Section: Obstetrics and Gynaecology

Original Research Article

A STUDY ON RELATIVE PRECISION OF HYSTEROSCOPY VERSUS BIOPSY FOR ABNORMAL UTERINE BLEEDING IN PERIMENOPAUSAL WOMEN

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Abstract

Background: To examine the endometrium, elucidate its characteristics, and pinpoint irregularities within the uterus among perimenopausal females via hysteroscopy. Also, to cross-reference observable evidence with histopathological diagnosis and gauge the agreement between lone hysteroscopy and biopsy-accompanied procedures. **Materials and Methods:** The authors enlisted 200 participants exhibiting dysfunctional uterine bleeding during their menopause attending Kasturba Gandhi hospital. Individuals underwent either isolated diagnostic hysteroscopy or scopy paired with tissue extraction for comparative analysis. **Result:** The typical patient age ranged 45-50 years with enduring symptoms over 6 months. Benchmarking endoscopic evaluation against postsurgical gold standard specimens revealed 87.5% accuracy for normal uteri while hyperplasic changes were corroborated in 86.36% cases. Comparable results reached 83.33% for polypoid outgrowths and 100% where atrophic or fibromatous degeneration manifested. **Conclusion:** In summary, supervised biopsy improved diagnostic precision over freestanding imaging amongst the cohort, cementing the utility of capturing physiological samples during hysteroscopy.

INTRODUCTION

A sizeable fraction of gynecologic operations encompasses excluding the ominous endometrial anomalies amongst perimenopausal patients exhibiting abnormal uterine bleeding. Chief worries comprise endometrial hyperplasia and malignancies, plus unusual growths like polyps and persistent endometritis. Still, most scenarios display no organic pathology.

Abnormal uterine bleeding (AUB) encompasses any uterine bleeding occurring at abnormal intervals, durations, frequency or heaviness - stemming from a range of structural, hormonal or other culprits within the uterus or reproductive system. It marks one of gynecology's most ubiquitous afflictions.

Causes include:

- Pregnancy complications
- Uterine tumors (Benign/Malignant)
- Infections
- Hormone disturbances
- Intrauterine implants
- Clotting disorders

Dysfunctional uterine Bleeding (DUB) delineates bleeding stemming from hormone imbalance minus pregnancy, tumors, infection, or coagulation defects. Subtypes encompass ovulatory and anovulatory variants.

Ovulatory Bleeding

Ovulatory DUB refers to dysfunctional uterine bleeding that occurs in relation to ovulation, encompassing inconsistent endometrial maturation or exfoliation. It occurs around predictable monthly ovulation and is related to abnormalities of the ovulatory process itself.

Examples include corpus luteum insufficiency, irregular endometrial growth/breakdown. These result in heavy, prolonged menstrual bleeding at regular intervals

Anovulatory Bleeding

Anovulatory DUB refers to dysfunctional uterine bleeding that is unrelated to ovulation. Persistent ovarian estrogen secretion lacking ovulation frequently transpires in pubescent and perimenopausal persons.

Pubescence: Immature gland signalling causes anovulation and eccentric blood loss.

Perimenopause: Comparable to adolescence, the changing hormonal milieu around perimenopause frequently disrupts normal ovulation, predisposing

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women to anovulatory bleeding, as oocytes/follicles wither. Surviving follicles incite elevated FSH. Unopposed action of Estrogen persists. Thus, overgrowth and malignancy regularly underline perimenopausal hemorrhage, necessitating biopsy preceding hormonal therapy.

Diagnostic methods include:

- Documenting irregular cycle history
- Ruling out structural causes like polyps or fibroids
- Checking hormone levels - FSH, oestradiol
- Pelvic ultrasound evaluation
- Endometrial biopsy to check for hyperplasia

Specific procedures encompass:

- Dilation/curettage
- Cell studies (cervical/vaginal swabs, lavage, brushes)
- Biopsy (curettage, vacuum-assisted aspirators)
- Hysteroscopy
- Ultrasounds - TAS / TVS / Sonohysterography

MATERIALS AND METHODS

The current investigation enrolled 200 perimenopausal females exhibiting abnormal uterine hemorrhage admitted to Government Kasturba Gandhi Hospital over October 2022 to October 2022. Subjects met delineated inclusion/exclusion specifications

