



ORIGINAL RESEARCH PAPER

Gynaecology

EVALUATION OF PERIMENOPAUSAL BLEEDING BY TRANSVAGINAL ULTRASONOGRAPHY, SALINE INFUSION SONOGRAPHY, HYSTEROSCOPY, AND DILATATION AND CURETTAGE

KEY WORDS: .Abnormal uterine bleeding, transvaginal ultrasonography, saline infusion sonography.

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ABSTRACT

Background and Objectives:

Abnormal uterine bleeding (AUB) is one of the most frequent menstrual complaints that is unpredictable in women. A thorough evaluation of perimenopausal women is needed to rule out serious pathology.

Methods:

A prospective analytical study was conducted in the department of RIMS, Kadapa during the period August 2016 - July 2017, on the women of age group between 40 to 55 years complaining of abnormal bleeding per vaginum.

Results: In the study, we found that AUB is high among the age group of 46-50 i.e. 15 members (50%), followed by 10members (33.3%) in 40-45 age group and 5 members (16.7%) in the 51-55age group.

Conclusion: We found that TVS and SIS are the safe, simple and minimally invasive procedure with a low incidence of minor complications. TVS and SIS are cost effective and can be used as a first line diagnostic procedure for the evaluation of AUB.

INTRODUCTION:

Abnormal uterine bleeding is a symptom but not a disease¹. About 33% complain of AUB and seek gynecological examination and this pattern is increased to 50% in pre-menopausal women². It is very common in perimenopausal age group but ill-defined entity needs proper evaluation.

A thorough evaluation of AUB is needed in perimenopausal women in order to rule out, serious pathologies like simple hyperplasia, complex hyperplasia and atypical hyperplasia which are precursors of endometrial cancer. Early, and accurate diagnosis is utmost important in the women to plan appropriate treatment. Sonography and dilation and curettage (D&C) procedures can miss early malignancies and polyps. But, transvaginal sonography (TVS) and saline infusion sonography (SIS) is the easy and non-invasive techniques used for the evaluation of abnormal uterine bleeding and to examine female reproductive organs or any abnormalities.

II. MATERIALS AND METHODS:

A. Source of data:

A prospective analytical study was conducted in the department of Rajiv Gandhi Medical Sciences (RIMS), Kadapa during the period August 2016 - July 2017.

B. Inclusion criteria:

All the women of age group between 40 to 55 years complaining of abnormal bleeding per vaginum were enrolled in this study.

C. Exclusion criteria:

1. Women with uterus >14 weeks size.
2. Women who went for hormone therapy within last 6 months.
3. Previous abnormal endometrial biopsy.
4. Women with the positive pregnancy test.
5. Women with cervical pathology on speculum examination.
6. Abnormal Pap smear.
7. Women having history /evidence suggestive of active pelvic infection within past 6 months are excluded from this study.

D. Method:

This is a prospective analytical study of women complaining of abnormal bleeding per vaginum admitted in Gynaecology and obstetrics department at Rajiv Gandhi Institute of Medical Science, Kadapa. Patients were enrolled in the study based on the inclusion and exclusion criteria. General, systemic, local examination and basic investigations were done. All patients were diagnosed with Transvaginal Sonography and Saline infusion sonography respectively. Findings were noted. By holding the anterior lip of cervix with vulsellum, 8 Fr Foleys catheter was inserted into the

endometrial cavity. The bulb of the Foleys was inflated with 5ml of distilled water and positioned in the lowermost portion of the endometrial cavity. Then the Transvaginal probe introduced without disturbing the catheter and positioned in the posterior fornix posterior to the catheter.

About 10-20 ml of sterile normal saline was injected into the Foleys catheter under ultrasonic guidance. The uterine cavity distended with saline was carefully examined in the coronal plane from cornua to cornua and in the longitudinal plane from the fundus to the cervix for any intraluminal pathology. Endometrial thickness surrounding the fluid was measured. If any polyp or intraluminal pathology was present, its position was noted and measured. Hysteroscopy was done by using Karl-Storz Germany, 5mm telescope with 7mm diagnostic sheath by giving paracervical block by 2% Lidocaine. Normal saline (0.9%) was used as distension medium and the findings were noted. Then, dilatation and curettage were done. Specimens collected from this was sent for Histo-pathological examination. All the patients tolerated the procedure well, except in few cases who had mild lower abdominal pain. Complications were observed postoperatively and were treated them with tab Cifran 500 mg bid & tab Metronidazole 400 mg tid. Based on the finding, results were evaluated. The findings of TVS, SIS, and hysteroscopy were compared with Histopathology.

