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Original Research Article

Pipelle versus MVA cannula for endometrial biopsy: a comparative study

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ABSTRACT

Background: Endometrial biopsy procedure is a prerequisite for evaluation of abnormal uterine bleeding, also performed to exclude the presence of endometrial carcinoma or in cases of infertility.
Methods: A study was conducted at Rohilkhand Medical College and Hospital, Bareilly among 350 subjects to assess the efficacy and problems associated with endometrial biopsy technique by MVA cannula method and pipelle method of biopsy.
Results: Mean age recorded was 45.14±10.11, mean parity was 3.18±1.8, mean endometrial thickness was 6.9±3.28 and mean BMI was 24.3±2.12. In our study, duration of MVA endometrial biopsy was (3.1±0.62min) and with Pipelle method was (3.01±0.77 min). Endometrial biopsy is a compulsory requirement for evaluation of endometrial causes of abnormal uterine bleeding especially malignancy, hence, it is a very frequently done procedure.
Conclusions: This study concluded that manual vaccum aspiration using cannula No.4, an unconventional technique was comparable to Pipelle technique with comparable efficacy and results.

Keywords: MVA cannula, Pipelle, Endometrial biopsy, Office procedures

INTRODUCTION

Endometrial biopsy is a necessary requirement for the evaluation of abnormal uterine bleeding. The procedure is often performed to exclude the presence of endometrial cancer or its precursors or for infertility. Various office based endometrial sampling devices are available which are easy to use and several have been reported to have diagnostic efficacy in comparison to the conventional dilatation and curettage (D and C) procedure but there is no sufficient data to advocate the use of a single best office based device for endometrial biopsy.[1]

Endometrial Pipelle was introduced in 1980s as an OPD procedure instrument to obtain endometrial biopsy. Cornier developed pipelle instrument. It was initially used for endometrial sampling in fertility studies. It was discovered that it is also useful in the diagnosis of pathological lesions.[2]

MVA cannula is an endometrial sampling device which is made of flexible polyethylene tubing. It has a large cannula diameter than other endometrial sampling devices. It is conventionally used for MTP upto 12 weeks. It has a potential to remove small polyps as well as the endometrium. It is a reusable device and needs no electricity. Its smallest cannula is 4 mm in diameter and needs no dilatation.[3]

This study was done to compare the unconventional method of MVA cannula with a conventional method of pipelle biopsy.

Aim

To compare Pipelle and MVA cannula for endometrial biopsy.

Objectives

To compare the diagnostic efficacy of Pipelle endometrial device with MVA cannula in evaluating endometrial pathology in terms of tissue adequacy. To compare problems after using MVA cannula and Pipelle for endometrial biopsy.

METHODS

This was a prospective comparative study conducted at Rohilkhand Medical College and Hospital, Bareilly, Uttar Pradesh among 350 patients of abnormal uterine bleeding and post menopausal bleeding fulfilling the inclusion and exclusion criteria . the study was conducted over a span of year from August 2021 to July 2022. Written and informed consent was taken from patients to be a part of the study. Also, approval by ethics committee of the hospital was taken. A detailed history was taken and was followed by detailed clinical examination, baseline blood investigations and pelvic ultrasound. Patients were randomly grouped into two different groups. All endometrial samples were obtained on outpatient basis.

Inclusion criteria

Patients with abnormal uterine bleeding. All uterine sizes (normal to bulky).

Exclusion criteria

Pregnancy. Those who did not give consent. Coagulation disorders. Post menopausal bleeding.

Pipelle is a flexible polypropylene device 23.5 cm long with a soft rounded end. Its outer diameter is 3.1 mm and inner diameter 2.6 mm. An inner piston is present which is pulled back quickly after the device is inserted in the uterus. It creates a negative pressure which allows the tissues to be sucked out through a perforation/eye of 2.4mm from the endouterine end. MVA cannula number 4 was used. It produces a negative pressure as high as 660 mmHg

Endometrial samples obtained were collected in 10% formalin and were sent for histopathological examination.

Doctors were given questionnaire to assess the ease of insertion and time taken during the procedure. The ease of insertion was defined as the ease with which the operator could negotiate the internal os with the respective cannula. It was measured subjectively by the clinician on a score of 1-5 with 5 being very easy. Women were asked about the pain experienced during the procedure and one hour after the procedure which was documented from a score of 0-5 with 5 being worst pain according to the visual analogue scale. Pathologist commented on the adequacy of the tissue which was defined as the presence of intact endometrial glands and stroma on microscopy. Patients in whom sample came to be inadequate were subjected to repeat test. The cost of sampling devices were not compared as both the procedures were provided free of cost.