Inclusion Guidelines

- Age 40-55 years with regular menstruation
- Multiparous (2 or more deliveries)
- Absent medical/surgical complications
- Lacking noticeable pelvic pathologies on examination
- No exogenous hormone/pharmaceutical use recently

Exclusion Guidelines

- Nulliparity
- Uncontrolled profuse hemorrhage necessitating urgent treatment
- Cervical or vaginal abnormalities
- Concurrent medical/surgical complications
- Pelvic inflammatory disease, gravidity, or associated events like abortion
- Hormonal or pharmacological therapies

After documenting patient history and conducting physical examinations, baseline blood tests were obtained, including:
Urine protein/glucose
Hemoglobin
Glucose
Electrocardiogram (ECG)
Anaesthesia: Intravenous analgesia
Patient Positioning And Exposure: Modified dorsal lithotomy with patient supine, legs held in stirrups.
Equipments
Speculum
Single tooth tenaculum
Sponge forceps
Microhysteroscope (light source attached)
Hysteroscopy Biopsy forceps
Distension media infusion set
Hysteroscopy steps: Under IV sedation, antiseptic preparation preceded bimanual pelvic examination. A speculum enabled cervical visualization and grasping with a single tooth tenaculum. The microhysteroscope was introduced atraumatically into the cervical canal under direct vision using an obturator when necessary. Continuous distension media inflow enabled cavity distension and systematic examination of:
Uterine fundus
Endometrial linings all around
Tubal ostia
Endometrial color
Abnormal tissue / growth
Targeted biopsy obtained under direct visualization. Minimal cervical dilation up to 7 millimetre performed for difficult entry. Procedures terminated given excessive bleeding or inability to introduce hysteroscope despite 7 millimetre dilation.

RESULTS

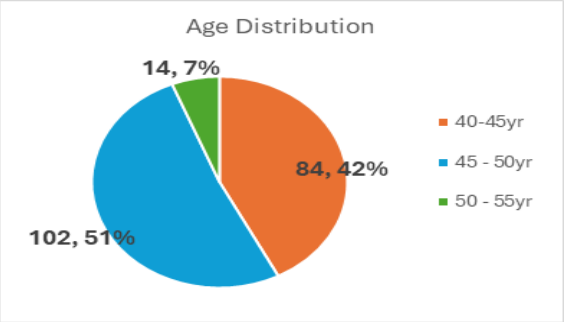

Figure 1: age distribution

Majority of the population are in the age group of 45-50 years.

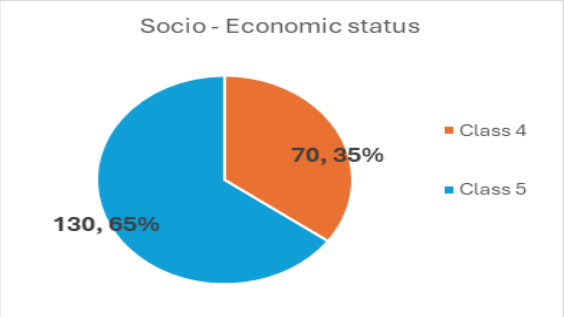

Figure 2: socio economic status

65% of the study population belong to socio economic class 5.

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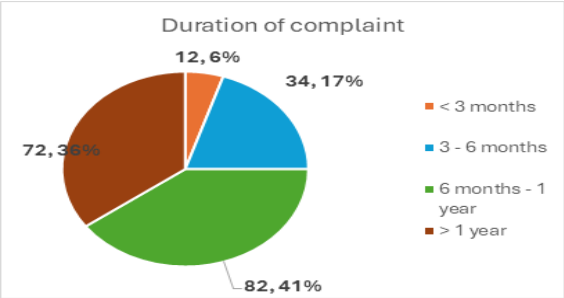

Figure 3: duration of the complaint

Most of the study population had their complaint for than 6 months.

