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Comparison of Transvaginal Scans with Saline Infusion Hysterography in Cases of AUB

Dr Neerja Goel[1], Dr Bharti Jain[2]

[1] Professor, Gynae Department, Muzaffar Nagar Medical College

[2] Assistant Professor, Department of Radiodiagnosis, Muzaffar Nagar Medical College

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ABSTRACT:

Introduction: The various etiologies of AUB are submucosal fibroids, endometrial polyps, and endometrial hyperplasia .In abnormal uterine bleeding [AUB] the screening modality is ultrasound mainly transvaginal scans.The diagnostic gold standard in these cases of AUB is hysteroscopy which being an operative modality is invasive–Keeping this aimin mind this prospective study was done to compare saline infusion sonohysterography [SIS) with diagnostic hysteroscopy (DH) for the diagnosis of endometrial pathology in patients with abnormal uterine bleeding.

Aims and Objectives: Comparison of TRANSNAGINAL SCANS with saline infusion hysterography in cases of AUB .

Material and Methods :100 patients with AUB underwent TVS ,SIS and hysteroscopy .TVS ,3D SIS and DH was done on day 5 to day 10 of menstrual cycle .Findings elucidated on TVS, SIS, hysteroscopy were compared and their statistical significance calculated ,

Results : Out of 100 patients with abnormal uterine bleeding, On TVS 53 %were normal .28% had endometrial hyperplasia 10% had polyp ,9% had myoma , On SIS 55% were normal 20% endometrial hyperplasia ,10% had polyp 13 % had myoma and 2 % had adhesions ,On DH 55% were normal 16% endometrial hyperplasia ,16% had polyp 13 % had myoma .1% had endometrial carcinoma and 2 % had adhesions .SIS was more sensitive and specific in comparison to TVS .The sensitivity and specificity of TVS were 71.4 % and 67.75 resp compared to 92.9 % sensitivity and 89.7%specificity of SIS .Positive predictive value of SIS was 86.7 % as compared to 54.4% for TVS .Diagnostic accuracy of SIS -91 % was significantly more than TVS –[69%] with a p value =0.002.

Conclusion : Hysteroscopy is the diagnostic gold standard .Even though hysteroscopy has the advantage of being a curative modality also it has a limitation as it is invasive .SIS is a noninvasive new diagnostic modality with improved sensitivity and specificity .It is safe .Hence its use is recommended in all cases of AUB. However larger RCT s are required

Keyword: SIS (saline infusion sonohysterography), AUB (abnormal uterine bleeding), DUB (Dysfunctional uterine bleeding), TVS (Transvaginal sonography)

INTRODUCTION:

Abnormal uterine bleeding (AUB) is one of the most frequent cause of morbidity in females.[1–5] Dysfunctional uterine bleeding (DUB) and intrauterine abnormalities are the main causes of AUB. Over 40% of e cases of AUB have intrauterine abnormalities.[6] The various etiologies of AUB are submucosal fibroids, endometrial polyps, and endometrial hyperplasia.[4] A significant number [10% to 15%]of postmenopausal AUB is due to endometrial cancer.[7] In abnormal uterine bleeding [AUB] the

Corresponding author: Dr Bharti Jain

screening modality is ultrasound mainly transvaginal scans.[1–5,7] .The diagnostic gold standard in these cases of AUB is hysteroscopy which being an operative modality is invasive.[9–11]

Hence to increase the diagnostic confidence and thereby avoid unnecessary hysteroscopies we need to increase the sensitivity and specificity of the screening modality, TVS. 3D ultrasounds and saline infusion sonohysterography has stepped in a big way in this approach.

Keeping this aim in mind this prospective study was done to compare saline infusion sonohysterography [SIS]with diagnostic hysteroscopy [DH] for the diagnosis of endometrial pathology in patients with abnormal uterine bleeding.

Aims and Objectives

Comparison of Transvaginal scans with saline infusion hysterography in cases of AUB

Material and Methods

Study type - prospective study

Place - Gynae department, Muzaffarnagar medical college

Time period - 8 months

100 patients with AUB underwent TVS, SIS and hysteroscopy

Excluded patients –patients with PID, cervical stenosis, active bleeding, pregnancy

Findings elucidated on TVS, SIS, hysteroscopy were compared and their statistical significance calculated

TVS,3D SIS and DH was done on day 5 to day 10 of menstrual cycle. Informed written consent was taken after explaining the risks. Cases were do neon the same machine by a single operator.

