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Original Research Article

Diagnostic comparison of hysteroscopic guided biopsy with histopathology of hysterectomy specimen in abnormal uterine bleeding

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ABSTRACT

Background: The objective of the study is to do diagnostic comparison of hysteroscopic guided biopsy with histopathology of hysterectomy specimen in evaluation of abnormal uterine bleeding.
Methods: An observational prospective study is conducted amongst 114 women between age of 30 years to 80 years with abnormal uterine bleeding admitted for diagnostic hysteroscopy and underwent hysterectomy for relief of symptoms at obstetrics and gynecology department, Apollo Hospital, Bilaspur, Chhattisgarh from January 2023 to July 2024 over a period of 1.5 years.
Results: Leiomyoma and adenomyosis are best diagnosed by histopathology of hysterectomy specimen. Diagnostic accuracy of hysteroscopic guided biopsy in endometrial polyp, atrophic endometrium, endometrial hyperplasia and endometrial carcinoma is equal to diagnostic accuracy of histopathology of hysterectomy specimen in evaluating abnormal uterine bleeding.
Conclusions: Hysteroscopic guided biopsy should be done in every case to find exact cause of abnormal uterine bleeding and rule out malignancy. It helps in avoiding unnecessary hysterectomy. It helps to select route of hysterectomy whether abdominal, vaginal or laparoscopic should be preferred.

Keywords: Hysteroscopy, Hysterectomy, Abnormal uterine bleeding, Histopathology

INTRODUCTION

Histopathology refers to the microscopic examination of tissue/biopsy or surgical specimen by a pathologist after the specimen has been processed and histological sections have been placed onto glass slides. Endometrial biopsy is the gold standard method for distinguishing normal endometrium from pathological endometrium.[1]

According to histopathological findings in present study in all age groups, the most common cause of abnormal uterine bleeding (AUB) is disordered proliferative endometrium, 2nd most common cause is endometrial polyp and 3rd common cause of AUB is endometrial hyperplasia.[2]

Federation of International Gynecology and Obstetrics (FIGO) have approved a classification system for abnormal uterine bleeding. It classifies the causes into two categories structural and functional. It is described by the acronym PALM–COEIN. PALM (structural): P-polyp, A-adenomyosis, L-leiomyoma, M-malignancy; COEIN (functional)): C-coagulopathies, O-ovulatory dysfunction, E-endometrial, I-iatrogenic, and N-not yet classified.[3]

Many treatment options are available nowadays including medical and conservative surgical procedures but hysterectomy remains the most preferred method to manage gynaecological disorders.[4]

The objective of the study is to do diagnostic comparison of hysteroscopic guided biopsy with histopathology of

hysterectomy specimen in evaluation of abnormal uterine bleeding.

METHODS

Study design

It was a prospective, and observational study.

Relevant history taken and clinical examination was conducted in all women. Transvaginal sonography was done along with the routine pre-operative investigations. Hysteroscopy was performed under general anesthesia. Distension of uterine cavity was by normal saline with inflow pressure of 120 mm of Hg. Hysteroscope after entering uterine cavity, both the tubal ostia visualized followed by inspecting all the four intrauterine walls and findings were recorded. After removing hysteroscope, endometrial sample was collected by gentle curettage for histopathological diagnosis. Cervical biopsy done. The correlation between findings of hysteroscopy guided biopsy and histopathology of hysterectomy specimen was tabulated.

Study site

The study was conducted at the obstetrics and gynecology department, Apollo Hospital, Bilaspur, Chhattisgarh.

Study population

Women between age of 30 years to 80 years with AUB admitted for diagnostic hysteroscopy and underwent hysterectomy for relief of symptoms.

Sample size

The sample size in the present study is 114 cases.

Duration of study

The study was conducted from January 2023 to July 2024.

Inclusion criteria

Women of between age of 30 years to 80 years admitted for diagnostic hysteroscopy with chief complaints of heavy or irregular menses, intermenstrual bleeding, vaginal bleeding after intercourse, postmenopausal bleeding underwent hysterectomy for relief of symptoms were included in the study from the period of January 2023 to July 2024. Per vaginal and per speculum examination is done in all women.

