Original Article

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Hysteroscopic morcellator versus hysteroscopic scissors for endometrial polypectomy: a retrospective study

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Objective: To compare hysteroscopic morcellation with hysteroscopic scissors for endometrial polypectomy in terms of operating time, the need for cervical dilatation, blood loss, complications, and completeness of removal.
Methods: Medical records of patients who underwent hysteroscopic polypectomy using either the Intrauterine BIGATTI Shaver (IBS) system or hysteroscopic scissors between January 2020 and August 2022 at the United Christian Hospital or Tseung Kwan O Hospital were retrospectively reviewed.
Results: A total of 1063 women were operated on using the IBS (n=132) or hysteroscopic scissors (n=931). More patients in the IBS group required general/spinal anaesthesia (97.7% vs 71.1%, p<0.001) and cervical dilatation (77.3% vs 30.1%, p<0.001). The operating time was shorter in the IBS group when removing one polyp (18.6 vs 20.0 min, p=0.049) and when performed by trainees independently (17.9 vs 19.8 min, p=0.007) but was longer when performed by specialists (21.4 vs 19.7 min, p<0.001). All patients in the IBS group achieved complete removal of polyps, compared with five patients with incomplete removal of polyps in the scissors group.
Conclusion: Compared with hysteroscopic scissors, hysteroscopic morcellation requires less operating time when removing one polyp and when performed by trainees independently and is more effective in achieving complete removal, but the need for cervical dilatation and anaesthesia is more for hysteroscopic morcellation.

Keywords: Endometrial neoplasms; Hysteroscopy

Introduction

Endometrial polyps are a common cause of abnormal uterine bleeding including menorrhagia, intermenstrual bleeding, and postmenopausal bleeding. Its mainstay treatment is hysteroscopic polypectomy[1], which is traditionally performed with a high-frequency electric-current resectoscope, hysteroscopic cold scissors, or forceps. However, owing to the need to retrieve tissue fragments to ensure clear visualisation, additional instrumentation and operating time may be required, which can increase the risk of fluid overload, cervical laceration, and uterine perforation.

New hysteroscopic morcellator systems such as the TruClear, Myosure, and Intrauterine BIGATTI Shaver (IBS) have been introduced and widely used[2,3]. The IBS consists of an angled telescope with an integrated 8-mm sheath and a working channel. The shaver system can be inserted via the working channel, which is connected to a suction system. Therefore, this device can simultaneously cut and extract polyps using the same working channel. It enables clear visualisation throughout the procedure, resection without high-frequency electric current, and a reduction in cervical dilatation and the risk of fluid overload[4]. It also enables retrieval of specimens because specimens are aspirated directly into the suction system during morcellation.

In a meta-analysis of six randomised controlled trials comparing hysteroscopic morcellation with electrosurgical resection, morcellation is associated with a shorter procedure and operating time[5]. Compared with electrosurgical resection, the mechanical tissue-removal system is significantly faster, uses less fluid, and achieves greater success in complete removal of polyps[6-8]. We compared a hysteroscopic morcellator with hysteroscopic scissors for removal of endometrial polyps in terms of operating time, the need for cervical dilatation, blood loss, complications, and completeness of removal.

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Materials and methods

The medical records of patients who underwent hysteroscopic polypectomy using either the IBS system or hysteroscopic scissors between January 2020 and August 2022 at the United Christian Hospital or Tseung Kwan O Hospital were retrieved from the Clinical Data Analysis and Reporting System. Women who underwent hysteroscopic polypectomy with other surgical techniques such as Bonney forceps and a resectoscope were excluded.

The choice of polypectomy technique was based on the surgeon's preference. Operations were performed by either specialists or trainees independently or under the supervision of specialists. Trainees were competent in both polypectomy techniques. The use of anaesthesia was based on the patient's preference. Diagnostic hysteroscopy was performed before surgery. The IBS system consisted of a 6° angulated hysteroscope with a 24-Fr (8-mm) outer sheath[9], whereas the hysteroscopic scissors were inserted into a 6-mm operating sheath. Sodium chloride 0.9% was used as the distension medium. Patients were usually discharged on the same day.

The data collected included patient demographics, operating time, the need for cervical dilatation, estimated blood loss, intraoperative complications, and completeness of polyp removal. The operating time was defined as the actual operating time for morcellation or resection. Hysteroscopic scissors were readily available in the operating theatre, whereas the IBS system was stored in the storage room and was more complicated to set up. The set-up time for the IBS system was the time from ordering IBS to the time of set-up completion. The set-up time for 17 cases was recorded; the mean was 11 minutes, which was deducted from the operating time. The primary outcome was the operating time; secondary outcomes were the need for cervical dilatation, estimated blood loss, any complications such as uterine perforation and completeness of polyp removal.

