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Role of diagnostic hysteroscopy in evaluation of abnormal uterine bleeding and its histopathological correlation

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Abstract
Objectives: To correlate hysteroscopic findings with histopathologic findings and study the accuracy of hysteroscopy in evaluation of abnormal uterine bleeding.
Methods: This prospective study was conducted at Tertiary care hospital, Department of Obstetrics and Gynaecology SMGS GMC Jammu, from July 2019 to Feb 2020. 100 patients who were admitted with history of abnormal uterine bleeding were selected for this study. Reproductive aged, perimenopausal and postmenopausal females with age between 25-70 years were included while pregnant females, females with clinically palpable pelvic pathology, unhealthy cervix and coagulation disorders were excluded from this study. All patients underwent Hysteroscopy and D&C postmenstrually with consent. The hysteroscopic and histopathologic findings (after D&C) obtained were compared.
Results: This study was conducted on 100 patients of age group between 25-70 years, with mean age 41.2 years. Menorrhagia (35%) was the commonest presenting symptom. Diagnostic efficacy of hysteroscopy in terms of accuracy 84.6% for proliferative endometrium, 84.46% for secretory endometrium, 89% for hyperplasia, 100% for polyp, 100% for myoma, 100% for endometrial CA respectively.
Conclusion: Diagnostic accuracy of hysteroscopy was found better in polyps and submucous myomas which were missed by traditional D&C. Although the diagnostic accuracy of pathological abnormalities in our study was 75%, hysteroscopy has 100% accuracy for CA endometrium, Myoma and polyp.
Hysteroscopically directed biopsy would be an ideal procedure in abnormal uterine bleeding wherever facilities are available.

Keywords: Histopathological, diagnostic hysteroscopy, MIPPO, knee stiffness, wound dehiscence

Introduction
Abnormal uterine bleeding is defined as any type of uterine bleeding in which the duration, frequency or amount is excessive for an individual. Almost one third of gynecological consultation and two-thirds of hysterectomies are due to abnormal uterine bleeding (AUB) [20]. Incidence rises to 69% in peri and postmenopausal age [12]. Various methods used to diagnose the structural causes of AUB include ultrasonography, sonosalpingography, hysteroscopy, D&C [20]. Dilatation and curettage has long been gold standard for abnormal uterine bleeding but Hysteroscopy helps in direct visualization of the endometrial cavity and importantly, directed endometrial sampling of any suspicious areas [8]. To manage effectively it is important to diagnose accurately the cause of abnormal bleeding. Primary goal is to diagnose in the most efficient and least invasive manner. Certain intracavitary lesions can be missed by D and C [1]. Use of hysteroscopy in abnormal uterine bleeding is almost replacing blind curettage, as it ‘‘sees’’ and ‘‘decides’’ the cause [5]. The present study tries to explore hysteroscopy potential as a procedure in evaluation of abnormal uterine bleeding with histopathology as the basis for correlation.

Material methods
This prospective study was conducted at Tertiary care hospital, Department of Obstetrics and Gynaecology, SMGS GMC Jammu from July 2019 to Feb 2020. 100 patients who were admitted with history of abnormal uterine bleeding were selected for this study. Reproductive aged, perimenopausal and postmenopausal females with age between 25-70 years were included while pregnant females, females with clinically palpable pelvic pathology, unhealthy cervix and coagulation disorders were excluded from this study.

The patients who met inclusion and exclusion criterias were interviewed and data such as demographic characteristics, relevant history documented and clinical examination was performed and the findings were noted on a pre-designed proforma. All patients underwent Hysteroscopy and D&C postmenstrually with consent as an inpatient procedure, under short GA with 0.9% normal saline as distending media in hysteroscopy. The correlation between findings on hysteroscopy and histo-pathological examination (after D&C) was done.
Statistical analysis was done by using SPSS (version 19) for windows and data was presented as percentages. P value of < 0.05 was considered significant. P value calculated using F test.

Results

This study was conducted on 100 patients. Age group of the patients ranged from 25-70 years and the mean age was 41.2 years. Menorrhagia (35%) was the commonest presenting symptom in this study. The next common presentations were polymenorrhagia (19%), oligomenorrhea (16%), hypomenorrhoea (13%), post-menopausal Bleeding (PMB) (7%), metrorrhagia (5%), hypomenorrhoea (3%), menometrorrhagia (2%).
Abnormal findings was seen in 58 patients while 42 patients showed normal endometrium on hysteroscopy.

