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Patient acceptability and satisfaction for hysteroscopic morcellation

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Objective: To evaluate patients' pain scores and satisfaction with hysteroscopic morcellation service in two hospitals in Hong Kong.

Methods: Medical records of women who underwent hysteroscopic morcellation as a day procedure using the Intrauterine Bigatti Shaver between 1 November 2018 and 31 October 2022 at Tuen Mun Hospital or Pok Oi Hospital were retrospectively reviewed.

Results: 242 patients who underwent hysteroscopic morcellation were included. The mean patient age was 54.1 years. Postmenopausal bleeding was the commonest presenting symptom (48.8%), followed by abnormal menstrual bleeding (42.6%). 43.8% of patients had one lesion; 87.2% of patients had endometrial polyps. There were 523 endometrial polyps and 29 myomas; 99.4% of endometrial polyps and 79.3% of myomas were removed. The complete resection rate was higher for patients with endometrial polyps than for patients with myomas (98.7% vs 77.8%, p<0.001). Most patients reported mild pain intraoperatively (57.4%), immediately after the procedure (72.3%), and upon discharge (95.0%). 98.8% of patients were satisfied with the procedure; 94.2% would undergo the same operation again if clinically indicated; and 95.5% would recommend this procedure to others. Premenopausal women reported more pain immediately after the procedure (2 vs 1, p=0.020) and upon discharge (0 vs 0, p=0.040) than postmenopausal women. Patients with an operative time of >20 minutes reported more pain immediately after the procedure (3 vs 1, p=0.007) than patients with an operative time of ≤20 minutes.

Conclusion: Almost all patients were satisfied with hysteroscopic morcellation. Most patients experienced only mild pain during and immediately after the procedure and upon discharge. Premenopausal status and operative time of >20 minutes were associated with higher pain scores. Further optimisation of pain-relief methods should be considered.

Keywords: Hysteroscopy; Morcellation; Patient satisfaction; Safety; Treatment outcome

Introduction

Abnormal uterine bleeding is a common problem for both premenopausal and postmenopausal women and can be caused by polyps and myomas[1,2]. Removal of these intrauterine lesions may help improve symptoms and aid diagnosis and malignancy detection. Hysteroscopy enables a minimally invasive approach to this problem, together with instruments such as grasping forceps, microscissors, resectoscope, bipolar electrosurgical probe, and morcellator. Conventionally, the bipolar resectoscope was considered the instrument of choice for technically more difficult lesions. However, electrosurgery may cause collateral thermal damage and increase the risk of uterine perforation[3]; repeated manual removal of tissue causes cervical trauma[4]; and larger lesions are associated with longer operative times.

A hybrid system of morcellation, irrigation, and suction under direct vision facilitates the effective removal of intrauterine lesions[5]. Compared with resectoscopy, hysteroscopic morcellation is associated with a higher success rate, shorter operative time, and better patient acceptability[6,7]. For residents in training, hysteroscopic morcellation takes less time to learn and is associated with higher levels of confidence and satisfaction[8-10]. The mechanical cutting mechanism causes no collateral electrical or thermal damage near the intrauterine lesions. Because no gas bubbles are generated when the device is activated, hysteroscopic morcellation enables better visibility of the operative field and possibly a lower risk of complications such as gas embolism[11]. In addition, continuous aspiration of the tissue fragments further ensures a clear field of view, and the fragments can be directly collected for histological examination[4].

In our hospitals, hysteroscopic morcellation is performed as a day procedure using the Intrauterine Bigatti Shaver (Karl Storz, Tuttlingen, Germany). It avoids the

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risks associated with general anaesthesia and enables a shorter recovery time and a faster return to mobility. It is also economical, decreasing costs related to dedicated personnel and operating room use as well as reducing waiting times for major surgery by freeing up the operating room[12]. However, only a few studies have examined patient acceptability and satisfaction with hysteroscopic morcellation[13,14]. Therefore, we aimed to evaluate patient pain scores and their associated factors and patient satisfaction with hysteroscopic morcellation.