RESULTS

In our study on 350 women (groups of two divided into 175 each subjects), various baseline parameters like age, parity, mean BMI were recorded. Mean age recorded was 45.14±10.11, mean parity was 3.18±1.8, mean endometrial thickness was 6.9±3.28 and mean BMI was 24.3±2.12. Women with abnormal uterine bleeding had menometrorrhagia (36%) as their chief complaint followed by menorrhagia (28%), polymenorrhea (18%) and metrorrhagia in 18%.

Table 1: Baseline parameters of total subjects.

Baseline characters	Mean	SD
Age (years)	45.14	10.11
Parity	3.18	1.8
Endometrial thickness	6.9	3.28
BMI (kg/m2	24.3	2.12

Table 2: Comparison of endometrial patterns on histopathology.

Endometrial pattern	MVA`s	Pipelle
Proliferative phase	69%	69%
Secretory phase	17%	16%
Endometrial hyperplasia	10%	11%
Atrophic endometrium	1%	1%
Inadequate tissue	3%	3%

In our study, duration of MVA endometrial biopsy was (3.1±0.62min) and with Pipelle method was (3.01±0.77 min).

In total 350 subjects (175 each), 175 samples were obtained by MVA cannula and 175 samples were obtained by Pipelle. Both MVA cannula and Pipelle group showed equal sample adequacy ($p>0.05$ which is insignificant). In 3% patients both MVA and Pipelle method failed to get an adequate sample for histopathological diagnosis.

The histopathological examination of samples by MVA cannula and Pipelle revealed proliferative endometrium

(69%) was the most common endometrial pattern by both the methods followed by secretory endometrium (17%) by MVA cannula method and 16% by Pipelle method, endometrial hyperplasia (10%) by MVA cannula method while 11 and by Pipelle method and atrophic endometrium (1%) by both the methods. Out of the total subjects, in 3% subjects, no histopathologic pattern was observed because of inadequate sample.

In the present study, 3% of procedures were termed as not easy in case of both MVA cannula as well as Pipelle method of endometrial sampling suggesting that MVA method of endometrial sampling has similar ease when compared to Pipelle method ($p>0.05$).

In the present study, during MVA endometrial sampling 25% of the subjects felt no pain (category 0), 66% of the subjects felt pain of category 1, 2 and 3 and 9% of the subjects experienced pain of category 4 on VRS. None of the subjects experienced unimaginable pain during MVA method of endometrial sampling. After Pipelle biopsy, no subject experienced pain (category 0).

On comparing both the methods in terms of histopathological results, MVA demonstrated 100% sensitivity, specificity, PPV, NPV, and accuracy with regards to diagnosis of proliferative phase endometrium and endometrial hyperplasia. For secretory endometrium the corresponding values were 100%, 98.62%, 79.23%, 100%, and 98.86% respectively.

DISCUSSION

Endometrial sampling is a technique which is considered gold standard for evaluation of endometrial pathologies in women. In the present study, variables like age and parity were compared in both the groups. In our study, mean age recorded was 45.14±10.11, mean parity was 3.19±1.8 which is slightly more in comparison to study by Zutshi et al where mean age was 37.1±10 years and parity less than two.[10]

In our study, menometrorrhagia was the most common presenting complaint, seen in 36%. In the study by Tansathit et al, they reported metrorrhagia was the most common presenting complaint (45.1%).[3] Singh et al reported menorrhagia as the most common presenting complaint seen in 54.2%.[4]

In our study, duration of endometrial biopsy by MVA cannula number 4 was 3.1±0.62 min when compared with Pipelle method of endometrial biopsy which was 3.01±0.77 min. Time taken by MVA cannula was comparable with study by Nama et al where the procedure time was 3±0.62 min.[5] This study had result comparable with our study. Sanam et al reported the duration of Pipelle biopsy procedure as 3.38±0.98 min which was slightly more than our study.[6]

In our study, samples obtained by both the methods were 97% adequate in each group. Various studies have shown variation in sample adequacy rate from 76.4% to 98% by using different methods of endometrial biopsy, though, there was not much variation observed in histopathology result obtained. Abdelazim et al in their study achieved a sample adequacy rate of 97.9% and 98.2% by endometrial aspiration with Pipelle and Tao brush respectively.[7] In our study, sample obtained by Pipelle method had sample adequacy rate of 97% which is similar to the study by Abdelazim et al.[7] By using MVA cannula Kenchappa et al8 and Kaur et al9 achieved a sample adequacy rate of 92%, and 95%, respectively. These studies have a comparable sample adequacy rate with our study. The study by Tansathit et al, Zutshi et al reported a sample adequacy rate of 87.2% and76.4% respectively with MVA cannula which is lower than our study.[3,10] In study by Zutshi et al, 11 patients were subjected to repeat sampling.[10]

In our study, 75% subjects experienced pain of mild to moderate degree while none experienced pain during Pipelle procedure which is similar to study by Rauf et al where Pipelle procedure was acceptable in 98% of subjects in terms of pain.[12]