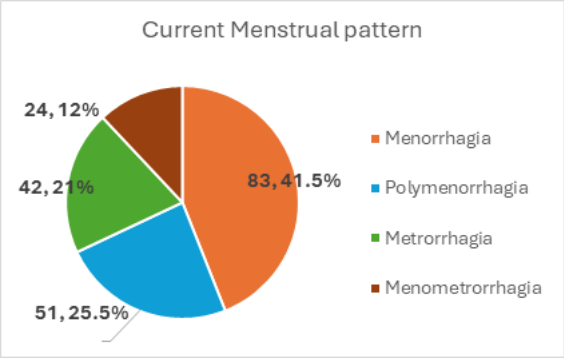

Figure 4: current menstrual pattern

Most common complaint was menorrhagia which was in 41.5% of study population.

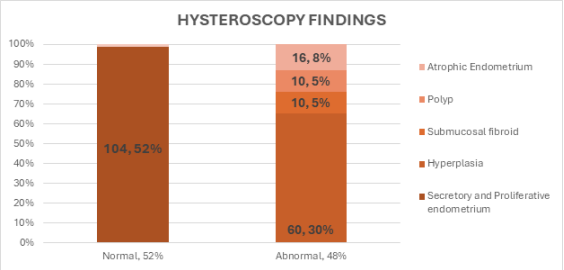

Figure 5: hysteroscopy findings

Hysteroscopy was undertaken in all 200 study participants. Imaging showed 52% exhibited ordinary secretory or proliferative patterns. However, 48% harboured abnormal findings – predominately endometrial hyperplasia found in 60%. Submucous fibroids prevailed in another 10% of abnormalities. 10% of abnormalities constituted endometrial polyps, while the residual 16% were endometrial atrophy.

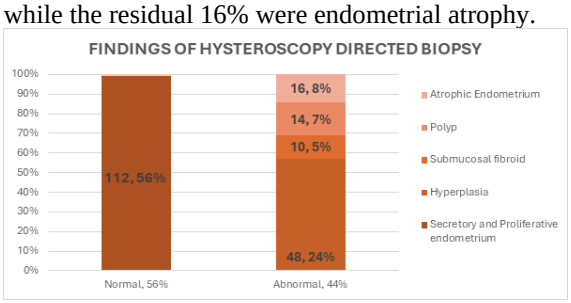

Figure 6: findings of hysteroscopy directed biopsy

All 200 subjects underwent guided biopsy after hysteroscopy. Results demonstrated 56% showed customary secretory or proliferative patterns. However, 44% harboured abnormalities—principally endometrial hyperplasia discovered in 24%. Submucous fibroids composed 5% of abnormalities, endometrial polyps 7%, and endometrial atrophy 8%.

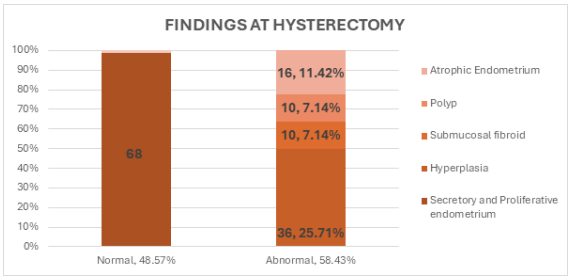

Figure 7: findings at hysterectomy

Within the collective 200 subjects, 140 underwent hysterectomies. Specimen analysis highlighted 68 (48.57%) evinced customary secretory or proliferative findings. Endometrial hyperplasia proved the predominant anomaly, manifesting in 36 (25.71%) cases. Submucous fibroids were evident in 10 (7.14%) cases, 10 (7.14%) showed endometrial polyps and 16 (11.42%) exhibited endometrial atrophy.

Table 1: duration of the menstrual complaint and hysteroscopic findings

Duration of complaint	Hysteroscopic findings				
	Secretory or proliferative endometrium	Hyperplasia	Submucous fibroids	Polyps	Atrophy
< 3 months	9	0	3	0	0
3 – 6 months	30	2	0	2	0
6 – 12 months	36	29	4	5	8
> 1 year	29	29	3	3	8

With increasing duration of the complaint, the abnormal hysteroscopy findings increase.