Materials and methods

Medical records of women who underwent hysteroscopic morcellation as a day procedure using the Intrauterine Bigatti Shaver between 1 November 2018 and 31 October 2022 at Tuen Mun Hospital or Pok Oi Hospital were retrospectively reviewed. Women were excluded if the uterine cavity was not entered.

All women received prior diagnostic hysteroscopy. Hysteroscopic morcellation was performed by trained gynaecologists in a dedicated hysteroscopy suite. Patients' height, weight, and blood pressure were recorded, and a urine pregnancy test was performed. In accordance with our analgesia protocol, all women received 1 g paracetamol 1 hour before the procedure, and paracervical block (lignocaine hydrochloride 2% with 1:80 000 adrenaline, 1.8 ml) intraoperatively, unless there was a known history of allergy. In addition, 400 μg buccal misoprostol was prescribed for premenopausal and nulliparous women to facilitate cervical dilatation. Cervices were dilated to 6 mm with Hegar dilators to facilitate entry of the instrument. Hysteroscopic morcellation was performed with the Intrauterine Bigatti Shaver Fr 19, which consists of a 6.3 mm diameter rod-lens telescope and a 4 mm diameter rotational cutting device with an automatic window closure activated by a footswitch. Normal saline was used as the distension medium. Fluid balance was monitored with the Hysteromat system (Karl Storz, Tuttlingen, Germany). Intrauterine pressure was set as the patient's diastolic blood pressure. All morcellated tissues were sent for histopathological examination.

Operative time was defined as the total duration of the procedure excluding instrument preparation time. Patients were asked to rate their pain on a visual analogue scale (VAS) from 0 (no pain) to 10 (worst possible pain) during, immediately after, and 1 hour after the procedure. Pain scores were then categorised as mild (0-3), moderate (4-6), and severe (7-10). Patients were asked yes/no questions on whether they were satisfied with the procedure, whether they would be willing to undergo the procedure again if clinically indicated, and whether they would recommend the procedure to others.

Baseline characteristics, clinical details, and final diagnoses were retrieved from the clinical case notes and electronic medical record system. Details of the hysteroscopic morcellation procedure were retrieved from the standard proforma. The nature, size, and location of the intracavitary lesions were collected, as were procedure duration, completeness of resection, procedural difficulties, and intraoperative complications (bleeding, infection, cervical trauma, and uterine perforation). Shaver speed, suction rate, irrigation pump pressure, and flow rate were also recorded.

Analyses were performed using SPSS (Windows version 27.0; IBM Corp, Armonk [NY], US). Parametric continuous data were presented as means with standard deviations and analysed using the Student's *t* test. Nonparametric continuous data were presented as medians with interquartile ranges and analysed using the Mann-Whitney *U* test. Categorical variables were presented as frequencies and percentages and analysed using the Pearson's Chi-squared test or Fisher's exact test. A value of $p<0.05$ was considered statistically significant. The STROBE (Strengthening the Reporting of Observational Studies in Epidemiology) guidelines were followed in the preparation of this article.

Results

Over the 4-year period, 247 patients underwent hysteroscopic morcellations. Five of them were excluded because of having a non-intracavitary lesion (n=3) or a procedural failure owing to a tight cervical os (n=2). The remaining 242 patients were included in analysis (Table 1). The mean patient age was 54.1 years, and the median body mass index was 24.7 kg/m^2. 167 (69.0%) of patients had previous vaginal deliveries, and 133 (55.0%) were postmenopausal. The commonest presenting symptom was postmenopausal bleeding (48.8%), followed by abnormal menstrual bleeding (42.6%) and suspected intracavitary lesion (8.7%). 43.8% of patients had one lesion; 87.2% of patients had endometrial polyps. There were 523 endometrial polyps, which were evenly distributed within the uterine cavity, and the median size was 1 (range, 0.1-8.0) cm. There were 29 myomas; 93.1% were solitary; 75.9% were type 0; the median size was 2 (range, 1-5) cm; and 31.0% were located at the fundal region. 96.3% and 95.5% of patients received oral paracetamol and paracervical block, respectively. 99.4% of endometrial polyps and