Table 1: Distribution of the patients according to the histopathological and hysteroscopic findings

Finding	Hysteroscopic finding (No. of cases)	Histopathological finding (No. of cases)
Normal	42	60
Proliferative	28	36
Secretory	14	24
Hyperplasia	29	24
Endometrial polyp	8	3
Myoma	10	2
Synechia	2	0
Atrophic endometrium	4	2
TB endometitis	2	2
Endometrial CA	3	3
No endometrial tissue obtained	0	4

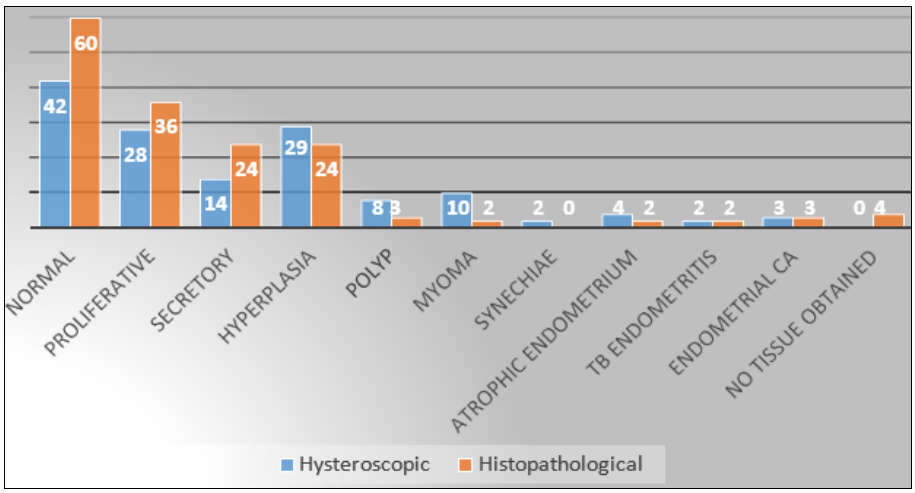

Fig 1: Distribution of the patients according to the histopathological and hysteroscopic findings

Out of total 100 cases evaluated, in 4 cases, no endometrial tissue was obtained histopathologically. Among the abnormal cases, 24 cases of hyperplasia, 3 cases of endometrial polyp, 2 cases of myoma, 2 cases of atrophic endometrim, 2 cases of TB endometritis and 3 cases of endometrial CA respectively were diagnosed histopathologically. While on hysteroscopy, 29 cases of hyperplasia, 8 cases of endometrial polyp, 10 cases of myoma, 4 cases of atrophic endometrim, 2 cases of TB endometritis and 3 cases of endometrial CA respectively were seen.

Table 2: Comparison between the hysteroscopic findings and the histopathological findings

Hysteroscopic	histopathological									Total
	Proliferative	Secretory	Hyperplasia	Endometrial polyp	Myoma	Atrophic endometrium	TB endometritis	Endometrial CA	No endometrial tissue	
Proliferative	24	4	0	0	0	0	0	0	0	28
Secretory	3	11	0	0	0	0	0	0	0	14
Hyperplasia	3	5	21	0	0	0	0	0	0	29
Endometrial polyp	3	2	0	3	0	0	0	0	0	8
Myoma	3	2	3	0	2	0	0	0	0	10
Synechie	0	0	0	0	0	0	0	0	2	2
Atrophic endometrium	0	0	0	0	0	2	0	0	2	4
TB endometrium	0	0	0	0	0	0	2	0	0	2
Endometrial CA	0	0	0	0	0	0	0	3	0	3
Total	36	24	24	3	2	2	2	3	4	100

Table 3: Evaluation of diagnostic efficacy of hysteroscopy for different AUB pathologies

S. No.	Findings	Sensitivity	Specificity	PPV	NPV	Accuracy
1.	Proliferative (n=36)	66.6%	94.1%	85%	84.2%	84.6%
2.	Secretory (n=24)	45.8%	96.2%	78.5%	85.3%	84.46%
3.	Pathological abnormalities(n=40)	90%	65.62%	62.06%	91.3%	75%
4.	Hyperplasia (n=24)	87.5%	90.4%	77.7%	96.2%	89%
5.	Polyp (n=8)	100%	95%	37.5%	100%	100%
6.	Myoma (n=2)	100%	92%	20%	100%	100%
7.	Endometrial CA	100%	100%	100%	100%	100%

Diagnostic efficacy of hysteroscopy in terms of accuracy 84.6% for proliferative endometrium, 84.46% for secretory endometrium, 89% for hyperplasia, 100% for polyp, 100% for myoma, 100% for endometrial CA respectively.