III. RESULTS:

Women who were complaining of abnormal bleeding per vaginum in the age group between 40 to 55 years were included and the following details were observed.

1. AUB: BASED ON AGE DISTRIBUTION:

TABLE - 1: AUB: AGE DISTRIBUTION (n=30)

S.NO	AGE	NUMBER	PERCENTAGE
1	40-45	10	33.3
2	46-50	15	50
3	51-55	5	16.7

In this study, we got 30 patients during the period of August 2016 - July 2017 and we observed the incidence of AUB is high among the age group 46-50 i.e. 15 members (50%) cases, followed by 10 members (33.3%) respectively.

2. AUB BASED ON PARITY:

Majority of the women were multiparous i.e. 15 members (50%) were Para 2 and the AUB observed in this party, was most common. Followed by 6 members (20%) in Para3 and the same number of members (20%) observed in Para 1 and the rest of them

were observed in Para 4

TABLE -2:AUB: DISTRIBUTION BASED UPON PARITY (n=30)

PARITY	NUMBER	PERCENTAGE
P1	6	20
P2	15	50
P3	6	20
P4	3	10

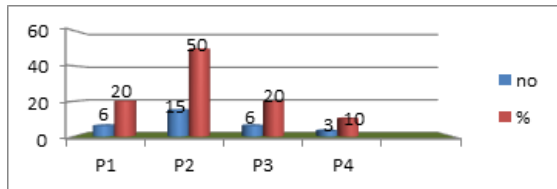


FIG-1 AUB: DISTRIBUTION BASED UPON PARITY

3. DISTRIBUTION OF PATIENTS BASED ON BLEEDING PATTERNS:

Menorrhagia was the most common bleeding pattern observed in 18 members (60%), followed by Polymenorrhagia in 6 (20%).

TABLE -3 AUB: BLEEDING PATTERNS (n=30)

S.NO	COMPLAINT	NUMBER	PERCENTAGE
1.	Menorrhagia	18	60
2.	Menometrorrhagia	3	10
3.	Polymenorrhoea	3	10
4.	Polymenorrhagia	6	20

4. DISTRIBUTION OF PATIENTS BASED ON FINDINGS IN TVS:

TABLE -4:AUB: FINDINGS IN TVS (n=30)

S.NO	FINDINGS	NUMBER	PERCENTAGE
1.	Normal	13	43.3
2.	Hyperplasia	7	23.3
3.	Polyp	3	10
4.	Submucous myoma	2	6.7
5.	Asymmetrical thickening	5	16.7

Among 30 members who underwent TVS (Transvaginal Sonography), 13 members (43.3%) were normal. The abnormal findings were observed in 17 (56.7%) patients and Hyperplasia was the most common cause observed in this finding.

5. DISTRIBUTION BASED ON FINDINGS IN SIS (SALINE INFUSION SONOGRAPHY):

TABLE - 5: AUB: FINDINGS IN SIS (n=30)

S.NO	FINDINGS	NUMBER OF PATIENTS	PERCENTAGE
1.	Normal	13	43.3
2.	Hyperplasia	6	20
3.	Asymmetrical thickening	4	13.3
4.	Polyp	4	13.3
5.	Submucous myoma	3	10

All the 30 members in the study population underwent SIS, among them 13(43.3%) were normal and 17 members shows abnormality as shown in the table and fig. 5

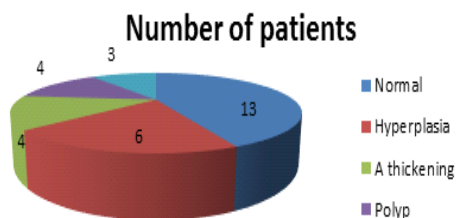


FIG.4 - SIS FINDINGS

Most common abnormal finding observed in SIS was endometrial hyperplasia followed by asymmetrical thickening, polyps, and submucous myoma.



Fig .6- SIS view of a normal uterine cavity



Fig .7 - SIS view of a polyp



Fig .8 - SIS view of a Submucous fibroid



Fig .9 - SIS view of Endometrial hyperplasia

6. DISTRIBUTION OF PATIENTS BASED ON FINDINGS IN HYSTEROSCOPY (n=30)

All the 30 cases in the study group underwent Hysteroscopy, in that 13 were found to be normal.

TABLE - 6:AUB: FINDINGS IN HYSTEROSCOPY (n=30)

S.NO	FINDINGS	NUMBER	PERCENTAGE
1.	Normal	13	43.3
2.	Hyperplasia	6	20
3.	Asymmetrical thickening	1	3.3
4.	Polyp	6	20
5.	Submucosal myoma	4	13.3

Abnormal findings were observed in 17 (56.6%) cases including endometrial hyperplasia in 6 (20%), followed by polyps in 6 (20%). It was observed that patients had polyps and submucous myomas in more number in TVS when compared to SIS.



