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Original Research Article

Transvaginal sonography versus saline contrast sonohysterography in evaluation of abnormal uterine bleeding

Rashmi Vohra[1]*, Rita Mittal[2], Anupa Sood[3]

[1]Department of Obstetrics and Gynecology, MM Medical College Mullana, Ambala, Haryana, India
[2]Department of Obstetrics and Gynecology, IGMC Shimla, Himachal Pradesh, India
[3]Department of Obstetrics and Gynecology, MM Medical College, Solan, Himachal Pradesh, India

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***Correspondence:**
Dr. Rashmi Vohra,
E-mail: rashmivohra99@gmail.com

ABSTRACT

Background: To evaluate TVS and SCSH as a screening method in case of AUB and to correlate he findings of TVS and SCSH with hysterectomy specimen.
Methods: Present study was conducted in department of obstetrics and gynaecology, Kamla Nehru Hospital for mother and child, IGMC, Shimla for a period of one year. A total of 150 patients with AUB were subjected to TVS and SCSH in same sitting irrespective of their phase of menstrual cycle. All the cases were subjected to hysterectomy within 2 weeks and operative findings were noted. Data was collected and findings analysed.
Results: Overall sensitivity of SCSH was found to be 97.6% while that of TVS was 95.1%. The overall specificity of SCSH was found to be 99.6% and that of TVS was 98.2%. PPV, NPV and DA for SCSH was more than that of TVS i.e., 98.9% vs 97.4%, 99.7% vs 99.3% and 99.4% vs 98.7%.
Conclusions: SCSH represents a new and promising technique for investigation of the uterine cavity. It is safe, minimally invasive, easy, cost effective and reliable method to diagnose the cause of AUB.

Keywords: AUB, SCSH, Sensitivity, Specificity, TVS

INTRODUCTION

Abnormal uterine bleeding accounts for 15% of office visits and almost 25% of gynecological surgeries.[1] AUB can be caused by a variety of uterine abnormalities such as polyp, submucous myoma, endometrial hyperplasia and endometrial carcinoma.[2] Most commonly used modalities to assess anatomic causes of AUB have been endometrial biopsy, D and C, HSG, TVS and hysteroscopy. In cases where intracavitary masses or submucous myomas are suspected, hysteroscopy has become the most definitive method for diagnosis.[3] Though hysteroscopy has been considered as gold standard for evaluating the uterine cavity abnormalities, it is invasive, expensive, associated with complications like perforation, embolism, ascending genitourinary infection and cannot asses the myometrial and adnexal pathology.[4] When TVS was combined with saline contrast in the uterine cavity, the diagnostic accuracy was markedly improved and was found to equal that of hysteroscopy when performed by skilled investigators.[5,6]

SCSH is the term used for ultrasound imaging of uterine cavity, using sterile saline solution as a negative contrast medium. SCSH is a low-tech, low-cost, painless enhancement of TVS which obviates the need for diagnostic hysteroscopy in cases of AUB. SCSH can detect focal pathology and suggest the diagnosis of an

endometrial polyp or a submucosal fibroid on the basis of the echotexture and, in cases of fibroids or adenomyosis, the presence of overlying endometrium. Blood clots and synechiae may also result in apparent endometrial thickening, but SCSH can usually differentiate between these findings and diffuse endometrial hyperplasia.[7]

The objective of the study was to evaluate TVS and SCSH as a screening method in cases of AUB. To correlate the findings of TVS and SCSH with hysterectomy specimen.

METHODS

A total of 150 patients who presented with complaint of AUB were admitted for hysterectomy in the Department of Obstetrics and Gynaecology, KNSH M&C IGMC Shimla from the year 2011 to 2012.

Inclusion criteria

- Premenopausal status; defined as no more than 12 months amenorrhoea,
- Uterus less than 12-week size.

Exclusion criteria

- Uterus more than 12-week size,
- Acute pelvic infection,
- Acute uterine hemorrhage,
- Suspected or diagnosed cases of genital cancer,
- Pregnancy,
- Serious cardiopulmonary diseases,
- Cervical cytology on speculum examination/ abnormal Pap smear.

Detailed history, GPE and laboratory investigations were done on all 150 patients included in the study. Then all patients were subjected to TVS irrespective of their phase of menstrual cycle.

TVS machine which was used was Toshiba Test Vision-200, with 6.5 Hz transvaginal probe. The contour of endometrial cavity was studied in longitudinal and transverse plane and uterine pathology and endometrial thickness were noted. Endometrial thickness more than or equal to 12mm was taken as significant and labelled as endometrial hyperplasia.

All cases were then subjected to SCSH in same sitting. Tablet buscopan was given half an hour before doing SCSH. No. 8 Foleys catheter was introduced into uterine cavity.

Bulb was inflated with 3cc of normal saline and mild traction was given so as to place the bulb at the level of internal os. Vaginal probe was then introduced. Sterile saline was infused until distention of uterine cavity was adequate to see any lesions or till pain appears.

Amount of normal saline infused, appearance of pain or any other complications were noted. Multiple sagittal and coronal images were obtained and findings were noted. All the cases were subjected to hysterectomy within 2 weeks and operative findings were noted. Findings at TVS and SCSH were compared with findings of hysterectomy specimen.

Findings were analysed and sensitivity, specificity, positive predictive value, negative predictive value and diagnostic accuracy were calculated.