In our study, MVA endometrial sampling reported 100% sensitivity, 100% specificity, 100% PPV, 100% NPV and 100% accuracy with regards to diagnosis of proliferative endometrium. Our results were similar to the study by Nama et al, Kaur et al who reported 98.50%, 100%, 100%, 97.05%, and 99% and 100%, 96%, 86.96%, 100%, and 96.84% of sensitivity, specificity, PPV, NPV, and accuracy, respectively in diagnosing proliferative endometrium with MVA cannula.[5,9] Kenchappa et al reported 88% of accuracy in diagnosing proliferative endometrium by MVA cannula which is comparatively lower than our study.[8]

In our study, MVA endometrial sampling showed 100%, 98.62%, 79.23%, 100%, and 98.86% of sensitivity, specificity, PPV, NPV, and accuracy respectively for diagnosing secretory endometrium. Nama et al reported 88.88%, 100%, 100%, 97.62%, 98% of sensitivity, specificity, PPV, NPV, and accuracy while Kaur et al reported 94.44%, 100%, 100%, 98.73%, and 98.96% of sensitivity, specificity, PPV, NPV, and accuracy respectively in diagnosing secretory endometrium with MVA cannula.[8,9] Both the studies have comparable results with our study.

In our study, MVA endometrial sampling showed 94.74 % sensitivity, 100% specificity, 100% PPV, 99.95 % NPV and 99.43% accuracy in diagnosing endometrial hyperplasia. Kaur et al reported 87.5% sensitivity, 100% specificity, 100% PPV, 96.1% NPV and 96.94% accuracy in diagnosing endometrial hyperplasia with Karman`s cannula No.4 which is similar to our study.[9]

In our study, MVA endometrial sampling reported 100% sensitivity, 100% specificity, 100% PPV, 100% NPV and 100% accuracy with regards to diagnosis of atrophic endometrium which is comparable to study by Kaur et al who demonstrated 97.4% accuracy in diagnosing atrophic endometrium.[9]

Limitation of my study was that limited research has been done to explore unconventional methods of D and C comparable to conventional D and C method.

CONCLUSION

Endometrial biopsy is a compulsory requirement for evaluation of endometrial causes of abnormal uterine bleeding especially malignancy, hence, it is a very frequently done procedure. This study concluded that manual vaccum aspiration using cannula No.4, an unconventional technique was comparable to Pipelle technique with comparable efficacy and results. It can be easily done on outpatient basis and doesn`t require prior dilatation and is not very painful or time consuming.

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Ethical approval: The study was approved by the Institutional Ethics Committee

REFERENCES

1. Zuber TJ. Endometrial biopsy. American family physician. 2001;63(6):1131.
2. Seamark CJ. The demise of the D&C. Journal of the Royal Society of Medicine. 1998;91(2):76-9.
3. Tansathit T, Chichareon S, Tocharoenvanich S, Dechsukhum C. Diagnostic evaluation of MVA endometrial aspiration in patients with abnormal uterine bleeding. Journal of Obstetrics and Gynaecology Research. 2005;31(5):480-5.
4. Singh M, Sachan R, Yadav A. Significance of endometrial thickness on transvaginal sonography in heavy menstrual bleeding. J Curr Res Sci Med. 2019;5:28-32.
5. Nama A, Kochar S, Suthar N, Kumar A, Solanki K. Accuracy of MVA endometrial aspiration in comparison to conventional D and C in women with AUB at tertiary care hospital in North West Rajasthan. Journal of Family Medicine and Primary Care. 2020;9(7):3496.
6. Sanam M, Majid MM. Comparison the Diagnostic Value of Dilatation and Curettage Versus Endometrial Biopsy by Pipelle-a Clinical Trial. Asian Pac J Cancer Prev. 2015;16:4971-5.
7. Abdelazim IA, Aboelezz A, Abdulkareem AF. Pipelle endometrial sampling versus conventional dilatation and curettage in patients with abnormal uterine bleeding. J Turk Ger GynecolAssoc. 2013;14:1-5.
8. Kenchappa S, Gandhi N, Shukla A, Rathore A. Diagnostic efficacy endometrial aspiration cytology in gynecological pathology. Ind JPathoOnco. 2017;4:517-22.
9. Kaur N, Chahal JS, Bandlish U, Kaul R, Mardi K, Kaur H. Correlation between cytological and histopathological examination of the endometrium in abnormal uterine bleeding. J Cytol. 2014;31:144-8.
10. Zutshi V, Gupta M, Kaur P, Malik A, Zaheer S, Gambhir P. Office endometrial sampling: Acomparison between Endosampler and MVA cannula number 4. Int J Reprod Contracept Obstet Gynecol. 2018;7:3965-8.
11. Rauf R, Shaheen A, Sadia S, Waqar F, Zafar S, Sultana S, et al. Outpatient endometrial biopsy with Pipelle versus diagnostic dilatation and curettage. J Ayub Med Coll Abbottabad. 2014;26(2):145-8.

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