



COMPARISON OF SALINE INFUSION SONOGRAPHY WITH OFFICE HYSTEROSCOPY IN EVALUATION OF ABNORMAL UTERINE BLEEDING

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ABSTRACT

Aim: To evaluate the diagnostic potential of saline infusion sonography(SIS) to pick up uterine cavity lesions and compare it with the gold standard office hysteroscopy in women with abnormal uterine bleeding.

Methods: Study population consisted of women scheduled for office hysteroscopy for various indications. Uterine cavity of 105 women of the study group were evaluated first by SIS and then by office hysteroscopy by two separate examiners. Findings were recorded separately for both procedures and compared.

Result: With SIS, pathological findings were identified in 47 (47%) patients and hysteroscopy detected lesions in 44 (44%) patients. For all findings combined sensitivity of SIS was 88.6%, specificity 87.5%, positive predictive value 84.7% and negative predictive value 94.7% as compared to hysteroscopy.

Conclusion: The findings of saline infusion sonography and office hysteroscopy did not differ significantly. Thus SIS is an excellent option for uterine cavity evaluation.

KEYWORDS : Saline infusion sonography, Office Hysteroscopy

INTRODUCTION

Abnormal uterine bleeding is a common presenting complaint of women seen in a gynecologist's office. It may be due to anovulation, pregnancy problems, hormonal factors, and benign or malignant pelvic lesions¹. FIGO classification system (PALM-COEIN) divides the causes of abnormal uterine bleeding in nongravid women of reproductive age into two components namely structural and functional². An ideal approach would be to promptly identify the patients with organic disease, to offer the treatment options available and treatment by early and optimal surgical or medical management. Diagnostic hysteroscopy combined with endometrial biopsy is considered the gold standard in the evaluation of uterine cavity because hysterectomy, the ultimate gold standard, cannot be considered a diagnostic tool. Transvaginal ultrasound improves visualization of the endometrium and ovaries as compared with transabdominal imaging. Small structural abnormalities can be missed and endometrial and myometrial abnormalities cannot always be differentiated. Saline Infusion Sonography (SIS) improves the visualisation of structural abnormalities of the endometrium due to saline as negative contrast. It is a convenient way to indirectly visualize the endometrial cavity. The aim of this study was to determine accuracy of SIS in comparison to Office Hysteroscopy for diagnosing uterine and endometrial abnormalities in women with abnormal uterine bleeding

MATERIAL & METHODS

Prospective cohort study was carried out in a referral and teaching hospital. The study population consisted of women attending gynaecology OPD, scheduled to undergo office hysteroscopy. The examination was done in the first half of the menstrual cycle. The procedure was explained to each patient and consent obtained. The hysteroscopy was the gold standard in the study. The study population was first evaluated by SIS. With the use of SIS, the diagnosis was made on the basis of the criteria described by Parsons & Lense.

Inclusion criteria :-

- Women with vaginal bleeding suspected of having uterine

abnormalities

- Non-pregnant
- Normal Cervical Cytology

Exclusion criteria :-

- Refusal to undergo hysteroscopy
- Inability to undergo Endovaginal ultrasonography
- Suspected current cervical, uterine or tubal infection
- Active menstrual bleeding
- Cervical stenosis

Analgesics were given as on required basis. No antibiotic prophylaxis was given.

A total of 105 patients consented and were enrolled for the study. The mean age was 35.1 yrs (24-44yrs). Abnormal uterine bleeding was commonest in the age group 33-37 yrs followed by the age group 40-44 yrs. The commonest symptom was menorrhagia (61%) followed by polymenorrhagia (15%).

Procedural Difficulties : In the study, we were able to perform both the procedures on most of the patient without difficulty and unnecessary discomfort to patient except five patients. These five patients were not included in the analysis. In three patients SIS was performed but office hysteroscopy could not be performed because of cervical stenosis and severe pain. In one case there was difficulty in negotiating cervical canal due to stenosis. In one patient quality of sonography image was inadequate for reporting due to difficulty in distension of the uterine cavity despite adequate saline infusion.

RESULTS

Both the procedures were performed in all the patients of the study group. Office hysteroscopy identified 56 patients with normal uterine cavity and 44 patients were having one or more structural abnormalities of uterine cavity. The overall incidence of various uterine abnormalities in patients with abnormal uterine bleeding diagnosed by office hysteroscopy in our study is as listed in Table 1.

Table 1: Incidence of uterine abnormalities

Lesion	No of patients
Normal	56
Polyp	09
Myoma	31
Hyperplasia	01
Polyp + adhesions	01
Adhesions	01
Others	01

The diagnostic accuracy of both the diagnostic procedures was compared with each other. The detection of various lesions by SIS and office hysteroscopy is listed in Table2.