RESULTS

A total of 150 patients who presented with AUB and were admitted for hysterectomy in the Department of Obstetrics and Gynaecology, KNSH M and C IGMC Shimla were included in the study which was conducted from May 2011 to June 2012. In all 150 cases, the findings of TVS were compared with SCSH. Table 1 shows the comparative diagnosis on TVS and SCSH.

Table 1: Shows the comparative diagnosis on TVS and SCSH.

Findings	TVS	SCSH
Normal study	31	30
Endometrial hyperplasia	39	39
Intramural fibroid	44	43
Submucosal fibroid	16	18
Endometrial polyp	12	13
Subserosal fibroid	06	06
Adenomyosis	02	01

All the patients were operated upon and per-operative anatomical features were noted with full details as shown in Table 2.

Table 2: All the patients were operated upon and per-operative anatomical features.

Operative finding	Numbers	%
Normal study	30	20.0
Endometrial hyperplasia	37	24.7
Intramural fibroid	42	28.0
Submucosal fibroid	20	13.3
Endometrial polyp	14	9.3
Subserosal fibroid	06	4.0
Adenomyosis	01	0.7
Total	150	100.0

Various values of true positive, true negative, false positive, false negative for both TVS as well as SCSH are shown in Tables 3. Overall sensitivity of SCSH was found to be 97.6% while that of TVS was 95.1%. The overall specificity of SCSH was found to be 99.6% and that of TVS was 98.2%. PPV, NPV and DA for SCSH was more than that of TVS i.e., 98.9% vs 97.4%, 99.7% vs 99.3% and 99.4% vs 98.7%.

Table 3: Comparative table for TVS and SCSH.

	Sensitivity %		Specificity %		PPV %		NPV%		DA%	
	TVS	SCSH	TVS	SCSH	TVS	SCSH	TVS	SCSH	TVS	SCSH
NS	100	100	99.2	100	96.8	100	100	100	99.3	100
EH	100	100	98.1	98.2	95.5	94.9	100	100	98.7	98.7
IMF	100	100	98.1	99.1	95.5	97.7	100	100	98.7	99.3
SMF	80.0	90.0	100	100	100	100	97.0	98.5	97.3	98.7
EP	85.7	92.9	92.9	100	100	100	98.5	99.3	98.7	99.3
SSF	100	100	100	100	100	100	100	100	100	100
Adenomyosis	100	100	99.3	100	50.0	100	99.3	100	98.3	100

DISCUSSION

Abnormal uterine bleeding is a common but complicated clinical presentation, diagnosis of which is often variable. Small intracavitary lesions are often missed on routine TAS. TVS has emerged a better method for imaging uterine and endometrial anomalies, but small structural anomalies can be missed and endometrial and myometrial anomalies cannot always be differentiated.[6]

SCSH represents a new and promising technique for investigation of the uterine cavity. It is safe, minimally invasive, easy, cost effective and reliable method to diagnose the cause of AUB.[6]

Table 4: Sensitivity and specificity of TVS versus SCSH in various studies.

Study	Year	Procedure	Sensitivity%	Specificity %
Schwarzler P et al[9]	1998	TVS SCSH	67.0 87.0	89.0 91.0
Dijkhuizen FPHLJ et al[10]	2000	TVS SCSH	61.0 100	96.0 85.0
Guven MA et al[11]	2004	TVS SCSH	56.0 81.0	68.0 73.0
Ryu J et al[12]	2004	TVS SCSH	79.0 95.0	46.0 83.0
Aslam M et al[13]	2007	TVS SCSH	71.4 92.9	67.7 89.7
Kim SJ et al[14]	2009	TVS SCSH	85.5 94.7	68.9 82.8
Reddi RP et al[4]	2010	TVS SCSH	65.5 82.0	63.6 83.3
Present study	2012	TVS SCSH	95.1 97.6	98.2 99.6

Table 5: PPV, NPV, and DA of TVS versus SCSH in various studies.

Study	Year	Procedure	PPV %	NPV %	DA %
Schwarzler P et al[9]	1998	TVS SCSH	88.0 92.0	71.0 86.0	- -
Epstein E et al[15]	2001	TVS SCSH	64.0 70.0	69.0 83.0	68.0 77.0
Guven MA et al[11]	2004	TVS SCSH	75.0 83.0	78.0 70.0	- -
Ryu J et al[12]	2004	TVS SCSH	83.0 95.0	39.0 83.0	- -
Aslam M et al[13]	2007	TVS SCSH	54.4 86.7	81.5 94.5	69.0 91.0
Kim SJ et al[14]	2009	TVS SCSH	87.8 93.5	64.5 85.7	80.9 91.4
Reddi RP et al[4]	2010	TVS SCSH	68.0 81.0	90.0 93.0	- -
Present study	2012	TVS SCSH	97.4 98.9	99.3 99.7	98.7 99.4

CONCLUSION

To conclude, the overall sensitivity of SCSH was found to be 97.6% while that of TVS was 95.1%. The overall specificity of SCSH was found to be 99.6% and that of TVS was 98.2%.

Thus, the sensitivity and specificity was more for SCSH. PPV, NPV and DA for SCSH was more than that of TVS i.e., 98.9% vs 97.4%, 99.7% vs 99.3% and 99.4% vs 98.7%. SCSH is especially helpful for intracavitary abnormalities. So TVS could be supplemented with SCSH for better diagnosis.

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