Table 1. Characteristics of patients who underwent hysteroscopic morcellation for intracavitary lesions (n=242)

Characteristic	Value*
Age, y	54.1±10.1
Ethnicity	
Chinese	239 (98.8)
Southeast Asian: Thai, Indonesian	2 (0.8)
South Asian: Nepalese	1 (0.4)
Weight, kg	59.1 (38.5-102.8)
Body mass index, kg/m^2	24.7 (16.4-42.6)
Ambulatory	240 (99.2)
Medical problems	
Hypertension	78 (32.2)
Diabetes mellitus	41 (16.9)
Cardiac disease	8 (3.3)
Breast cancer with history of tamoxifen use	44 (18.2)
Polycystic ovarian syndrome	1 (0.4)
Nulliparous	38 (15.7)
Previous vaginal delivery	167 (69.0)
Postmenopausal	133 (55.0)
Presenting symptom	
Abnormal menstrual bleeding	103 (42.6)
Postmenopausal bleeding	118 (48.8)
Incidental sonographic finding	21 (8.7)
No. of intracavitary lesions	
1	106 (43.8)
2	55 (22.7)
3	21 (8.7)
4	28 (11.6)
5	28 (11.6)
6	2 (0.8)
7	2 (0.8)
Type of intrauterine pathology	
Endometrial polyp	211 (87.2)
Myoma	11 (4.5)
Endometrial polyp and myoma	16 (6.6)
Endocervical polyp and endometrial polyp	3 (1.2)
Endocervical polyp, endometrial polyp, and myoma	1 (0.4)
Patients with endometrial polyps (n=231)	
1 lesion	107 (46.3)
>1 lesions	124 (53.7)
Diameter, cm	1 (0.1-8.0)
Location of endometrial polyps (n=523)	
Fundal	103 (19.7)
Anterior	105 (20.1)
Posterior	125 (23.9)
Right	98 (18.7)
Left	92 (17.6)
Complete resection	228 (98.7)
Total number of endometrial polyps removed	520/523 (99.4)
Patients with myomas (n=27)	
1 lesion	25 (92.6)
>1 lesions	2 (7.4)
Diameter, cm	2.0 (1.0-5.0)
Location of myomas (n=29)	
Fundal	9 (31.0)
Anterior	4 (13.8)
Posterior	5 (17.2)
Right	8 (27.6)
Left	3 (10.3)
Type of submucosal myomas (n=29)	
Type 0 (pedunculated intracavitary)	22 (75.9)
Type 1 (<50% intramural)	2 (6.9)
Type 2 (≥50% intramural)	5 (17.2)
Complete resection	21 (77.8)
Total number of myomas removed	23/29 (79.3)
Surgeon experience	
Specialist	78 (32.2)
Resident	17 (7.0)
Both	147 (60.7)
Antibiotic cover	10 (4.1)
Analgesia	
Oral paracetamol	233 (96.3)
Cervical block	231 (95.5)
Buccal misoprostol	86 (35.5)
Instrumental preparation time, min	15 (2-31)
Operative time, min	20 (7-78)
Fluid used, ml	1400 (200-11 000)
Fluid deficit, ml	0 (–300 to 700)
Shaver speed, rpm	2100 (800-4000)
Suction rate, ml/min	240 (200-400)
Histological diagnosis	
Benign endometrial polyp	189 (78.1)
Myoma	24 (9.9)
Normal endometrium	13 (5.4)
Endometrial polyp and myoma	8 (3.3)
Endocervical polyp and endometrial polyp	2 (0.8)
Endometrial hyperplasia without atypia	3 (1.2)
Endometrial hyperplasia with atypia	1 (0.4)
Malignant cells suggestive of metastatic breast cancer	1 (0.4)
Insufficient tissue for diagnosis	1 (0.4)

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

79.3% of myomas were removed. The complete resection rate was higher for patients with endometrial polyps than for patients with myomas (98.7% vs 77.8%, p<0.001). There were complications of bleeding (n=2) and endometritis (n=1) but no cervical trauma or uterine perforation. All histological diagnoses matched the hysteroscopic findings, except for five cases of endometrial hyperplasia and one case of malignancy suggestive of metastatic breast cancer.