Results

Out of 100 patients with abnormal uterine bleeding, 61 [61%] were normal and 39 [39%] patients had menorrhagia. From the latter group 2.9% had myoma and endometrial hyperplasia,8.96% had polyps, 5.9% had polyp with endometrial hyperplasia, 14.9 % endometrial hyperplasia, 4.4 % had endometritis and 1.4% had adhesions

On TVS 53% were normal. 28% had endometrial hyperplasia 10%had polyp,9% had myoma

On SIS 55% were normal 20% endometrial hyperplasia, 10% had polyp 13 % had myoma and 2 % had adhesions

On DH 55% were normal 16% endometrial hyperplasia, 16% had polyp, 13 % had myoma. 1% had endometrial carcinoma and 2% had adhesions

3 cases of normal endometrium were falsely diagnosed as endometrial hyperplasia on SIS Whereas 10 cases were normal on SIS, but had endometrial pathologies on TVS, 0.8 cases were normal on TVS, but had endometrial pathologies on SIS. Discrepancies between TVS and final diagnosis was in 27 cases. 15 false negative cases included 5 cases of myoma, 3 cases of polyp, 3 cases of endometritis, 2 cases of adhesions, 1 case of endometrial hyperplasia and endometrial carcinoma each3 cases of normal endometrium were falsely diagnosed as endometrial hyperplasia on SIS

SIS was more sensitive and specific in comparison to TVS .The sensitivity and specificity of TVS were 71.4 % and 67.75 resp compared to 92.9 % sensitivity and 89.7%specificity of SIS

Positive predictive value of SIS was 86.7 % as compared to 54.4% for TVS .Diagnostic accuracy of SIS -91 % was significantly more than TVS –[69%] with a p value =0.002 .All these results are tabulated as under

Table 2: Showing age wise distribution of patients.

Age Group	No. of Patients
30 – 40	**67**
41 - 50	**31**
>51	**2**
Total (n)	**100**

This table shows that Age wise distribution of patients of maximum i.e. 67 number of patients in 30 – 40 age group, followed by 31 in 41 – 50 age group and 2 in >51 age group.

Table 3 : Showing distribution of patients according to parity.

Parity	No. of Patients
Primiparous	2
Multiparous (<4)	31
Grand Multiparous(>4)	67
Total (n)	100

This table shows that distribution of patients according to parity of Abnormal uterine bleeding and see that there is increasing trend of Abnormal uterine bleeding with increasing parity with maximum no. i.e. 67 in Grand Multiparous.

Table 4 : Showing Type of Bleeding

Type of Bleeding	
Heavy Menstrual Bleeding	52
Polymenorrhagia12	
Polymenorrhea 10	
Metrorrhagia8	
Continuous Bleeding Per Vaginum 9	
Contact Bleeding	9
Total (n)	100

This table shows that 52% of cases Heavy Menstrual Bleeding, 12% Polymenorrhagia, 10% of Polymenorrhea, 8% of Metrorrhagia, 9% of Continuous Bleeding PerVaginum, 9% of contact Bleeding. Making Heavy Menstrual Bleeding most common type of abnormal uterine bleeding.

Table 5: Showing distribution of cases according to size of uterus on pelvic examination.

Uterine Size	No of cases
Normal uterus	74
Bulky to 6 wks 21	
6 – 8wks	3
8 – 10wks	1
10 – 12wks	1
Total (n)	100

This table shows uterine size of different patient of abnormal uterine bleeding and the maximum number of patients had normal to bulky uterus which is 95%, 3% 6-8wks and 1% each in 8-10wks & 10-12wks.

Table 6: Showing the distribution of types of finding in 30-40 year age group.

Diagnosis	No. Patients	Percentage(%)
Normal	41	61.19
Fibroid + Endo. Hyper.	2	2.99
Polyp	6	8.96
Polyp + Endo. Hyper.	4	5.97
Endometrial Hyperplasia	10	14.93
Endometritis	3	4.48
Uterine Adhesions	1	1.49
Total (n)	67	

This table shows normal and abnormal findings in 30-40 years of age group of women in which majority i.e. 41 (61.19%) being normal with 10 patients diagnosed as endometrial hyperplasia (14.93%) followed by polyp (8.96%) and 1 i.e. merely (1.49%) with Uterine Adhesions.

Table 7: Showing the distribution of types of findings in 41-50 year age group.

