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# Role of Saline Sonohysterography in the Detection of Endometrial Polyp in AUB

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**ABSTRACT**

Endometrial polyps are one of the most common causes of abnormal uterine bleeding in reproductive and perimenopausal age group of women which is an easily treatable. With the use of transvaginal ultrasound and advent of saline sonohysterography more polyps are being diagnosed even in asymptomatic patients. The objective of the study is to determine the efficacy of saline sonohysterography as an adjuvant to transvaginal sonography in the detection of endometrial polyps. A Prospective Cohort Study was conducted on 50 patients in the reproductive and perimenopausal age group with history of abnormal uterine bleeding .After specific history taking with clinical examination and lab investigations, these patients were advised to undergo transvaginal sonography and saline sonohysterography. We found out statistically significant association between the detection of endometrial polyp and the diagnostic method used in our study either SIS or TVS [Chi-square value-6.383 and p = 0.012]. SIS detected seven endometrial polyp cases whereas TVS detected none. Therefore it was concluded that SIS is superior to TVS in detection of endometrial polyps. The diagnostic efficacy of both the tests were compared using paired t-test showed significant difference between TVS and SIS (t-value-2.824 and p = 0.007). From the mean value observed it was concluded that SIS [mean = 0.52060] is more effective than TVS [mean = 0.44309] in detecting intrauterine pathologies. In saline infusion sonohysterography saline outlines the uterine cavity and appears to be very sensitive in detecting endometrial polyps which are often missed by doing transvaginal ultrasound alone. Thus saline infusion sonohysterography when combined with transvaginal sonography is more sensitive, accurate and simple method in detecting endometrial polyp as a cause of AUB.

## INTRODUCTION

Endometrial polyps are relatively common in all age group of women[1]. Endometrial polyps are most common pathological cause of abnormal uterine bleeding although a few percent of patients may be asymptomatic[2]. Transvaginal ultrasound (TVS) is the first modality used in the radiologic work-up of endometrial disease. The findings in sonohysterography, hysterosalpingography are often correlated with findings in TVS. The appearance of the endometrium is related to factors such as patient's age, stage of the menstrual cycle, pregnancy status and treatment with hormonal replacement therapy. An accurate diagnosis requires consideration of these factors in addition to clinical history and physical examination findings[3].

Transvaginal sonography allows a detailed assessment of the endometrium and has been proved useful for diagnosing endometrial disease[4]. Some authors have concluded that B-mode transvaginal sonography may distinguish endometrial polyps from endometrial hyperplasia and endometrial cancer[5]. The introduction of transvaginal color Doppler sonography allowed the analysis of endometrial vascularization and has showed that polyps have a distinctive vascular pattern[7,8].

Transvaginal saline sonohysterography is aminimally invasive technique that enables the visualisation of uterine cavity in detail after instillation of saline. It is usually done in the proliferative phase of the menstrual cycle (Day 8-10). The infused saline distends the cavity thus providing an excellent visualisation of endometrial lining and improved clarification of intraluminal abnormalities like polyps, submucous fibroid and endometrial hyperplasia. Several studies quote that saline sonohysterography is superior to transvaginal sonography in detecting endometrial pathologies[12] . Saline sonohysterography has shown to increase the specificity of conventional B-mode sonography in identifying endometrial polyps[9,10].

**Aims and objectives:** Saline Infusion Sonohysterography [SIS] as an adjuvant to TVS to improve the accuracy of diagnosis of endometrial pathologies with special emphasis on endometrial polyp in patients with AUB.

## MATERIALS AND METHODS

A Hospital Based Prospective Cohort Study was conducted on 50 patients with history of AUB who was referred to the department of Radiodiagnosis, Govt Villupuram Medical college, from January to Sep 2021. All the patients in the reproductive and perimenopausal age group with complaints of abnormal uterine bleeding were chosen based on inclusion and exclusion criteria. A detailed history was taken along with clinical examination and laboratory investigations were carried out.

**Inclusion criteria:**

- Patients with abnormal uterine bleeding in reproductive age group
- Patients with abnormal uterine bleeding in perimenopausal age group

**Exclusion criteria:**

- Menstruating female
- Patients with pelvic inflammatory disease
- Pregnant patients
- Patients with surgical history in cervix

**Method:** The patients were asked to empty the bladder before the procedure and then placed in dorsal lithotomy position with knee flexed. A transvaginal ultrasound is performed using 7.5MHz endovaginal probe of SAMSUNG and MINDRAY ultrasound machine [covered with a condom].The appearance of the endometrium, myometrium and adnexae were noted.