Most patients reported mild pain intraoperatively (57.4%), immediately after the procedure (72.3%), and upon discharge (95.0%) [Table 2]. 98.8% of patients were satisfied with the procedure; 94.2% would undergo the same operation again if clinically indicated; and 95.5% would recommend this procedure to others. Premenopausal women reported more pain immediately after the procedure (2 vs 1, p=0.020) and upon discharge (0 vs 0, p=0.040) than postmenopausal women (Table 3). Patients with an operative time of >20 minutes reported more pain immediately after the procedure (3 vs 1, p=0.007) than patients with an operative time of ≤20 minutes. Surprisingly, satisfaction was not correlated with pain during the procedure (3 vs 3, p=0.782), after the procedure (2 vs 3, p=0.518), and before discharge (0 vs 0, p=0.340).

Table 2. Patients' pain levels and satisfaction with hysteroscopic morcellation (n=242)

Outcome	Value*
Visual analogue scale for pain	
During procedure	
Mild (≤3)	139 (57.4)
Moderate (4-6)	73 (30.2)
Severe (≥7)	30 (12.4)
Immediately after procedure	
Mild (≤3)	175 (72.3)
Moderate (4-6)	54 (22.3)
Severe (≥7)	13 (5.4)
Upon discharge	
Mild (≤3)	230 (95.0)
Moderate (4-6)	10 (4.1)
Severe (≥7)	2 (0.8)
Are you satisfied with the service you have received?	
Yes	239 (98.8)
No	3 (1.2)
Are you willing to undergo this operation again if clinically indicated?	
Yes	228 (94.2)
No	14 (5.8)
Will you recommend this operation to others?	
Yes	231 (95.5)
No	11 (4.5)

* Data are presented as No. (%) of patients

Discussion

Almost all patients were satisfied with the procedure, would undergo the procedure again if needed, and would recommend the procedure to others. Most patients experienced only mild pain (VAS score 0-3) during and immediately after the procedure and upon discharge. For 30 patients who reported severe pain (VAS score ≥7) during the procedure, only two reported severe pain upon discharge.

Premenopausal women reported higher pain scores than postmenopausal women immediately after the procedure (p=0.020) and upon discharge (p=0.040). This is in contrast to most findings that suggest that postmenopausal status is related to a higher pain score in hysteroscopy, which is attributed to a tighter cervical os and vaginal dryness from a hypo-oestrogenic state[15]. However, our results are in line with those in a study that reported significantly higher pain scores in premenopausal women than in postmenopausal women (3.2 vs 2.5, p=0.047) who underwent removal of endometrial polyps in an outpatient setting using the MyoSure morcellation device[16]. One explanation for this observation may be that pain receptors in the cervix or uterus are more sensitive in premenopausal women, and that the co-existence of adenomyosis, fibroids, and chronic inflammatory pelvic conditions is more common in premenopausal women[17].

An operating time of >20 minutes was associated with higher pain scores immediately after the procedure. This may be explained by the surgeon expertise, distension pressure and duration, and procedural difficulty.

To improve pain relief, the Royal College of Obstetricians and Gynaecologists suggests replacing pre-procedural paracetamol with sustained-release nonsteroidal anti-inflammatory drugs and adding post-procedural paracetamol[18]. Non-pharmacological strategies to minimise pain include the 'vocal local' approach, the vaginoscopic approach, the use of miniaturised instruments, and playing music to reduce patient anxiety[19-21].

Patient satisfaction was not associated with pain scores during the procedure (p=0.782), immediately after the procedure (p=0.518), or upon discharge (p=0.340).

