Diagnostic accuracy of hysteroscopy in relation to histopathology in patients with abnormal uterine bleeding at a tertiary care centre

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Abstract

Background: : Judicious use of hysteroscopy to manage abnormal uterine bleeding (AUB) adds a new dimension in handling this perplexing problem. Hysteroscopy combined with histological examination is the new "Gold Standard" for evaluating a case of abnormal uterine bleeding

Objectives: To study Diagnostic accuracy of hysteroscopy in relation to histopathology in patients with abnormal uterine bleeding

Methods: A hospital based diagnostic accuracy study was carried out among 100 women with abnormal uterine bleeding. All patients underwent the procedure of hysteroscopy. Samples were collected in all patients for histopathology confirmation of the hysteroscopy findings. Sensitivity, specificity, positive predictive value, negative predictive value and diagnostic accuracy were calculated for hysteroscopy in comparison to gold standard histopathology.

Results: Majority of the women belonged to 40-49 years (41%). Majority (37%) reported after one year of occurrence of the symptoms. Majority (54%) had menorrhagia. Hysteroscopy was found to be having good sensitivity and specificity in comparison to gold standard histopathology. Sensitivity=97.7%; specificity=78.5%, positive predictive value=78.1%; negative predictive value=97.7%; diagnostic accuracy=87% for hysteroscopy in comparison to histopathology.

Conclusion: Hysteroscopy is simple to perform and provides direct visualization of the uterus cavity and the endo-cervical canal. In abnormal uterine bleeding, quick and safe diagnosis is possible by hysteroscopy. In cases of endometrial polyp and sub mucous myoma which are pedunculated structures, diagnostic accuracy is greater with hysteroscopy and can be treated during the procedure itself. Thus, Hysteroscopic guided biopsy and histopathology is considered as new "Gold Standard" in diagnosis and often treatment of abnormal uterine bleeding.

Key words: Sensitivity, specificity, gold standard, bleeding, hysteroscopy

Introduction

Abnormal uterine bleeding (AUB) is the bleeding per vagina which is increased in quantity and/or increased duration of the bleeding and/or is out of schedule. It has been estimated that almost 30% of the women suffer from AUB and it makes them visit the outpatient department of the obstetrics and gynecology department [1]. AUB has a considerable impact on the life of the woman affecting the daily routine life [2].

Around one fourth of surgeries in the gynecology department can be attributed to AUB correction[3]. More than 40% cases of AUB are due to myomas and polyps [4]. AUB has varied aetiology. It can be due to

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many local conditions. It can also be as a result of systemic diseases for which one of the manifestations can be as AUB. It can also be due to any side effect of any drugs [5].

Thus, AUB aetiology can lead to difficulty in finding the exact cause of the AUB. If the correct aetiology is not found, the diagnosis is difficult and hence the management of the condition. The source of the bleeding and the site of the bleeding can be determined by careful and detailed history, complete and thorough clinical examination and precise pelvic examination. Previously ultrasonography was used as a common investigation for AUB patients as well as dilatation and curettage to evaluate the aetiology of the AUB cases [6].

Dilatation and curettage have been designated as a blind procedure as the doctor is not able to see what exactly is going to happen while carrying out the procedure. It was considered as a gold standard but it has been shown that nearly 50% of the cases of endometrial polyp were totally missed in dilatation and curettage procedure [7].

Hysteroscopy with high level of sensitivity and specificity (in comparison to histopathology findings) because there is chance of direct visualization. The doctor can directly see the condition of the uterine cavity and cervical canal. Hysteroscopy can be rigid, or it can be flexible depending upon the type of procedure used and required. It allows immediate diagnosis and can also have an added advantage of immediate surgical procedure in cases of submucous fibroids and polyps [7].

Thus the judicious use of hysteroscopy to manage AUB adds a new dimension in handling this perplexing problem. Hysteroscopy combined with histological examination is the new "Gold Standard" for evaluating a case of AUB [7].

This study is taken up to analyse the role of hysteroscopy in evaluating abnormal uterine bleeding and contribution of the procedure for clinical diagnosis and treatment. It also aims to correlate histopathological results with hysteroscopy findings.

Materials and Methods

The present study was hospital based diagnostic accuracy study. Histopathological findings were taken as gold standard to determine the diagnostic accuracy of hysteroscopy findings. Present study was carried out in the Department of Obstetrics and Gynaecology, Aayan Institute of Medical Sciences, Kanakamamidi, Hyderabad. Hundred women (n=100) who presented with abnormal uterine bleeding (AUB) and also consented for participation in study were included while women with severe anaemia, profuse bleeding, multiple/large fibroids, uterine infection, cancer cervix, pregnant women were not included in the study. Institution Ethics Committee permission was obtained. Informed consent was taken from all the patients. All patients were appropriately treated and followed

Detailed history, thorough clinical examination was carried out and recorded in the predesigned, pre tested, and semi structured study questionnaire. Details of pelvic and abdominal examination findings were noted. Hysteroscopy was planned in the morning hours and hence patients were asked to be nil by mouth since 10 pm night. Surgical profile along with other required investigations was carried out well in advance to hysteroscopy.