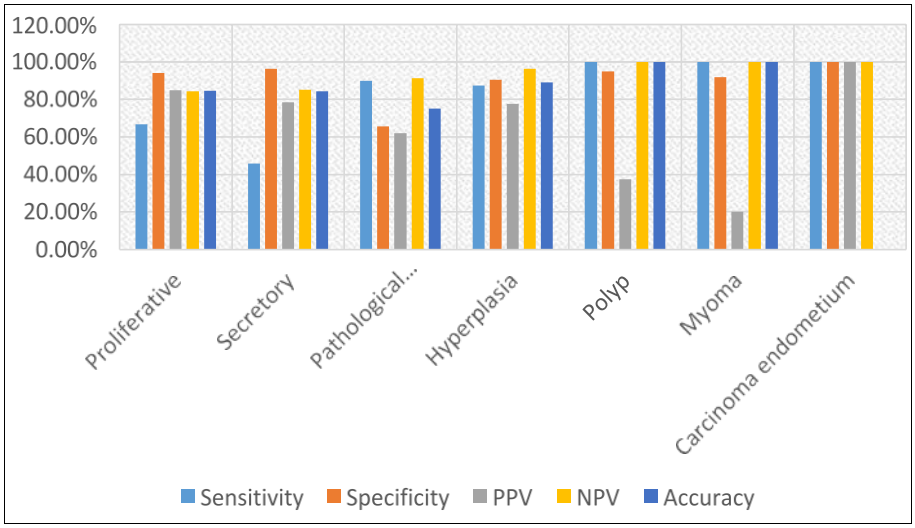

Fig 2: Evaluation of diagnostic efficacy of hysteroscopy for different AUB pathologies

Discussion

In the present study, 42% of the cases were normal on hysteroscopy and 60% were normal on histopathological examination. Sunitha C *et al*. noted 54% of the patients with normal findings whereas Mukhopadhyay and Ashis noted 32.6% as normal on hysteroscopy [17, 13].

Among normal endometrium, diagnostic efficacy of hysteroscopy in terms of sensitivity (66.6%), specificity (94.1%), PPV (85%), NPV (84.2%) and accuracy (84.6%) for proliferative endometrium and sensitivity (45.8%), specificity (96.2%), PPV (78.5%), NPV (85.3%) and accuracy (84.46%) for secretory endometrium respectively. The results were comparable with Valson H *et al*. [18].

The results of our study indicate a high sensitivity (90%) and specificity (65.6%) of hysteroscopy in detection of intrauterine pathologies which was comparable to Barati *et al*. and Hatem H *et al*. [2, 9]

Table 4: Comparison of various parameters in diagnosing IU pathologies

Parameter	Barati *et al*. [2]	Hatem H *et al*. [9]	Our study
Sensitivity	97.8%	91.9%	90%
Specificity	99%	86.5%	65.62%
PPV	94%	93.2%	62.06%
NPV	99%	84.2%	91.3%
Accuracy	-	90.1%	75%

In our study, among 8 cases of endometrial polyp on hysteroscopy, 3 cases were diagnosed histologically. Rest 5 cases were diagnosed as proliferative (3) and secretory (2) endometrium on histopathological examination, with overall sensitivity of 100%, specificity 95%, PPV 37.5%, NPV 100% and accuracy 100% on hysteroscopy. Pasqualotto *et al*. reported sensitivity of hysteroscopy for detection of endometrial polyp as 99%, while Epstein *et al*. reported it as 80% [15, 7]. Patil *et al*. and Panda *et al*., also reported accuracy of 100% in the diagnosis of endometrial polyp and submucous myoma [16, 14].

Out of 10 cases of myoma on hysteroscopy in our study, 3 cases were proliferative endometrium, 2 cases were secretory endometrium, 3 cases were hyperplastic endometrium and 2 cases were myoma on histopathological examination. Hysteroscopy had 100% sensitivity and accuracy in diagnosing myoma. In the study of Jakab *et al*., the sensitivity of hysteroscopy in detection of circumscribed intrauterine lesions was 100% [10].

In our study, 29 cases were diagnosed as hyperplastic endometrium on hysteroscopy while 24 cases were diagnosed histopathologically. 21 cases were hyperplastic and 8 cases were normal histopathologically and 3 cases were diagnosed as myoma. So, hysteroscopy had accuracy of 89% in diagnosing endometrial hyperplasia.

Table 5: Comparison of various parameters in diagnosing hyperplasia

Parameter	Loverro *et al*. [11]	Chaudhari KR, Sathe P [3]	Our study
Sensitivity	98%	98.3%	87.5%
Specificity	95%	80.5%	90.4%
PPV	63%	89.7%	77.7%
NPV	99%	96.7%	96.2%
Accuracy	-	91.8%	89%

In our study, out of 3 cases of endometrial CA on histopathological examination, all 3 cases were diagnosed hysteroscopically with 100% accuracy.

Conclusion

Diagnostic accuracy of hysteroscopy was found better in polyps and submucous myomas which were missed by traditional D&C. The finding of our study suggest that hysteroscopy was useful in workup of AUB. Although the diagnostic accuracy of pathological abnormalities in our study was 75%, hysteroscopy provides additional information for pathologies that remain undiagnosed on histopathological examination. Hysteroscopy has 100% accuracy for CA endometrium, Myoma and polyp. The accuracy for hyperplasia was 89%. Hysteroscopically directed biopsy would be an ideal procedure in abnormal uterine bleeding wherever facilities are available.

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