Table 3. Predictors for pain during and immediately after hysteroscopic morcellation and upon discharge

	Pain score during procedure*	p Value	Pain score immediately after procedure*	p Value	Pain score upon discharge*	p Value
Menopausal status		0.644		0.020		0.040
Premenopausal	3 (1-5)		2 (0-4)		0 (0-1)	
Postmenopausal	3 (1-5)		1 (0-3)		0 (0-0)	
Previous vaginal delivery		0.943		0.636		0.385
Yes	3 (1-5)		2 (0-3)		0 (0-0)	
No	3 (1-5)		2 (0-4)		0 (0-1)	
Operative time		0.358		0.007		0.465
≤20min	3 (0-5)		1 (0-3)		0 (0-0)	
>20min	3 (1-5)		3 (0-4)		0 (0-1)	
Paracetamol before procedure		0.756		0.645		0.385
Yes	3 (1-5)		2 (0-4)		0 (0-0)	
No	3 (0.5-4.5)		3 (0.5-3)		0 (0-0)	
Paracervical block		0.444		0.463		0.063
Yes	3 (1-5)		2 (0-4)		0 (0-0)	
No	3 (1-4)		2 (0-3)		0 (0-0)	
Buccal misoprostol		0.273		0.126		0.063
Yes	3 (1-5)		2 (0-4)		0 (0-1)	
No	3 (0.5-5)		2 (0-3)		0 (0-0)	
Lesion		0.817		0.489		0.093
Solitary	3 (0-5)		2 (0-3)		0 (0-1)	
Multiple (>1)	3 (1-5)		2 (0-4)		0 (0-0)	
Presence of myoma		0.825		0.273		0.733
Yes	3 (1-6)		3 (1-4)		0 (0-0)	
No	3 (1-5)		2 (0-4)		0 (0-0)	
Satisfaction		0.782		0.518		0.340
Yes	3 (1-5)		2 (1-5)		0 (0-0)	
No	3 (0-5)		3 (0-5)		0 (0-0)	

* Data are presented as median (interquartile range)

This suggests that patient satisfaction/acceptability may be attributed to the quality of preoperative counselling and information-giving[13] and differences in the pain experienced and the pain expected[12]. Therefore, optimising expectations with pre-procedural counselling and close communication may further increase patient satisfaction.

Hysteroscopic morcellation is a good alternative to conventional resectoscopy because of higher rates of resection of polyps and myomas[5,6,22]. The complete resection rate was higher for patients with endometrial polyps than for patients with myomas (98.7% vs 77.8%, p<0.001), which may be attributed to the difference in tissue consistency. In seven patients with myomas >3.5 cm, the resection was incomplete. Of them, two underwent a second hysteroscopic resectoscopy, one underwent resection under general anaesthesia, and four opted for observation only. Endometrial polyps were incompletely resected in four women. Two of these women subsequently underwent bipolar resectoscopy under general anaesthesia, and the remaining two underwent hysterectomies because they had concurrent multiple fibroids.

Two patients were complicated by intraoperative bleeding, which resolved spontaneously. The hysteroscopic morcellation system cannot coagulate bleeding vessels

during surgery. Introducing a bipolar probe through the operative channel for focal haemostasis may be a solution.

There are limitations to our study. First, patient selection may be biased, because women who preferred the procedure performed in other settings or who had intracavitary lesions deemed difficult to be resected by hysteroscopic morcellation were excluded at the outset. Therefore, satisfaction could be affected by preconceived acceptance and might be overestimated. Second, confounding factors such as patient preoperative anxiety level and any concomitant uterine pathologies (adenomyosis, endometriosis, chronic pelvic pain, or pelvic congestion syndrome) that might have affected patient pain perception were not taken into account. Third, rating scores for satisfaction should have been used rather than yes/no questions. Fourth, long-term outcomes of this procedure including the extent of symptom improvement, recurrence of lesions, quality of life, and cost-effectiveness were not addressed. Nonetheless, the present study included details of the procedure, reasons for procedure failure, patient pain scores at different time intervals, and patient satisfaction. The present study also included more patients with large endometrial polyps and various types of myomas than other studies; this may enable better generalisation of our results across populations.

Conclusion

Almost all patients were satisfied with hysteroscopic morcellation. Most patients experienced only mild pain during and immediately after the procedure and upon discharge. Premenopausal status and operative time of >20 minutes were associated with higher pain scores. Further optimisation of pain-relief methods should be considered.

Contributors

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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

This study was approved by the Hospital Authority Central Institutional Review Board (reference: CIRB-2023-023-4).

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