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## Saline infusion sonography and office hysteroscopy in the diagnosis of abnormal uterine bleeding

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### Abstract

Abnormal uterine bleeding is one of the commonest reasons of women consulting gynecologist. Approximately 33% of all admission to gynecologist is due to abnormal uterine bleeding<sup>[1]</sup>. Management of these patients include prompt diagnosis of caused AUB. Intracavitary pathology like polyp, fibroid, hyperplasia of endometrium are the commonest pathology for AUB. Invasive procedure like office hysteroscopy (OH) is considered as gold standard for diagnosis of AUB. Considering its cost, skill and accessibility SIS may prove effective alternative to office hysteroscopy.

Trans vaginal sonography (TVS) is widely used diagnostic tool for all gynaecological conditions. Our current study aims to compare the accuracy of saline infusion sonography (SIS) with TVS and office hysteroscopy in the diagnosis of AUB.

**Method:** The prospective observational study was conducted in the department of OBGY of ACPM Medical College Dhule. 100 patients of AUB evaluated by TVS, SIS and office hysteroscopy to diagnose etiological factors like endometrial hyperplasia, submucous fibroid or polyp.

**Results:** In our study sensitivity and specificity of TVS SIS and OH were 65%, 89%; 87%, 91%; 87%, 91% respectively. Similarly PPV and NPV of TVS SIS and OH were 88%, 68%; 92%, 86%; 92%, 86% respectively.

**Conclusion:** For diagnosis of intracavitary lesion in case of AUB, SIS is definitely cost effective non invasive investigation with almost equal accuracy when compared with office hysteroscopy. Therefore we recommend that SIS should be first line investigation in case of AUB.

**Keywords:** TVS, SIS, office hysteroscopy, abnormal uterine bleeding

### Introduction

Abnormal uterine bleeding is one of the commonest reason for women consulting gynaecologist. Approximately 33% of all admissions to gynecologist is due to abnormal uterine bleeding<sup>[1]</sup>. Management of these patients include prompt diagnosis of caused AUB. Intracavitary pathology like polyp, fibroid, hyperplasia of endometrium are the commonest pathology for AUB. Trans vaginal sonography is highly applicable non-invasive and preferred initially in evaluation of women with abnormal uterine bleeding<sup>[2, 3]</sup>. However the accuracy of TVS is restricted in diagnosing focal endometrial lesions which can be overcome by SIS which can be performed easily and quickly. It was also well tolerated by the patient. SIS can accurately differentiate focal endometrial lesions and provide information about the localisation and extent of subendometrial lesions affecting the uterine cavity<sup>[4, 5]</sup>. Invasive procedure like office hysteroscopy is considered as gold standard for diagnosis of AUB. Considering its cost, skill and accessibility SIS may prove effective alternative to office hysteroscopy.

The lesions confirmed by above methods are well treated by minimally invasive surgical procedures. Dysfunctional causes of AUB requires medical treatment.

Trans vaginal sonography is widely used first line of investigation for all cases of AUB. However to differentiate between fibroid with fibroid polyp, endometrial hyperplasia with 1 endometrial polyp, intramural fibroid with submucosal fibroid TVS is having limitation. This may be overcome by injecting saline intracavity while performing TVS (Saline Infusion sonography/sonohysterography/SIS). SIS appears to be easy, rapid and tolerable tool.

Office hysteroscopy no doubt is most accurate to diagnose all these conditions but seems to be expensive and somewhat invasive.

The aim of our study was to describe role of SIS and Office hysteroscopy in diagnosing aetiology of AUB.

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**Material and Methods**

100 patients of AUB from gynaecology OPD of our Institute from June 2018 to Jan 2019 fulfilling inclusion criteria were included in our prospective observational study.

All pregnant women, unmarried women, women with profuse PV bleeding or bleeding diathesis were excluded from our study. After taking informed consent, detailed history noted of all selected women. Detailed menstrual history and general examination findings noted. Provisional diagnosis made after doing per speculum and per vaginal examination.

All patients evaluated by TVS, SIS and followed by office hysteroscopy by same consultant.

TVS Conventional TVS of the uterus was performed in both Sagittal and oblique transverse planes with 7.5 megahertz probe [6]. TVS was performed with an empty bladder.

SIS Subsequently following TVS Betadine solution was used for disinfecting vagina and a number 8 Foleys catheter was passed

through the cervical Canal into the uterine cavity without dilation of the cervix. Catheter was inflated with 2-3 ml of distilled water and uterus visualised after injecting 5 to 10 ml of 0.9% normal saline solution.