FIG-10: NORMAL CERVICAL CANAL



FIG-11: ENDOMETRIAL POLYP

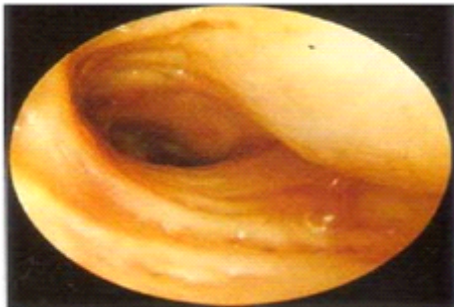
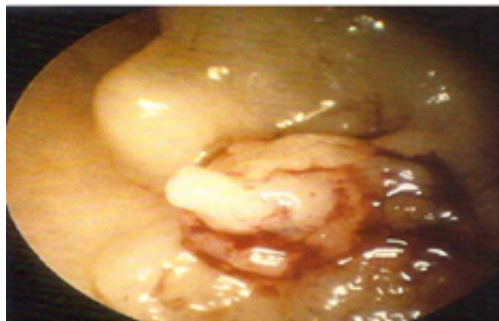


FIG-12: SUBMUCOUS MYOMA



7. COMPARISON OF TVS, SIS, HYSTEROSCOPY & D&C:
TABLE -7 COMPARISON OF TVS, SIS, HYSTEROSCOPY & D&C (n=30)

FINDINGS	TVS	SIS	HYSTEROSCOPY	D&C
Normal	13	14	13	18
Hyperplasia	7	5	6	7
Asymmetrical thickening	5	4	1	-
Polyp	3	4	6	3
Submucous myoma	2	3	4	2

In all the 30 cases in the study group, diagnosis of normal and hyperplasia were similar. Diagnosis of asymmetrical thickening differs in TVS, SIS & Hysteroscopy. The number of polyps and submucous myomas was diagnosed was more in Hysteroscopy when compared to other methods. Hyperplasia was the most common abnormality found in TVS & SIS when compared to others.

8. COMPARISON OF TVS & HISTOPATHOLOGY IN DIAGNOSING POLYPS:

TABLE -8

TVS	HISTOPATHOLOGY		Total
	YES	NO	
YES	2	1	3
NO	1	26	27
Total	3	27	30

$$\text{Sensitivity} = \frac{a}{a+c} \times 100 = \frac{2}{3} \times 100 = 66.6\%$$

$$\text{Specificity} = \frac{d}{b+d} \times 100 = \frac{26}{27} \times 100 = 96.2\%$$

$$\text{Positive predictive value} = \frac{a}{a+b} \times 100 = \frac{2}{3} \times 100 = 66.6\%$$

$$\text{Negative predictive value} = \frac{d}{c+d} \times 100 = \frac{26}{27} \times 100 = 96.2\%$$

- D&C missed 1 case of Polyp which was diagnosed on TVS.
- 1 more case was diagnosed as Polyp in SIS which was not seen on TVS.
- Specificity & Negative predictive values are high for diagnosing polyps on TVS.

9. COMPARISON OF TVS & HISTOPATHOLOGY IN DIAGNOSING SUBMUCOUS MYOMAS:

TABLE -9

TVS	HISTOPATHOLOGY		Total
	YES	NO	
YES	1	1	2
NO	1	27	28
Total	2	28	30

$$\text{Sensitivity} = \frac{a}{a+c} \times 100 = \frac{1}{2} \times 100 = 50\%$$

$$\text{Specificity} = \frac{d}{b+d} \times 100 = \frac{27}{28} \times 100 = 96.4\%$$

$$\text{Positive predictive value} = \frac{a}{a+b} \times 100 = \frac{1}{2} \times 100 = 50\%$$

$$\text{Negative predictive value} = \frac{d}{c+d} \times 100 = \frac{27}{28} \times 100 = 96.4\%$$

TVS has high specificity & negative predictive values in diagnosing submucous myomas. D&C missed 1 case of submucous myoma & diagnosed 1 more as myoma which was not seen on TVS.