Table 2. Abnormality by SIS and Hysteroscopy

Lesion	SIS	Hysteroscopy
Polyp	12	09
Myoma	31	31
Hyperplasia	02	01
Polyp + adhesions	-	01
Adhesions	02*	01
Adenomyosis	-	01
Total	47	44

* In case of adhesions+ polyp only adhesions were detected by SIS

A total of seven false positive cases were detected by SIS while false negative cases were five in number. False positive were mainly due to polyp and myoma while main reason for false negative was myoma. The sensitivity of SIS in case of polyp in the uterine cavity is 90%, specificity of 96.6%, positive predictive value (PPV) of 75% and negative predictive value (NPV) of 98.8%. The sensitivity of SIS in case of myoma in the uterine cavity is 90.3%, specificity of 95.6%, positive predictive value (PPV) of 90.3% and negative predictive value (NPV) of 95.6%.

Table 3. Evaluation for all abnormalities

	Hysteroscopy		
	Present	Present	Absent
SIS		39	7
	Absent	5	49

The sensitivity of SIS in case of all abnormalities in the uterine cavity is 88.6%, specificity of 87.5%, positive predictive value (PPV) of 84.7% and negative predictive value (NPV) of 90.7%.

Table 4. Lesions detected by SIS and office hysteroscopy and diagnostic potential of SIS vs Hysteroscopy

Lesion	Polyp	Myoma	Hyperplasia	Adhesions	Total
Abnormalities SIS/Hysteroscopy	12/9	31/31	2/1	2/2	47/44
Sensitivity	90%	90.3%	100%	100%	88.6%
Specificity	96.6%	95.6%	98.9%	100%	87.5%
Positive predictive value	75%	90.3%	50.0%	100%	84.7%
Negative predictive value	98.8%	95.6%	100%	100%	90.7%
False positive	3.33%	4.3%	01.0%	-----	12.5%
False negative	10%	9.6%	-----	-----	11.3%
Likelihood ratio +	26.4	20.5			7.08
Likelihood ratio -	9.66	0.1			7.67

DISCUSSION

The most common modalities used to assess anatomic causes of abnormal uterine bleeding have been D & C, endometrial biopsy, hysterosalpingography, hysteroscopy, transvaginal sonography. These modalities can improve triage of patients, enhance understanding of the pathophysiology of menstrual disturbances and improve patient care. Bradley et al⁴

documented patient acceptability, diagnostic accuracy, and cost- effectiveness in 417 patients undergoing office hysteroscopy with flexible hysteroscope. The advantages of hysteroscopic visualization include immediate evaluation, direct visualization of the endometrial and endocervix, the ability to detect minute focal endometrial pathology, and the ability to perform directed endometrial biopsies. Office hysteroscopy is a rapid, safe, well-tolerated, and highly accurate means of diagnosing the cause of excessive uterine bleeding. Theoretically, the specificity and positive predictive value of hysteroscopy in cases of abnormal uterine bleeding should be 100%. In practice, however, the false- negative rate is 2% to 4% and is the result of operator error in detecting abnormal endometrial lesions⁵. The disadvantages of office hysteroscopy include the necessity of purchasing and maintaining expensive office equipment (e.g., camera, insufflator, hysteroscope, and video equipment), finding a skilled and experienced hysteroscopist, and the cost of the procedure. The irrigation of the endometrial cavity during the hysteroscopic procedure with saline may disseminate the disease to the abdominal cavity and may change the prognosis and the course of treatment⁶.

Lillian M. Mihm et al⁷ concluded that the high sensitivity and high negative predictive value of saline sonohysterography combined with endometrial biopsy make this technique useful for the evaluation of abnormal uterine bleeding and may allow some patients to avoid more invasive operative procedures. Cornelis D. de Kroon et al⁸ carried out study on technology assessment of saline contrast hysterosonography and concluded that SCHS was able to replace 84% of the outpatient diagnostic hysteroscopies in uterine cavity evaluation in women suspected of intrauterine abnormalities. The study showed that diagnostic hysteroscopy can be restricted to inconclusive or failed SCHS.

Cornelis D. de Kroon et al⁹ carried out a systematic review and meta-analysis of diagnostic studies that compared saline contrast hysterosonography to a gold standard diagnosis based on either hysteroscopy with or without histological sampling or to hysterectomy and concluded that saline contrast hysterosonography, in combination with an endometrium aspiration if necessary, can become the standard diagnostic procedure in women with abnormal uterine bleeding.

Overall incidence of various uterine abnormalities in patients presenting with abnormal uterine bleeding has been in the range of 76% to 30.7% by various studies. Our study results have been comparable to most of the studies.

CONCLUSION

The findings of SIS and office hysteroscopy did not differ significantly. Thus saline infusion sonography is an excellent option for uterine cavity evaluation especially in low resource setting where Hysteroscope is not available.

Conflict of Interest: None

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