Statistical analysis was performed using SPSS (Windows version 29.0; IBM Corp, Armonk [NY], United States). Comparisons were made using the Chi-squared test or independent *t* test, as appropriate. A p value of <0.05 was considered statistically significant.

Results

Of 1111 women who underwent hysteroscopic polypectomy, 1063 were operated on using either the IBS (n=132) or hysteroscopic scissors (n=931). The two groups were comparable in terms of all patient characteristics, except that patients were older in the IBS group than in the scissors group (55.25 vs 52.67 years, p=0.01, Table 1).

Compared with the scissors group, the IBS group had higher proportions of patients who had ≥2 polyps (37.9% vs 26.0%, p<0.001), who had polyps at the fundus (25.0% vs 14.0%, p<0.001), who required general/spinal anaesthesia (97.7% vs 71.1%, p<0.001), and who required cervical dilatation (77.3% vs 30.1%, p<0.001). The mean size of the polyps was larger in the IBS group than in the scissors group (2.37 vs 1.19 cm, p=0.008). The blood loss was comparable in both groups (4.89 vs 4.75 ml, p=0.972).

The operating time was shorter in the IBS group than in the scissors group when removing one polyp (18.6 vs 20.0 min, p=0.049) and when performed by trainees independently (17.9 vs 19.8 min, p=0.007) but was longer when performed by specialists (21.4 vs 19.7 min, p<0.001) and when polyps were located at the fundus (26.1 vs 23.1, p=0.007) [Table 2]. The operating time was comparable between groups in terms of all sizes of polyps.

One case of uterine perforation occurred in the scissors group, but no cervical dilation was required. The perforation occurred at the time of insertion of the hysteroscope. The patient was discharged home the next day with antibiotics. One case of vaginal tear occurred in the IBS group. The patient presented with postmenopausal bleeding and was not sexually active. Intraoperatively, the cervix was dilated with the Hegar No. 8 dilator, and the IBS was used to remove a large intracavity polyp occupying two-thirds of the cavity. After completion of the procedure, active oozing was noted near the introitus of the right vagina. Haemostasis was achieved after the wound was sutured with Vicryl 2/0. Given the location of the tear at the introitus, it is postulated that the tear was caused by insertion of a relatively large speculum into a narrow vagina. One case of bleeding occurred in the IBS group. This was noted after removal of a polyp of 2×3 cm^2 and resolved with 5 units of Syntocinon and 1 g of Transamin. The total blood loss was 50 ml. All three patients made a good recovery. There were five cases of incomplete removal of polyps; all occurred in the scissors group.

Discussion

In patients with ≥3 polyps, the operating time was shortened by 12.8% in the IBS group, compared with the scissors group, although the difference was not significant. The percentage of complete removal of polyps was higher in the IBS group. Our findings are consistent with those

Table 1. Patient characteristics and intraoperative parameters between the Intrauterine BIGATTI Shaver (IBS) group and hysteroscopic scissors group

Characteristic	IBS (n=132)*	Scissors (n=931)*	p Value
Age, y	55.25±10.7	52.67±10.6	0.01
Body mass index, kg/m^2	25.19±4.4	24.91±4.7	0.518
Parity	1.38±1.1	1.34±1.2	0.739
Previous vaginal delivery			0.893
Yes	74 (56.1)	532 (57.1)	
No	58 (43.9)	399 (42.9)	
Menopausal status			0.329
Premenopausal	61 (46.2)	473 (50.8)	
Postmenopausal	71 (53.8)	458 (49.2	
Presenting symptoms			0.163
Postmenopausal bleeding	45 (34.1)	335 (36.0)	
Menorrhagia/ prolonged menses/ IMB	47 (35.6)	332 (35.7)	
Suspicion on ultrasound	40 (30.3)	244 (26.2)	
Endometrial hyperplasia	0	19 (2.0)	
Abnormal cervical smear	0	1 (0.1)	
Anaesthesia			<0.001
No anaesthesia	3 (2.3)	268 (28.8)	
General anaesthesia / spinal anaesthesia	129 (97.7)	662 (71.1)	
Local anaesthesia	0	1 (0.1)	
Cervical dilatation			<0.001
Yes	102 (77.3)	280 (30.1)	
No	30 (22.7)	651 (69.9)	
No. of polyps			<0.001
1	76 (57.6)	671 (72.1)	
2	31 (23.5)	187 (20.1)	
≥3	25 (18.9)	73 (7.8)	
Polyp size, cm	2.37±1.0	1.19±0.8	0.008
Polyp location			0.001
Fundal	33 (25.0)	130 (14.0)	
Non-fundal	99 (75.0)	801 (86.0)	
Blood loss, mL	4.89±5.94	4.75±46.5	0.972
Intraoperative complication	2 (1.5)	1 (0.1)	0.005
Incomplete removal of polyps	0	5 (0.5)	0.005