10. COMPARISON OF SIS & HISTOPATHOLOGY IN DIAGNOSING POLYPS:

TABLE -10

SIS	D&C		Total
	YES	NO	
YES	3	1	4
NO	0	26	26
Total	3	27	30

$$\text{Sensitivity} = \frac{a}{a+c} \times 100 = \frac{3}{3} \times 100 = 100\%$$

$$\text{Specificity} = \frac{d}{b+d} \times 100 = \frac{26}{27} \times 100 = 96.2\%$$

$$\text{Positive predictive value} = \frac{a}{a+b} \times 100 = \frac{3}{4} \times 100 = 75\%$$

$$\text{Negative predictive value} = \frac{d}{c+d} \times 100 = \frac{26}{26} \times 100 = 100\%$$

- SIS is 100% sensitive in diagnosing Polyps.
- SIS has 100% negative predictive value.
- 1 polyp was not confirmed by histopathology.

11. COMPARISON OF SIS & HISTOPATHOLOGY IN DIAGNOSING SUBMUCOUS MYOMAS:

TABLE 12

SIS	D&C		Total	
	YES	NO		
YES	2	1	3	
NO	0	27	27	
Total	2	28	30	

Sensitivity = $\frac{a}{a+c} \times 100 = \frac{2}{2+28} \times 100 = 6.6\%$

Specificity = $\frac{d}{b+d} \times 100 = \frac{27}{0+27} \times 100 = 100\%$

Positive predictive value = $\frac{a}{a+b} \times 100 = \frac{2}{2+0} \times 100 = 100\%$

Negative predictive value = $\frac{d}{c+d} \times 100 = \frac{27}{27+0} \times 100 = 100\%$

- Both sensitivity & specificity are high in diagnosing submucous myomas on SIS.
- SIS has 100% sensitivity & negative predictive values.
- D&C missed 1 case of submucous myoma.

12. COMPARISON OF HYSTEROSCOPY & HISTOPATHOLOGY IN DIAGNOSING POLYPS:

HYSTEROSCOPY	HISTOPATHOLOGY		Total	
	YES	NO		
YES	3	3	6	
NO	0	24	24	
Total	3	27	30	

Sensitivity = $\frac{a}{a+c} \times 100 = \frac{3}{3+27} \times 100 = 10\%$

Specificity = $\frac{d}{b+d} \times 100 = \frac{24}{0+24} \times 100 = 100\%$

Positive predictive value = $\frac{a}{a+b} \times 100 = \frac{3}{3+0} \times 100 = 100\%$

Negative predictive value = $\frac{d}{c+d} \times 100 = \frac{24}{24+0} \times 100 = 100\%$

Hysteroscopy has 100% Sensitivity and negative predictive values in diagnosing Polyps. D&C could confirm only in 50% of cases.

13. COMPARISON OF HYSTEROSCOPY & HISTOPATHOLOGY IN DIAGNOSING SUBMUCOUS MYOMAS:

TABLE 13

HYSTEROSCOPY	HISTOPATHOLOGY		Total
	YES	NO	
YES	2	2	4
NO	0	26	26
Total	2	28	30

Sensitivity = $\frac{a}{a+c} \times 100 = \frac{2}{2+28} \times 100 = 6.6\%$

Specificity = $\frac{d}{b+d} \times 100 = \frac{26}{0+26} \times 100 = 100\%$

Positive predictive value = $\frac{a}{a+b} \times 100 = \frac{2}{2+0} \times 100 = 100\%$

Negative predictive value = $\frac{d}{c+d} \times 100 = \frac{26}{26+0} \times 100 = 100\%$

Diagnosis of submucous myomas was 100% sensitive in hysteroscopy.

- It has 100% negative predictive value.
- Specificity is also high.
- D&C confirmed only in 50% cases.

IV. DISCUSSION:

This prospective analytical study was done in a tertiary hospital, RIMS, Kadapa. A total of 30 patients underwent Transvaginal sonography, Saline Infusion Sonography, Hysteroscopy and Dilatation & Curettage followed by histopathological examination and the result observed in this study was discussed as follows:

We categorized the patients and found the incidence of AUB is more common between 46-50 years of age i.e. 15 members (50%), followed by 10 members (33.3%) in 40-45 of age. Our study is similar to Sefa Kelkci3 study who's percentage is 50 in 46-50 years.

We distinguished the patients based on the parity and found that AUB was common in multiparous women (80%) and our study is supported by Jyotsna et al4, Vercellini et al5, Dasgupta Subhanker et al6 studies who's incidence is similar to our study.

In our study Menorrhagia was the most common complaint which was found in 60% (18) of the cases. Rests of them were having polymenorrhagia, menometrorrhagia, and polymenorrhoea. This study was similar to the of Sadi Khan et al7 and Brig S Rudra et al8 studies. In Reddi Rani et al9 study high incidence of menorrhagia was noticed. Rest of them showed a low incidence of menorrhagia.