**Office hysteroscopy:** Following SIS patients were subjected to hysteroscopy for which patients were placed in dorsal lithotomy position perineum and vagina were painted and draped posterior vaginal wall was depressed with sims speculum. By grasping anterior lip of cervix with vulsellum a suitable telescope (Rigid 5 mm) was inserted and was viewed at 30 degree at the distal end. 0.9% normal saline was injected to visualize the uterine cavity.

A total of 100 patients were enlisted into the study. 100 patients underwent diagnostic procedure according to the Protocol. Tissue details giving apparently false positive or false negative findings are given in the following table. I.

**Table I:** Showing distribution of findings in TVS, SIS and OH in 100 patients

	<b>Abnormal (n=54)</b>	<b>Normal (n=46)</b>	<b>Total (n=100)</b>
Trans vaginal sonography Positive Negative	35 19{(12Polyp(P), 4Fibroid(F), 3Hyperplasia (H))}	5(2P, 3F) 41	40 60
Saline infusion sonography Positive Negative	47 7(4P, 1F, 2H)	4(2P, 2F) 42	51 49
Office hysteroscopy Positive Negative	47 7(3P, 3F, 3H)	4(4F). 42	51 49

The sensitivity, specificity, positive predictive value and negative predictive value of all three methods for the detection

of all abnormality is shown in following table.

**Table 2:** Showing calculated sensitivity, specificity, positive predictive value and negative predictive value of TVS, SIS and OH

	<b>TVS</b>	<b>SIS</b>	<b>OH</b>
Sensitivity	65	87	87
Specificity	89	91	91
Positive predictive value	88	92	92
Negative predictive value	68	86	86

**Discomfort**

TVS = Blue bars

SIS = Red bars

0 = No discomfort

5 = Intolerable pain



**Fig 1:** Comparison of pain score in TVS, SIS and OH

All patients tolerated TVS SIS and OH well. During TVS 58%, SIS 56% and during OH 34% reported no discomfort. While 42%, 44% and 66% felt slight pelvic pain. 2% reported that the operative procedure was troublesome and uterine cavity distention was most distressing step. In 1% of OH application pain interrupted the procedure, however complete examination was possible after few minutes. No discomfort or complications were recorded during subsequent 2 to 3 days.

**Discussion**

TVS has been extensively used for the assessment of patients with AUB. Our results have indicated sensitivity of 65%, specificity of 89% positive predictive value of 88% and negative predictive value of 68% of TVS for the investigation of AUB. But TVS has its limitation in depicting small nodular lesions which are isoechogenic within the endometrium and even a normal thickness endometrium maybe seen to represent

endometrial hyperplasia. Advantage of SIS as an initial evaluation test is its ability to demonstrate small endometrial lesion and its reliability to differentiate between focal and diffuse endometrial lesion.

The information from our results signified that the use of saline as contrast agent in SIS helps in improving Diagnostic reliability of TVS. Diagnosing intracavitary tumors was the main advantage of this method. Especially small intracavitary tumors were precisely visualised by SIS where TVS failed to diagnose it. Therefore number of false negative results were significantly reduced for this type of Pathology. As stated by De Kroon *et al.* [7] SIS can effectively replace hysteroscopy and reduce the cost of anaesthesia, disinfection, sterilization and guides the need for hysteroscopy in a particular patient. Grimbizis *et al.* [8] compared the transvaginal sonography (TVS) and SIS and concluded that SIS detected more intrauterine abnormalities than TVS alone.

In our study majority of women complaint of menorrhagia (in 38% of women) of which polymenorrhoea (30% of women) being the commonest symptom. In our study 40% of women were found with normal uterus after undergoing clinical examination and were diagnosed by DUB. Mathew *et al* who concluded that 48% of patients were with normal uterine cavity and fibroid and polyp were the next most common pathologies found in patients with AUB [9].

Sensitivity, PPV of SIS has been reported to be 87% and 92%. The data and results from present study are in agreement with above - mentioned published reports. These findings were comparable to Reddi Rani *et al.* [10] and Ryu *et al.* [11] Sharma *et al.* [12] also showed similar sensitivity for SIS in their study.

Also majority of our study population were premenopausal and cervix were easy to catheterized. We did not encounter any complication related to SIS. Also the instruments required for SIS were accessible and inexpensive and examination was completed within few minutes with least discomfort for the patient.

### Conclusion

For diagnosis of intracavitary lesion in case of AUB, SIS is definitely cost-effective non-invasive investigation with almost equal accuracy when compared with office hysteroscopy. Therefore we recommend that SIS should be first line investigation in case of AUB.

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