Table 2: current menstrual pattern & findings at hysteroscopy

Menstrual complaint	Hysteroscopic findings				
	Secretory or proliferative endometrium	Hyperplasia	Submucous fibroids	Polyps	Atrophy
Menorrhagia	54	20	3	0	3

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Polymenorrhoea	20	17	1	1	12
Metrorrhagia	24	6	4	8	0
Menometrorrhagia	6	14	2	1	1

Menorrhagia is the most common menstrual pattern. With endometrial polyp metrorrhagia predominates.

Table 3: duration of complaint and hysterectomy findings

Duration of complaint	Hysterectomy findings				
	Secretory or proliferative endometrium	Hyperplasia	Submucous fibroids	Polyps	Atrophy
< 3 months	7	2	3	0	0
3 – 6 months	14	8	0	2	0
6 – 12 months	25	10	4	5	8
> 1 year	12	26	3	3	8

Abnormal findings at hysterectomy are seen in those with duration of the complaint more than 1 year.

Table 4: comparision of findings at hysteroscopy and histopathologic examination

Hysteroscopy		No of Cases	Hysterocopic guided biopsy					Diagnostic accuracy
			Normal	Abnormal				
			Secretory or proliferative endometrium	Hyperplasia	Submucous fibroids	Polyps	Atrophy	
Normal	Secretory or proliferative endometrium	104	100	4				96.15%
Abnormal	Hyperplasia	60	16	44				73.33%
	Submucous fibroids	10			10			100%
	Polyps	10		2		8		80%
	Atrophy	16					16	100%

Among the 104 individuals with unremarkable hysteroscopic results, 100 exhibited a typical pattern. Additionally, 4 manifested endometrial hyperplasia, resulting in a hysteroscopy accuracy rate of 96.15% for a healthy uterus. Among the 60 patients diagnosed with endometrial hyperplasia, 16 displayed normal histology, yielding a diagnostic accuracy of 73.33%. The precision in identifying fibroids and atrophic endometrium reached 100%, while the accuracy for detecting polyps was 80%.

Table 5: comparision of findings at hysteroscopy and hysterectomy

Hysterectomy		No of Cases	Hysteroscopy					Diagnostic accuracy
			Normal	Abnormal				
			Secretory or proliferative endometrium	Hyperplasia	Submucous fibroids	Polyps	Atrophy	
Normal	Secretory or proliferative endometrium	68	58	10				85.29%
Abnormal	Hyperplasia	36	4	32				88.88%
	Submucous fibroids	10			10			100%
	Polyps	10		2		8		80%
	Atrophy	16					16	100%

When benchmarked against postoperative histological findings, hysteroscopy demonstrated diagnostic accuracy of 85.29% for normal uterine cavities. For endometrial hyperplasia, hysteroscopy attained 88.88% accuracy, though 4 cases revealed normal histology after surgery despite hysteroscopic impressions of hyperplasia initially. Endometrial polyps were properly characterized in 80% of relevant cases. Submucous fibroids and endometrial atrophy showed the highest correlation between hysteroscopic appearance and postoperative reality, with accuracy reaching 100% for both anomalies. In total, while hysteroscopic imaging boasted respectable sensitivity across most intrauterine irregularities, results indicate supplemented tissue diagnosis proves vital in resolving indeterminate visual impressions, necessary to maximize diagnostic precision.

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Table 6: comparision of findings at HPE of hysteroscopic guided biopsy and hysterectomy

Hysterectomy		No of Cases	Hysteroscopy guided biopsy					Diagnostic accuracy
			Normal	Abnormal				
			Secretory or proliferative endometrium	Hyperplasia	Submucous fibroids	Polyps	Atrophy	
Normal	Secretory or proliferative endometrium	68	61	7				89.7%
Abnormal	Hyperplasia	36		36				100%
	Submucous fibroids	10			10			100%
	Polyps	10	2			8		80%
	Atrophy	16					16	100%

This analysis juxtaposes biopsy impressions against postoperative specimens. Data unveils while accuracy for ordinary uteri remains comparable, guided sampling dramatizes precision detecting operative abnormalities over individual hysteroscopy. Specific figures exhibit 100% accuracy characterizing hyperplasia, fibroids and atrophy when biopsy supplements initial visualization. Overall, assimilating immediate histology during index hysteroscopy enriches sensitivity all anomalous entities over relying solely on scanning.