General anaesthesia was used to perform hysteroscopy.

Hysteroscope:

This instrument is a modified cystoscope consisting of a stainless-steel sheath equipped with stop cock, controlled channels for distension medium and the passage of ancillary instruments. An obturator to facilitate introduction of the sheath is a feature of the hysteroscope. Telescope used was of 4mm 30 degrees oblique lens with a 5mm sheath. Illumination provided by a xenon light source and is transmitted by a fibre optic cable.

Instruments: Speculum, Vulsellum, Sponge holding forceps, D&C set with Dilators, Syringes and needles

Distension medium used was Normal Saline (0.9%). Hysteromat was used for creating the intrauterine pressure.

Procedure:

Under anaesthesia, after catheterising the bladder, a bimanual pelvic examination was done. After introducing Sim's speculum, the anterior lip of the cervix was caught with vulsellum. After measuring the length of the uterine cavity, the internal os was dilated with Hegar's dilator (whenever necessary). Up to NO.8 Hegar"s dilator was needed in some patients. The hysteroscope was introduced into the cervical canal under vision. The uterine cavity was distended 0.9% normal saline and examined.

The points noted were Endocervical canal, endometrial cavity, Nature and surface of endometrium, Fundus, Vascular pattern, bilateral ostia, any other pathology

Patients with uterine cavities without any questionable areas were labelled as Normal or negative hysteroscopic view when the following 3 criteria were met:

1. Good visualization of entire uterine cavity
2. No structural abnormalities in the cavity.
3. A uniformly thin, homogenous appearing endometrium without variation in thickness.

Dilatation and Curettage: Under the same anaesthesia, endometrial curettage was done with a sharp curette and the curetting were sent for histopathological examination.

Post-operative: Patients were observed for any complications and were put on a broad-spectrum antibiotic. Most of the patients were discharged on the same day.

Statistical analysis: The data was entered in the Microsoft Excel worksheet and analysed using proportions. Sensitivity, specificity, positive predictive value and negative predictive value and diagnostic accuracy were calculated for hysteroscopy in comparison to gold standard of histopathology.

Results

Table 1: Distribution according to the age group

Variable		Number	%
Age (years)	20-29	5	5
	30-39	19	19
	40-49	41	41
	50-59	23	23
	60 and above	12	12
Parity	Nulliparous	9	9
	1-2 children	58	58
	> 2 children	33	33

Majority of the women in the present study were in the age group of 40-49 years (41%) followed by the 50-59 years (23%). Majority of the women were having 1-2 children (58%). (Table 1)

Table 2: Clinical characteristics of the study subjects

Clinical characteristics		Number	%
Duration of symptoms	< 3 months	27	27
	3-12 months	36	36
	> 12 months	37	37
Symptoms	Menorrhagia	54	54
	Polymenorrhagia	6	6
	Metrorrhagia	8	8
	Post-menopausal bleeding	32	32
Previous surgeries	Lower segment caesarean section (LSCS)	11	11
	Dilatation and curettage (D&C)	2	2
	Other	14	14
	No previous surgeries	73	73
Haemoglobin (gm/dl)	< 8	2	2
	8.1-10.9	41	41
	> 11	57	57

Majority of the women i.e., 37% reported after one year of occurrence of the symptoms. 36% reported within 3-12 months of occurrence of symptoms. Only 27% reported within 3 months of occurrence of symptoms. Of the total AUB cases, majority i.e., 54% had menorrhagia. 73% had no previous surgeries and majority i.e. 57% were not anaemic (Hb > 11 gm/dl) (Table 2)

Table 3: Comparison of Hysteroscopy Findings with histopathological findings

Condition	Hysteroscopic findings	Histopathological findings	No. of false positive	No. of false negative
Endometrial polyp	34	28	6	0
Proliferative	28	34	0	6
Secretory	17	22	0	5
Endometrial atrophy	6	5	1	0
Sub mucous myoma	3	3	0	0
Endometrial hyperplasia	11	7	4	0
Endometrial carcinoma	1	1	0	0

Out of 34 cases diagnosed as endometrial polyp as per hysteroscopy, 28 were true positive and 6 were false positive. Out of 34 cases diagnosed as proliferative as per histopathology, 28 were true positive and 6 were false negative. But in case of endometrial carcinoma and sub mucous myoma, hysteroscopy there were no false positives and false negatives.

