduces complications commonly associated with conventional resectoscopy, such as genital infection, bleeding, pelvic inflammatory disease (PID), uterine perforation (rare) and cervical damage. In addition, intrauterine bisection (IUB) is considered the ideal treatment for removing endometrial polyps. It effectively removes the basal endometrium at the origin of the polyp, minimising the risk of recurrence. In addition, IBS serves as a reliable method for assessing the potential malignancy of the epithelial layer of endometrial polyps.

Conclusion

We agree with other relevant studies that IBS is safe and effective, with excellent patient satisfaction. It is a reliable, patient-friendly technique for EP



management, offering a significant improvement over traditional methods, and we recommend long term follow-up to detect other complications such as intrauterine adhesions and recurrences.

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