Diagnosis	No. Patients	Percentage(%)
Normal	14	45.16
Fibroid	5	16.13
Fibroid + Endo. Hyper.	6	19.35
Endometrial Hyperplasia	5	16.13
Uterine Adhesions	1	3.23
Total (n)	31	100

This table shows normal and abnormal findings in 41-50 years of age group of women majority i.e 14(45.16%) being normal with 6 (19.35%) patients diagnosed as Fibroid + Endo, Hyper, followed by 5 patients (16.13%) diagnosed each with just endometrial hyperplasia nd fibroid and 1 (3.23%)diagnosed Uterine Adhesions.

Table: 9 Showing findings of TVS

	Findings of TVS
NORMAL UTERUS	53
Fibroid uterus	9
Polyp	10
ENDOMETRIAL HYPERPLASIA	28
ENDOMETRITIS	00
ENDOMETRIAL CARCINOMA	00
UTERINE ADHESIONS	00
TOTAL (n)	100

Total 100 pt underwent Transvaginal Sonography and 53% were diagnosed with normal uterus, 28% diagnosed as Endometrial hyperplasia 10% diagnosed as polyp and 9% diagnosed as Fibroid Uterus.

Table 10 : Showing findings of SIS

	DIAGONSTIC % SIS
NORMAL UTERUS	53
FIBROID UTERUS	9
POLYP	10
ENDOMETRIAL HYPERPLASIA	28
ENDOMETRITIS	00
ENDOMETRIAL CARCINOMA	00
UTERINE ADHESIONS	00
TOTAL (n)	100

Total 100 pt underwent Transvaginal Sonography and 53% were diagnosed with normal uterus, 28% diagnosed as Endometrial hyperplasia 10% diagnosed as polyp and 9% diagnosed as Fibroid Uterus.

Table 10 : Showing findings of SIS

	DIAGNOSTIC % SIS
NORMAL UTERUS	55
FIBROID UTERUS	13
POLYP	10
ENDOMETRIAL HYPERPLASIA	20
ENDOMETRITIS	00
ENDOMETRIAL CARCINOMA	00
UTERINE ADHESIONS	02
TOTAL (n)	100

Total 100 patients underwent investigation with Saline infusion sonography and 55% were diagnosed as normal, 20% with endometrial hyperplasia, 13% diagnosed as Fibroid uterus and 10% were diagnosed as polyp and 2% as Uterine Adhesions.

Table 11 : Showing findings of Hysteroscopy

FINDINGS OF HYSTEROSCOPY	
NORMAL UTERUS	55
FIBROID UTERUS	13
POLYP	10
ENDOMETRIAL HYPERPLASIA	16
ENDOMETRITIS	03
ENDOMETRIAL CARCINOMA	01
UTERINE ADHESIONS	02
TOTAL (n)	100

Total 100 patients underwent investigation of Hysteroscopy and 55% as normal uterus, 16% as endometrial hyperplasia, 13% as fibroid uterus, 10% as polyp and 1% as endometrial carcinoma.

Table 12 : Showing Comparison between TVS, SIS And Hysteroscopy.

Findings of	Hysteroscopy		
NORMAL UTERUS	53	55	55
FIBROID UTERUS	9	13	13
POLYP	10	10	10
ENDOMETRIAL HYPERPLASIA	28	20	16
ENDOMETRITIS	00	00	03
ENDOMETRIAL CARCINOMA	00	00	01
UTERINE ADHESIONS	00	02	02
Total (n)	100	100	100

Table (1) shows the final hysteroscopic diagnosis in 100 cases and its comparison with tvs and sis findings. Our final results endometrial hyperplasia in 16, submucosalmyoma in 13, endometrial polyp in 10, chronic endometritis in 3, uterine

Table 13 : Showing comparison between TVS and SIS.

Test		TVS	SIS
Sensitivity		71.43 (54.94 to 83.67)	92.86 (80.99 to 97.54)
Specificity		67.7 (55.61 to 77.79)	89.65 (979.21 to 95.17)
PPV		54.35 (40.1 8 to 67.84)	86.67 (73.82 to 93.74)
NPV		81.48 (69. 6 to 89.61)	94.54 (85.1 4 to 98.1 2)
DA		69 (59.94 – 78.06)	91* (85.44 – 96.61)
Likelihood Ratio	Positive	2.22 (1.47 – 3.33)	8.98 (4.19-19.24)
	Negative	0.42 (0.25-0.72)	0.07 (0.03-0.24)