Exclusion criteria

Women with menstrual complaints such as oligomenorrhea and hypomenorrhea; women having suspected pregnancy or pre-existing thyroid dysfunction and/or coagulopathy revealed in pre-operative investigations.

Statistical analysis

All the data was noted down in a pre-designed study proforma. Results were graphically represented where deemed necessary. Microsoft excel 2010 for graphical representation. Sensitivity, Specificity, positive predictive value, negative predictive value and diagnostic accuracy calculated.

RESULTS

Sensitivity, specificity, positive predictive value, negative predictive value and diagnostic accuracy of hysteroscopic guided biopsy in proliferative endometrium is 74.07%, 81.30%, 100%, 92.55% and 93.85% respectively.

Sensitivity, specificity, positive predictive value, negative predictive value and diagnostic accuracy of hysteroscopic guided biopsy in secretory endometrium is 73.33%, 100%, 100%, 91.30% and 92.98% respectively.

Sensitivity, specificity, positive predictive value, negative predictive value and diagnostic accuracy of hysteroscopic guided biopsy in disordered proliferative endometrium 50%,100%, 50%, 83.67% and 85.96% respectively.

Sensitivity, specificity, positive predictive value, negative predictive value and diagnostic accuracy of hysteroscopic guided biopsy in endometrial polyp is 100%, 100%, 100%, 83.67% and 100% respectively.

Sensitivity, specificity, positive predictive value, negative predictive value and diagnostic accuracy of hysteroscopic guided biopsy in atrophic endometrium is 100%, 100%, 100%, 100% and 100% respectively.

Sensitivity, specificity, positive predictive value, negative predictive value and diagnostic accuracy of hysteroscopic guided biopsy in endometrial hyperplasia is 75%, 100%, 50%, 99.09% and 99.12% respectively.

Sensitivity, specificity, positive predictive value, negative predictive value and diagnostic accuracy of hysteroscopic guided biopsy in endometrial carcinoma is 100%, 100%, 100%, 100% and 100% respectively.

Sensitivity, specificity, positive predictive value, negative predictive value and diagnostic accuracy of hysteroscopic guided biopsy in chronic cervicitis is 84.81%, 100%, 100%, 74.46% and 89.47% respectively.

Sensitivity, specificity, positive predictive value, negative predictive value and diagnostic accuracy of hysteroscopic guided biopsy in squamous metaplasia is 100%, 100%, 100%, 100% and 100% respectively (Tables 1 and 2).

Leiomyoma and adenomyosis are best diagnosed by histopathology of hysterectomy specimen. Diagnostic accuracy of hysteroscopic guided biopsy in endometrial polyp, atrophic endometrium, endometrial hyperplasia and endometrial carcinoma is equal to diagnostic accuracy of histopathology of hysterectomy specimen (Figure 1).

Incidence of disordered proliferative endometrium, adenomyosis, leiomyoma, endometrial hyperplasia and endometrial polyp is maximum in the age group of 40-49 years. Incidence of endometrial carcinoma is maximum in the age of 50-59 years age group (Figure 2).

In hysteroscopy guided biopsy, proliferative endometrium is seen in 17.59% cases, secretory endometrium in 26.31% cases, disordered proliferative endometrium in 14.03% cases, atrophic endometrium in 14.03% cases, endometrial hyperplasia in 3.5% cases, endometrial polyp in 7.01% cases, endometrial carcinoma in 2.63% cases, leiomyoma in 0%, adenomyosis is 0%, chronic cervicitis is 58.77% cases, squamous metaplasia in 3.5% cases.

In histopathology of hysterectomy specimen, proliferative endometrium is seen in 23.68% cases, secretory endometrium in 19.29% cases, disordered proliferative endometrium in 28.07% cases, atrophic endometrium in 14.03% cases, endometrial hyperplasia in 2.63% cases, endometrial polyp in 7.01% cases, endometrial carcinoma in 2.63% cases, leiomyoma in 48.24%, adenomyosis is 34.21%, chronic cervicitis is 69.29% cases, squamous metaplasia in 3.5% cases (Table 3).