* Data are presented as mean±standard deviation or No. (%) of patients

from studies comparing hysteroscopic morcellation and hysteroscopic resection using a resectoscope[5-8,10-16]. As the IBS can simultaneously remove and aspirate tissue fragments by suction, there is no need to retrieve tissue repeatedly with in-and-out movements. The number of insertions of the tool is lower in the morcellation arm than in the resection arm (1.0 vs 8.2, p<0.001)[17]. This benefit is especially evident when removing multiple polyps. The significantly shorter operating time for the IBS group performed by trainees implies that the IBS has a shorter learning curve and is more surgeon friendly. The mechanics of the IBS ensure complete removal of polyps. In contrast, complete resection of large or sessile polyps is more difficult using hysteroscopic scissors.

Table 2. Operating times between the Intrauterine BIGATTI Shaver (IBS) group and hysteroscopic scissors group

	Operating time, min*		p Value
	IBS (n=132)	Scissors (n=931)	
Surgeon level			
Trainee independent	17.9±12.3	19.8±11.1	0.007
Trainee under supervision	22.9±12.4	29.2±16.1	0.723
Specialist	22.7±21.5	19.7±11.4	<0.001
No. of polyps			
1	18.6±13.8	20.0±11.9	0.049
2	23.5±16.7	22.3±10.8	0.055
≥3	23.8±21.0	27.3±18.1	0.759
Size of polyps, cm			
<1	12.8±13.7	16.7±8.1	0.054
1	16.3±8.8	21.1±11.8	0.365
2	21.5±12.7	27.0±16.1	0.331
≥3	22.4±21.0	28.6±14.7	0.120
Location of polyps			
Non-fundus	18.9±12.9	20.8±12.4	0.333
Fundus	26.1±22.6	23.1±12.4	0.007

* Data are presented as mean±standard deviation; an 11-minute set-up time is deducted in the operating time of the IBS group

In the Kowloon East Cluster, all types of hysteroscopies were performed in the operating theatre; outpatient hysteroscopy was not available until October 2023. The type of anaesthesia is determined by the patient's preference after counselling with surgeons and consideration of factors including poor tolerance to speculum examination and an anticipated need for cervical dilatation and polypectomy.

More patients in the IBS group needed anaesthesia and cervical dilatation than in the scissors group. This is probably because the diameter of the outer sheath of the IBS is larger than that of hysteroscopes (8 vs 6 mm). Regional or general anaesthesia is mandatory for the hysteroscopic morcellation procedure because it requires more extensive cervical dilatation[18]. Smaller sized hysteroscopic shavers (such as TruClear) may reduce the need for cervical dilatation and anaesthesia. In October 2023, the TruClear 5C hysteroscopic shaver with a 5-mm scope and a 5.7-mm sheath was introduced to the United Christian Hospital. Further studies are warranted to compare the IBS with the TruClear in terms of efficacy and patient satisfaction.

There are limitations to the present study. The data were subject to selection bias because the study was retrospective. The choice of polypectomy technique was subject to the surgeon's preference; surgeons might preferentially choose the IBS for removal of multiple or large endometrial polyps. The logistics in the operating theatre about IBS storage affects the accuracy of calculation of the operating time in the IBS group, despite a deduction of 11 minutes. Further prospective randomised controlled trials are needed to confirm the benefits of hysteroscopic morcellation for endometrial polypectomy.

Conclusion

Compared with hysteroscopic scissors, hysteroscopic morcellation requires less operating time when removing one polyp and when performed by trainees independently and is more effective in achieving complete removal, but the need for cervical dilatation and anaesthesia is more for hysteroscopic morcellation. The IBS is more expensive and may not be readily available, so hysteroscopic scissors may still be the preferred choice.

Contributors

All authors designed the study, acquired the data, analysed the data, drafted the manuscript, and critically

revised the manuscript for important intellectual content. All authors had full access to the data, contributed to the study, approved the final version for publication, and take responsibility for its accuracy and integrity.

Conflicts of interest

All authors have disclosed no conflicts of interest.

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Data availability

All data generated or analysed during the present study are available from the corresponding author upon reasonable request.

Ethics approval

The study was approved by the Kowloon Central / Kowloon East Cluster Research Ethics Committee (reference: KC/KE-22-0222/ER-1). The patients were treated in accordance with the tenets of the Declaration of Helsinki. The patients provided written informed consent for all treatments and procedures and for publication.

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