Discussion

Abnormal uterine bleeding (AUB) is one of the most frequent cause of morbidity in females.[1–5] Dysfunctional uterine bleeding (DUB) and intrauterine abnormalities are the main causes of AUB. Over 40% of e cases of AUB have intrauterine abnormalities.6 The various etiologies of AUB are submucosal fibroids, endometrial polyps, and endometrial hyperplasia.4 A significant number [10% to 15%]of postmenopausal AUB is due to endometrial cancer.7 In abnormal uterine bleeding [AUB] the screening modality is ultrasound mainly transvaginal scans.[1–5,7] .The diagnostic gold standard in these cases of AUB is hysteroscopy which being an operative modality is invasive[9–11] . TVS is used as the first diagnostic investigation but it has limitations .and cannot differentiate intrauterine pathology with complete certainty.5

Hence to increase the diagnostic confidence and thereby avoid unnecessary hysteroscopies we need to increase the sensitivity and specificity of the screening modality, TVS. 3D ultrasounds and saline infusion sonohysterography has stepped in a big way in this approach.

The treatment of AUB varies with the cause .In patients with organiccauses, the treatment is surgical and in functional cases the cure is medical management. The diagnostic protocol in patients with AUB, TVS is done first as a screening test. Endometrium thickness, pattern and focal or diffuse pathologies are noted. Endometrium is labelled normal, ≤5 mm in postmenopausal or ≤16 mm in a premenopausal female in the absence of any pathology, focal or diffuse. These patients are taken up for medical management .SIS is recommended in these patients when they fail to respond to medical treatment. SIS is also recommended in cases of abnormal endometrial thickness, when TVS is suboptimal. Additionally it is also required in cases of focal endometrial pathologies to better characterize the lesions like polyps, uterine fibroids, endometrial hyperplasia, and endometrial cancer. In focal lesions the clinician requires to know the type of lesion, location, and extent of involvement of the myometrium to decide the surgical procedure.[4,12] Hysteroscopy is the gold standard in AUB. As a diagnostic modality, itpermits visualization of the endometrial cavity to better assess the intra-cavitary lesions[12].Additionally it is a corrective

modality for all of lesions like polyps and submucosal fibroids.9,12. However, But it has limitation as it fails to providethe myometrial extension of the lesions

Salim et al in a prospective double blind study diagnosed submucosal fibroid using 3DSIS . They concluded that 3d SIS compares well with hysteroscopy.[12]

Glanc et al in their study saw same accuracy of 3D SIS with hysteroscopy in cases of AUB, with a sensitivity and specificity of 95% and 88%, respectively, for 3D SIS, and 96% and 90% for hysteroscopy.8

Erdem et al, reported a high sensitivity and specificityof polyp(100% and 91.8% respectively)on SIS, and in fibroidssensitivity and specificity (95% and 100%respectively), in SIS .[10]

De Kroonet al in a meta-analysis of 2228 procedures compared 3D SIS with hysteroscopy or hysterectomy. This meta-analysis recommended SIS in evaluating the endometrial cavity in pre- and postmenopausal women with AUB.[11] The analysis revealed a pooled sensitivity of 3D SIS for evaluating uterine cavity was 0.95 (95% confidence interval [CI], 0.93–0.97), and the pooled specificity was 0.88 (95% CI, 0.85–0.92). They recommended the addition of aspiration biopsy in SIS in AUB patients.[11]

In comparison our study showed that of 13 cases of submucosal fibroids .5 were misdiagnosed on TVS but were correctly located on SIS 3 cases of normal endometrium were falsely diagnosed as endometrial hyperplasia on SIS Whereas 10 cases were normal on SIS, but had endometrial pathologies on TVS.8 cases were normal on TVS, but had endometrial pathologies on SIS.Discrepancies between TVS and final diagnosis was in 27 cases .15 false negative cases included 5cases of myoma, 3 cases of polyp, 3 cases of endometritis, 2 cases of adhesions ,1 case of endometrial hyperplasia and endometrial carcinoma each3 cases of normal endometrium were falsely diagnosed as endometrial hyperplasia on SIS .SIS was more sensitive and specific in comparison to TVS .The sensitivity and specificity of TVS were 71.4 % and 67.75 resp compared to 92.9 % sensitivity and 89.7%specificity of SIS

Positive predictive value of SIS was 86.7 % as compared to 54.4% for TVS .Diagnostic accuracy of SIS -91 % was significantly more than TVS – [69%] with a p value =0.002 . These results are in agreement with various other studies

Conclusion

Screening diagnostic modality of AUB is TVS.Hysteroscopy is the diagnostic gold standard.Even though hysteroscopy has the advantage of being a curative modality also it has a limitation as it is invasive .SIS is a non-invasivenew diagnostic modality with improved sensitivity and specificity .It is safe .Hence its use is recommended in all cases of AUB. However larger RCT s are required

Conflict of interest

There are no conflict of interests

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