



A Comparative Study on the Diagnostic Accuracy of Manual Vacuum Aspiration versus Endosampler Among Patients with Abnormal Uterine Bleeding and Postmenopausal Bleeding



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Introduction: Abnormal uterine bleeding (AUB) and postmenopausal bleeding (PMB) are healthcare burdens constituting majority of gynecologic consults. As primary manifestations of benign and malignant endometrial lesions, evaluation through endometrial sampling is crucial in early diagnosis and disease prevention. Hysteroscopy, the gold standard in endometrial evaluation, is often unavailable in low-resource settings. Also, available outpatient devices like the Pipelle, may yield insufficient samples affecting diagnostic accuracy. Improved variations, like the endosampler, are reported to obtain more tissues. Additionally, the World Health Organization (WHO) has recently recommended manual vacuum aspiration (MVA) as an alternative sampler for its accuracy and cost-effectiveness.

TABLE 1. Histopathologic Diagnosis and Frequency (%)

	Pipelle diagnosis	MVA diagnosis
Atrophic endometrium	3 (9.68)	4 (12.9)
Atrophic endometrium but suspicious for malignancy	1 (3.23)	0
Chronic endometritis with proliferative endometrium	1 (3.23)	1 (3.23)
Endometrial cancer	2 (6.45)	3 (9.68)
Endometrial polyp	1 (3.23)	1 (3.23)
Eosinophilic Metaplasia	1 (3.23)	0
Hyperplasia with atypia	1 (3.23)	2 (6.45)
Hyperplasia without atypia	7 (22.58)	7 (22.58)
Myoma	0	1 (3.23)
No endometrial tissues seen	0	2 (6.45)
Proliferative changes	14 (45.16)	10 (32.26)

Objective: This study aimed to compare MVA to endosampler in detecting endometrial pathology among women with AUB or PMB, specifically comparing histopathologic diagnosis, tissue yield, and pain scores.

Methodology: This cross-sectional diagnostic study was done at a tertiary university hospital from August 2020 to January 2021. Thirty-one (31) women with AUB or PMB underwent endometrial sampling using both endosampler and MVA. Participants were randomly divided into two groups based on treatment sequence. Age, gravidity, and endometrial thickness were recorded. Histopathologic diagnoses, weight of endometrial tissues, and pain scores by Visual Analogue Pain Scale (VAPS) were evaluated.

TABLE 2. Agreement (kappa scores) between Pipelle vs MVA for hyperplasia, atypia, malignancy

	Agreement	Expected agreement	Kappa	Interpretation	p-value
Hyperplasia	96.77%	55.15%	0.928	Almost Perfect	<0.001
Atypia	96.77%	75.13%	0.87	Almost Perfect	<0.001
Malignancy	96.77%	85.12%	0.783	Substantial	<0.001
Pipelle first [n=14]					
Hyperplasia	100.00%	66.33%	1.000	Perfect	<0.001
Atypia	92.86%	70.41%	0.759	Substantial	0.002
Malignancy	92.86%	80.61%	0.632	Substantial	0.006
Vacuum first [n=17]					
Hyperplasia	94.12%	50.52%	0.881	Almost Perfect	<0.001
Atypia	100.00%	79.24%	1	Perfect	<0.001
Malignancy	100.00%	88.93%	1	Perfect	<0.001

Kappa statistic interpretation: ≤ 0, none; (0 – 0.20], poor; (0.20 – 0.40], fair; (0.40 – 0.60], moderate; (0.60 to 0.80], substantial; (0.8 – 1), Almost perfect; 1, Perfect
Landis JR, Koch GG. The measurement of observer agreement for categorical data. Biometrics.1977;33(1):159–74

Results: The MVA has high sensitivity and specificity in detecting premalignant and malignant lesions, with a diagnostic accuracy of 96.7%. There was histopathologic concordance to endosampler in all cases of hyperplasias and carcinomas. The MVA also detected the following over endosampler: 1 hyperplasia without atypia, 1 atypical hyperplasia, 1 endometrial carcinoma, 1 leiomyoma, and 1 proliferative endometrium. The MVA sampled significantly more endometrial tissue than endosampler (2.1 g vs 1.5 g, p=0.008). The pain scores for both groups had no significant difference.

Conclusion: The MVA is comparable to endosampler as an endometrial sampling alternative in low-resource settings. It yields more endometrial tissues than the endosampler with no significant difference in pain scores.