In present study, most of the women who underwent hysterectomy are between the age of 41 to 50 years (61.40%) and second common is the age between 51 to 60 years (23.68%). Percentage of women between 30-40 years age group is 9.64%, 4.38% between 61-70 years age and 1.75% between 71- 80 years age (Table 4).

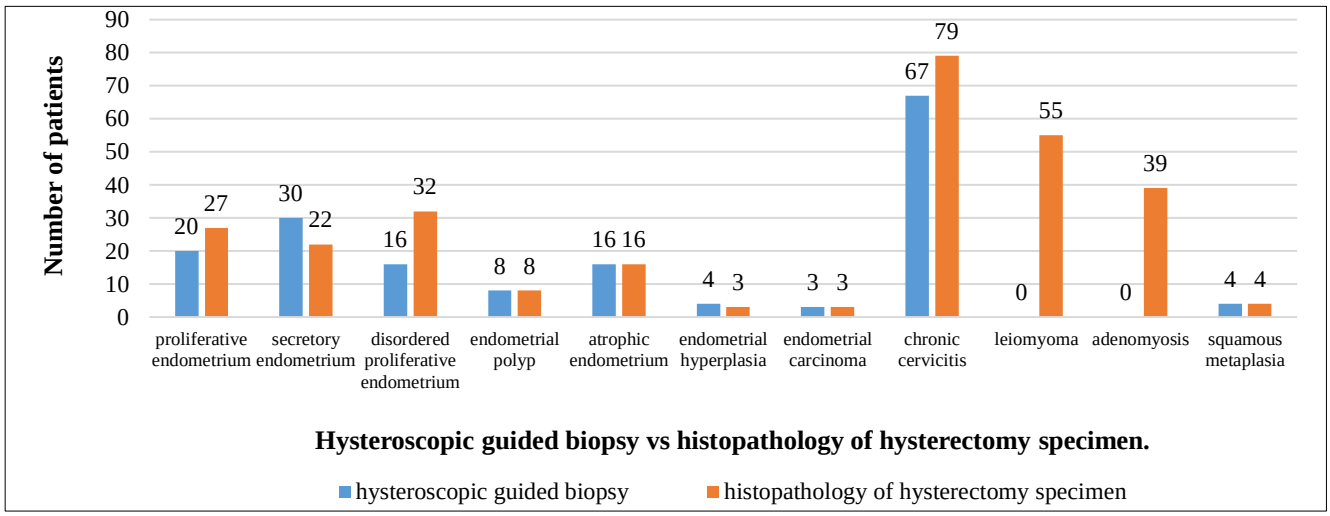

Figure 1: Diagnostic comparison of hysteroscopic guided biopsy with histopathology of hysterectomy specimen.

Table 1: Correlation of hysteroscopy guided biopsy with histopathology of hysterectomy specimen in abnormal uterine bleeding.

Hysteroscopy guided biopsy	HPE of hysterectomy specimen		Total
Proliferative endometrium present	20 [true positive]	0 [false positive]	20
Proliferative endometrium absent	07 [false negative]	87 [true negative]	94
Total	27	87	114
Secretory endometrium present	22 [true positive]	0 [false positive]	22
Secretory endometrium absent	08 [false negative]	84 [true negative]	92
Total	30	84	114
Disordered proliferative endometrium present	16 [true positive]	0 [false positive]	16
Disordered proliferative endometrium absent	16 [false negative]	82[true negative]	98
Total	32	82	114
Endometrial polyp present	8 [true positive]	0 [false positive]	8
Endometrial polyp absent	0 [false negative]	106 [true negative]	106
Total	8	106	114
Atrophic endometrium present	16 [true positive]	0 [false positive]	16
Atrophic endometrium absent	0 [false negative]	98 [true negative]	98
Total	16	98	114

Continued.