In the present study, 13 members (43.3%) had no pathology and detected as normal by TVS. This was similar to the Suna Soguktas et al10 and Dasgupta Subhanker et al6 studies.

In the present study, SIS detected, 13 people (43.3%) as normal and this was supported by Suna Soguktas et al10 study who had shown 46.1%.

Hysteroscopy detected 13 members (43.3%) as normal and this study was similar to Suna Soguktas et al10 study (44.9%) and Dasgupta Subhanker et al6 study (38.9%). Hysteroscopy diagnosed 17 (56.7%) cases as having intrauterine pathology and this was similar to the Suna Soguktas et al10 and Dasgupta Subhanker et al6 studies.

Comparison Of Tvs, Sis, Hysteroscopy& Histopathology:

- I. Normal findings detection were mostly similar to TVS (13), SIS (14) and Hysteroscopy (13). More no. of cases diagnosed as normal on D & C (18) when compared to other methods.
- II. TVS found 7 cases as having hyperplasia, 5 asymmetrical thickening, 3 polyps and 2 submucous myomas. The detection rate of hyperplasia was more and less no. of polyps, submucous myomas were found when compared to SIS & Hysteroscopy.
- III. TVS has abnormality detection rate of the sensitivity of 83.3% and specificity of 61.1%, this was comparable with other studies.

These values are comparable with other reports in the literature such as

TABLE-15: DIAGNOSTIC INDICES OF TVS

Study	Sensitivity	Specificity	PPV	NPV
Saidi et al11	95%	65%	84.6%	12.5%
Schwarzlr et al	67%	89%	88%	71%
Jaiswar Shyam Pyari12	86%	31%	78%	44%
Sefa Kelekci et al 3	56.3%	72%	56.3%	72%
Reddi Rani P et al 9	65.6%	88%	68%	90%
Present study	83.3%	61.1%	58.8%	84.6%

In the Present study sensitivity, specificity, positive predictive value and negative predictive value of TVS in detecting polyps was 66.6%, 96.2%, 66.6% and 96.2% respectively. Polyp detection

had high Specificity and NPV (Negative Predictive Value).

TABLE-16: DIAGNOSTIC INDICES OF SIS

Study	Sensitivity	Specificity	PPV	NPV
Schwarzler et al 13	87%	91%	92%	85%
Lillian M. Mihm et al 14	97%	70.2%	82%	99%
Sefa Kelekci et al 3	81.3%	100%	100%	88.9%
Aslam et al 16	92.86%	89.65%	86.67%	94.54%
Reddi Rani P et al 9	82%	95%	81%	93%
Present study	91.6%	66.6%	64.7%	92.3%

In the Present study sensitivity, specificity, positive predictive value and negative predictive value of SIS in detecting polyps was 100%, 96.2%, 75% and 100% respectively. This was comparable with other studies.

TABLE-17: DIAGNOSTIC INDICES OF HYSTEROSCOPY

Study	Sensitivity	Specificity	PPV	NPV
Schwarzler et al 13	90%	91%	92%	89%
Sefa Kelekci et al 3	87.5%	100%	100%	95%
Present study	87.5%	54.7%	41%	92.3%

The above studies have reported the sensitivity of hysteroscopy in diagnosing intrauterine lesions were more which is quite compatible (80%) with the result of this study. This finding proves hysteroscopy as a valid diagnostic method in AUB.

Endo In this study, sensitivity, specificity, PPV, and NPV of hysteroscopy in diagnosing polyps were 100%, 88.8%, 50%, 100% respectively, this was comparable with other studies.

CONCLUSION:

Transvaginal Sonography and Saline Infusion Sonography are the safe, simple and minimally invasive procedure with a low incidence of minor complications. SIS gives a higher percentage of correct diagnosis than TVS alone. SIS and hysteroscopy may be most useful in the diagnosis of focal lesions. TVS and SIS can be used as a first line diagnostic procedure for the evaluation of AUB and they are cost effective. They help to avoid invasive procedures like hysteroscopy.

Though SIS and hysteroscopy can classify a lesion as benign or suspicious of malignancy, accurate diagnosis of endometrial abnormalities and distinction of hyperplasia from disordered endometrial proliferation and endometrial cancer still requires histological evaluation. Hysteroscopy is a valuable, simple, low-risk technique which allows an adequate exploration of the uterine cavity under vision. Hysteroscopy along with curettage improves the accuracy of clinical diagnosis, the procedure being complementary. Though TVS, SIS, and Hysteroscopy identified endometrial hyperplasia, tissue diagnosis was necessary in these cases. But they obviate the need for D & C in those cases where endometrium appears normal.

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