Table 3. Weight of tissue yield

	Pipelle	Vacuum	p-value
Median (Range)			
Weight, g	1.5 (0.4–15.2)	2.1 (0.6–22.7)	0.008

Statistical test used: Wilcoxon Sign-rank test

Table 4. Pain score

	Pipelle	Vacuum	p-value
Median (Range)			
Pain score (out of 10)	4 (2–6)	4 (2–7)	0.052

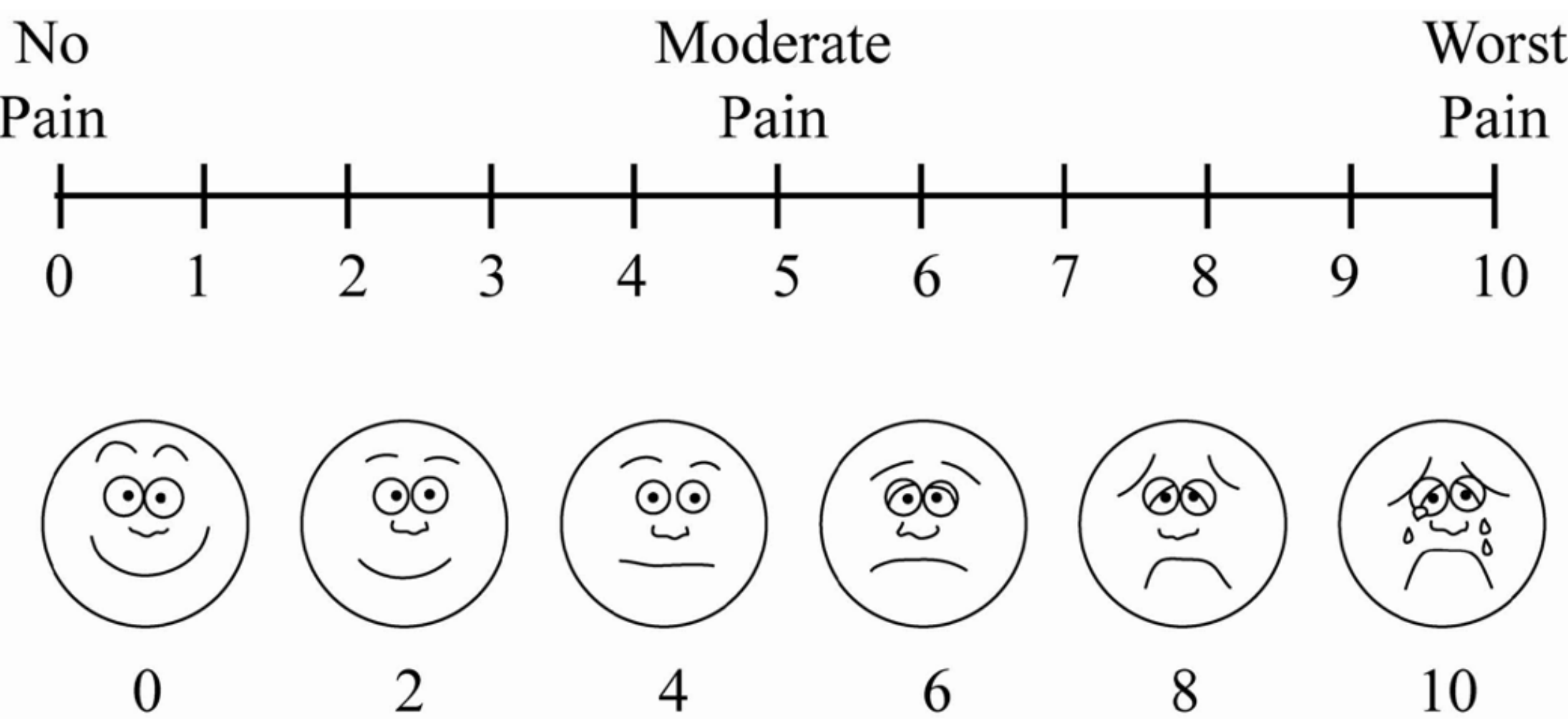
Statistical test used: Wilcoxon Sign-rank test

Keywords: abnormal uterine bleeding, postmenopausal bleeding, manual vacuum aspirator, endosampler

Figure 1. Set of instruments used for the surgery from left to right: (1) two specimen bottles, (2) MVA (Ipas Single-Valve Aspirator), and rigid 3mm cannula, (3) tenaculum, (4) ovum forceps, (5) speculum, (6) Endosampler (MedGyn)



Figure 2. Visual Analogue Pain Scale



<https://assessment-module.yale.edu/im-palliative/visual-analogue-scale>