Hysteroscopy guided biopsy	HPE of hysterectomy specimen		Total
Endometrial hyperplasia present	3 [true positive]	0 [false positive]	3
Endometrial hyperplasia absent	1 [false negative]	110 [true negative]	111
Total	4	110	114
Endometrial carcinoma present	3 [true positive]	0 [false positive]	3
Endometrial carcinoma absent	1 [false negative]	110 [true negative]	111
Total	4	110	114
Chronic cervicitis present	67 [true positive]	0 [false positive]	67
Chronic cervicitis absent	12 [false negative]	35 [true negative]	47
Total	79	35	114
Squamous metaplasia present	4 [true positive]	0 [false positive]	4
Squamous metaplasia absent	0 [false negative]	110 [true negative]	110
Total	4	110	114

Table 2: Sensitivity, specificity, positive predictive value, negative predictive value and diagnostic accuracy of hysteroscopic guided biopsy in abnormal uterine bleeding.

Variables	Values (%)
Proliferative endometrium	
Sensitivity	74.07
Specificity	81.30
Positive predictive value	100
Negative predictive value	92.55
Diagnostic accuracy	93.85
Secretory endometrium	
Sensitivity	73.33
Specificity	100
Positive predictive value	100
Negative predictive value	91.30
Diagnostic accuracy	92.98
Disordered proliferative endometrium	
Sensitivity	50
Specificity	100
Positive predictive value	50
Negative predictive value	83.67
Diagnostic accuracy	85.96
Endometrial polyp	
Sensitivity	100
Specificity	100
Positive predictive value	100
Negative predictive value	83.67
Diagnostic accuracy	100
Atrophic endometrium	
Sensitivity	100
Specificity	100
Positive predictive value	100
Negative predictive value	100
Diagnostic accuracy	100
Endometrial hyperplasia	
Sensitivity	75
Specificity	100
Positive predictive value	50
Negative predictive value	99.09
Diagnostic accuracy	99.12
Endometrial carcinoma	
Sensitivity	100

Continued.

Variables	Values (%)
Specificity	100
Positive predictive value	100
Negative predictive value	100
Diagnostic accuracy	100
Chronic cervicitis	
Sensitivity	84.81
Specificity	100
Positive predictive value	100
Negative predictive value	74.46
Diagnostic accuracy	89.47
Squamous metaplasia	
Sensitivity	100
Specificity	100
Positive predictive value	100
Negative predictive value	100
Diagnostic accuracy	100

Diagnostic accuracy of histopathology of hysterectomy specimen in leiomyoma and adenomyosis is 100%