Table 7: sensitivity, specificity, NPV & PPV of hysteroscopy

Sensitivity = 85.29% PPV = 90.62%
Specificity = 91.66% NPV = 86.84%

Table 8: sensitivity, specificity, NPV & PPV of hysteroscopic guided biopsy

Sensitivity = 89.7% PPV = 96.82%
Specificity = 97.22% NPV = 90.90%

DISCUSSION

Our subjects' predominant age group comprised 40-45 years, nearly 65% classified in socioeconomic stratum V. Table 3 portrays most females exhibiting current menstrual problems ≥6 months. Table 4 reveals menorrhagia constituted the most prevalent complaint.

Resembling studies from 2000 by J Kell Williams et al in 433 Perimenopausal AUB subjects who had menorrhagia as the prevailing indication. Likewise, Goldrath & Sherman et al's 1985 work with 423 females documented menorrhagia as the commonest ailment.

[Table 5] delineates hysteroscopic results across our 200 females; 52% had normal histology while 48% were abnormal - endometrial hyperplasia predominated. Submucous leiomyomas occurred in 5%, endometrial polyps in 5% and endometrial atrophy in 8%.

These findings align with Gillespie and Nichols' 1994 hysteroscopic assessment of 160 outpatients; around 66% retained normal endometrial histology. Moreover, J Kell Williams et al's 2000 study of 433 perimenopausal subjects illustrated roughly 50% of females beyond 45 years with AUB demonstrate ordinary endometrium. Nonetheless, Gillespie and Nichols most frequently encountered submucous fibroids rather than endometrial hyperplasia.

[Table 6] displays directed biopsy results – 56% normal histology while 44% were aberrant, predominantly endometrial hyperplasia again.

Among our 200 hysteroscopically biopsied subjects, 140 underwent hysterectomies – 72 for anomalies unamenable to surveillance like hyperplasia, submucous fibroids or endometrial polyps. 44 patients with >6 months uncontrolled bleeding despite medications and patients persistently requesting surgery for dysmenorrhea/quality of life impairment completed the contingent.

68 of 140 postoperative specimens showed normal histology while 72 were abnormal – 36 hyperplasia, 10 fibroids, 10 polyps and 16 endometrial atrophy.

[Tables 8 and 10] unveil escalating abnormal hysteroscopic/histological results relative to prolonged symptomatic durations, particularly beyond 1 year.

[Table 9] correlates bleeding patterns against hysteroscopic discoveries – menorrhagia prevailed, while submucous fibroids and endometrial polyps associates more with metrorrhagia/menometrorrhagia.

[Table 11] compares hysteroscopy and guided biopsy; hysteroscopy omitted 4 endometrial hyperplasia cases among 4 while wrongly labelling 16 normal subjects as hyperplasic, reducing its diagnostic accuracy. Related literature on hysteroscopy reliability for endometrial hyperplasia echoes this false positive tendency -guided biopsy proves vital in ambiguous instances. Diagnostic accuracy equalled 100% for myomas and atrophy and 80% for polyps.

[Table 12] displays hysteroscopy's diagnostic precision against hysterectomy. [Table 13] does the same for hysteroscopy paired with biopsy. Both align with existing sensitivity appraisals of both modalities from precedent works.

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Ultimately both statistical analyses underline hysteroscopy alongside biopsy as the paramount investigative modality for disorders in our subset of patients.

CONCLUSION

Hysteroscopy has evolved into a preeminent diagnostic instrument for assessing perimenopausal females with aberrant uterine loss, surpassing gadgets like transvaginal sonograms in precision. While endometrial sampling and dilatation + curettage retain benefit, complementing hysteroscopy with biopsy permits unparalleled detection of uterine disease compared to lone imaging.

Our data unveils augmentation of biopsies during endoscopy outshines lone visualization, amplifying detection of intrauterine lesions. Recent directives from the Royal College of Obstetricians/ Gynecologists propose assimilated biopsy and endoscopy as the evaluation mechanism of choice for females beyond 40 years exhibiting dysfunctional menses.

In essence, compounding conventional hysteroscopy with superintended endometrial sampling optimizes diagnostic yield and constitutes contemporary best practice for perimenopausal subjects with hemorrhage.

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