Table 4: Validity of hysteroscopy

Hysteroscopy findings	Histopathology findings		Total
	Disease present	Disease absent	
Disease present	43	12	55
Disease absent	1	44	45
Total	44	56	100

Sensitivity = 97.7%; specificity = 78.5%, positive predictive value = 78.1%; negative predictive value = 97.7%; diagnostic accuracy = 87%

Hysteroscopy was found to be having good sensitivity and specificity in comparison to gold standard histopathology

Discussion

We found that majority of the women belonged to the age of 40-49 years (41%). Panda A et al[8] also reported that the incidence of AUB was most in the age group of 35-45 years. Gianninoto A et al[9] also found that the most affected age group was 30-45 years..VonTrotsenberg M et al[10] also noted that AUB was common in the age group of 41-50 years.

In the present study, 54% women presented with menorrhagia, 32% presented with postmenopausal bleeding. Panda A et al[8] also observed that in their study 60% women presented with menorrhagia.

We noted that 55% had abnormal hysteroscopy and 45% had normal findings on hysteroscopy. Similar findings high abnormal rate on hysteroscopy were reported by Panda A et al[8] and VanTrotsenburg M et al[10] but low rates of abnormality on hysteroscopy were reported by Gianninoto A et al[9] and Garuti G et al[11].

Fifty six percent (56%) of cases had normal endometrium on hysteroscopy in the present study. The sensitivity of hysteroscopy for normal endometrium was 78.5%, specificity was 97.7%, positive predictive value was 97.7% and the negative predictive value was 78.5%. Gribb JJ et al[12] found that 57% had normal endometrium on hysteroscopy which is similar to the present study but a low rate of 34% was reported by Jyotsana MK et al[13].

Eleven (n=11) cases of endometrial hyperplasia were diagnosed on hysteroscopy of which 6 cases were confirmed by histopathology. On hysteroscopy, endometrium in these cases appeared thickened, oedematous and undulating. 1 case diagnosed to be normal endometrium by hysteroscopy was diagnosed as simple hyperplasia with atypia by histopathology. Results obtained are similar to the studies by LoverroG et al[14] and Panda A et al[8].

On hysteroscopy endometrial polyps appeared as soft, pedunculated or sessile with smooth surface. 34 cases of endometrial polyps were diagnosed by hysteroscopy of which 28 cases endometrial polyp was diagnosed in histopathology. 10.05 percent sensitivity, 91.6% specificity, 82.3% positive predictive value and 100% negative predictive value was obtained for endometrial polyp by hysteroscopy. 94% was the diagnostic accuracy while it was 100% in the study by Panda A et al[8], a bit lower i.e. 88.6% of the diagnostic accuracy was noted by Valle RF et al[15].

A round white coloured bulge with smooth surface in hysteroscopy was diagnosed as submucous myoma. In addition to D&C, hysteroscopic guided biopsies were taken in these cases. There were only three cases in this case there was 100% sensitivity as well as 100% positive predictive value of the hysteroscopy in comparison to the histopathology findings as all these three cases were confirmed as sub mucous myoma both by histopathology and hysteroscopy. Panda A et al[8] also reported similar findings.

In 6 patients endometrium appeared thin, flat and fragile in hysteroscopy out of which 5 cases were deduced as atrophic in histopathology. 1 case was reported as proliferative endometrium. 100% was sensitivity, 98.9% was specificity, 83.3% was positive predictive value, and 100% was negative predictive value. 99% was the diagnostic accuracy. Similar findings were reported by Panda A et al[8] and Sciarra JJ et al[16].

In 1 case endometrium was hyperplastic with areas of ulceration and haemorrhage with increased vascularity, which was deduced as carcinoma endometrium by hysteroscopy, the same was confirmed in histopathology as endometroid adenocarcinoma. Incidence of endometrial carcinoma was less in this study compared to previous studies ($p>0.05$)[13,17]. Sensitivity and positive predictive value of hysteroscopy for endometrial carcinoma is 100%. Similar findings were also reported by Valle RF et al[15] and Panda A et al[8].

Conclusion

Hysteroscopy is simple to perform and provides direct visualization of uterus cavity and endo-cervical canal. In AUB, quick and safe diagnosis is possible by hysteroscopy. In cases of endometrial polyp and sub mucous myoma which are pedunculated structures, diagnostic accuracy is greater with hysteroscopy and can be treated during the procedure itself. Thus Hysteroscopic guided biopsy and histopathology is considered as new “Gold Standard” in diagnosis and often treatment of abnormal uterine bleeding.

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Conflict of interest: Nil
Source of funding: Nil

Date received: Jun 23, 2020
Date accepted: Aug 13, 2020