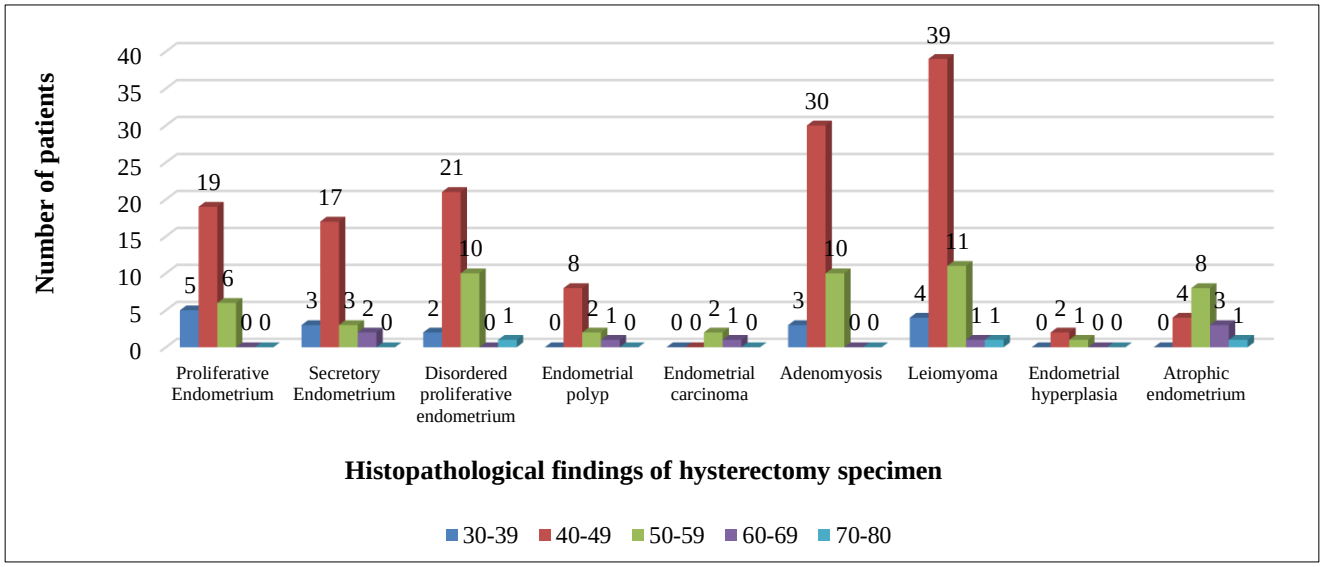

Figure 2: Age group wise distribution of histopathology of hysterectomy specimen.

Table 3: Comparison of hysteroscopy guided biopsy with histopathology of hysterectomy specimen in evaluating cause of abnormal uterine bleeding.

Variables	Hysteroscopy guided biopsy (%)	Histopathology of hysterectomy specimen (%)
Proliferative endometrium	17.59	23.68
Secretory endometrium	26.31	19.29
Disordered proliferative endometrium	14.03	28.07
Atrophic endometrium	14.03	14.03
Endometrial hyperplasia	3.5	2.63
Endometrial polyp	7.01	7.01
Endometrial carcinoma	2.63	2.63
Leiomyoma	0	48.24
Adenomyosis	0	34.21
Chronic cervicitis	58.77	69.29
Squamous metaplasia	3.5	3.5

Table 4: Age group wise distribution of women with AUB underwent hysterectomy.

Age group (in years)	Number of cases	Percentage
30-40	11	9.64
41-50	70	61.40
51-60	27	23.68
61-70	05	4.38
71-80	02	1.75

DISCUSSION

Hysteroscopic guided biopsy is considered as the gold standard investigation for diagnosing the cause of abnormal uterine bleeding.[5] In present study, most of the women who underwent hysterectomy are between the age of 41 to 50 years of age (61.40%) compared to the study of Somasunder et al in which most of the women were between 41 and 45 years of age (53%).[5]

In the study by Patil et al, most common age group is between 41 and 50 years (40%).[6]

In present study, leiomyoma is seen in 48.24%, adenomyosis is seen in 34.21%, polyp is seen in 7.01% and endometrial carcinoma is seen in 2.63% compared to by Patil et al study in which leiomyoma is seen in 37.3%, adenomyosis is seen in 13.3%, polyp is seen in 6% and endometrial carcinoma is seen in 1.3%.[6]

Hysterectomy is indicated in leiomyoma, abnormal uterine bleeding, endometrial hyperplasia with atypia, endometrial carcinoma for relief of symptoms compared to study conducted by Lefebvre et al similar to present study.[9] Decision to perform surgery still rests on the subjective interpretation of the symptoms by the patient and her physician.[10]

In present study, proliferative endometrium is seen in 23.68%, secretory endometrium is seen in 19.29%, disordered proliferative endometrium in 28.07%, atrophic endometrium in 14.03% cases, endometrial hyperplasia in 2.63% cases, endometrial polyp in 7.01% cases, endometrial carcinoma in 2.63%, leiomyoma in 48.24%, adenomyosis in 34.21% compared to study conducted by Lee et al where hormonal causes of abnormal uterine bleeding is seen in 37% cases, atrophic endometrium in 5.4% cases, leiomyoma in 36.5% cases, adenomyosis 28% cases on histopathology of hysterectomy specimen.

In present study, most common cause of hysterectomy is leiomyoma compared to study conducted by Shanmukhi et al.[12]

Limitations

Biopsy can detect only endometrial causes of AUB. USG and hysteroscopy are needed to confirm diagnosis of leiomyoma and adenomyosis. There is variation in endometrial findings due to time gap in between two procedures due to different phases of menstrual cycle.

CONCLUSION

Hysteroscopic guided biopsy should be done in every case to find exact cause of abnormal uterine bleeding and rule out malignancy. It helps in avoiding unnecessary hysterectomy. It helps to select route of hysterectomy whether abdominal, vaginal or laparoscopic should be preferred.

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