Patient was made to lie in lithotomy position. Standard bivalve speculum was inserted the cervix was swabbed with Betadine solution and anterior lip of the cervix is grasped. Then No.8 Foley's catheter was introduced through the external os of cervix upto the fundus of uterus. It was then drawn 1-1.5 cm back and the catheter is fixed by inflating it with 1.5-2 mL of distilled water such that it lies just above the internal os and blocks the fluid from flowing out. Then the speculum was removed carefully and the transvaginal probe was inserted. Gentle infusion of sterile isotonic saline was completed during real time sonography. Saline separates the echogenic endometrium which appears as hypoechoic area within the endometrial cavity. Uterine cavity was visualized in the longitudinal plane from corner to corner and in coronal plane from fundus to endocervix.

The endometrial cavity was examined for the presence of polyps. Any projection inside the uterine cavity is observed with special attention to its shape and echogenicity. The balloon was deflated and the catheter is gently removed.

Ethical clearance was obtained from the Instituitional ethical committee. After taking an informed consent, patients were advised to undergo transvaginal sonography and saline sonohysterography.

Data entry was done using Microsoft Excel and Statistical analysis was performed using SPSS version 20.0 for Windows.

**RESULTS**

Our study was done in 50 cases with complaints of abnormal uterine bleeding. Patients were subjected to transvaginal sonography and saline sonohysterography for the evaluation of polyps.

The age of the patient ranged from 20-55 years, with maximum number of cases in the age group of 36-40 years (34%).The most common complaint was Menorrhagia (70%). The duration of symptoms in the patients ranged from 2 months to 3 years. Majority had complaints for about 4-6 months (36%).Transvaginal sonography showed anterior intramural fibroid in 18%, posterior intramural fibroid in 16%, multiple intramural fibroid in 20%, bulky uterus in 18% and endometrial hyperplasia in 2% of cases. The study was normal in 26% of patients.

Saline sonohysterography showed endometrial polyp in 14% and normal in 20% of cases. Combination of intramural fibroid with polyp was seen in 6% of cases. A statistically significant association was seen between the detection of endometrial polyp and the diagnostic method used either SIS or TVS [Chi-square value-6.383 and p = 0.012].Out of 50 cases SIS detected polyp in seven patients whereas TVS detected none. Therefore it was concluded that SIS is superior to TVS in detection of endometrial polyps. The overall sensitivity of the Saline infusion sonohysterography was 92.5%, specificity was 100%, the negative predictive value was 76.9% the positive predictive value was 100% and the accuracy rate was 94%.

**Distribution of age:** Out of fifty patients, majority fall in the age group of 36-40 years (34%) which is followed by 41-45 years (22%).

**Frequency of symptoms:** 70% of the patients had complaints of Menorrhagia, followed by polymenorrhagia (16%) and intermenstural bleeding(6%).


Fig 1: TVS showing endometrial hyperplasia

Fig 2:SIS showing Endometrial polyp

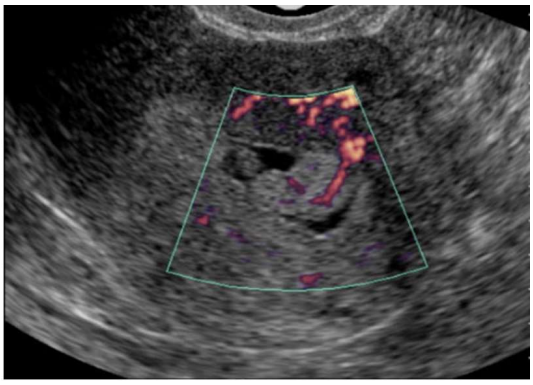

Fig 3: Power Doppler showing vascularity in the pedicle of polyp

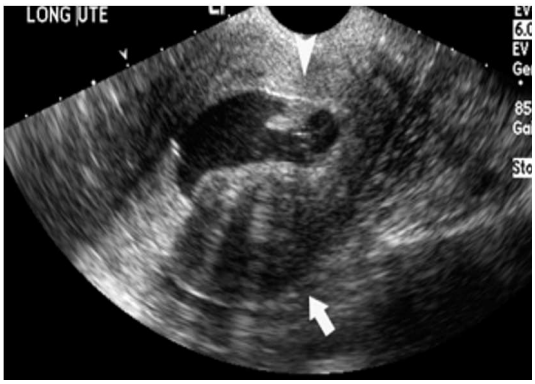


Fig 4: SIS showing both polyp and fibroid

**Diagnosis in transvaginal ultrasound:** In TVS we found 54% cases of Intramural fibroid. 18% of patients had bulky uterus and 2% had endometrial hyperplasia. In 26% of patients TVS appeared normal. Polyps were not found by TVS.

**Diagnosis in saline sonohysterography:** In SIS 52% had Intramural fibroid. 16% of patients had bulky

Table 1: Detection of endometrial polyp in TVS and SIS

| | Transvaginal ultrasound | | Saline sonohysterography | | Total |
|---|---|---|---|---|---|
| Polyp | No | Percentage | No | Percentage | No |
| No | 50 | 100 | 43 | 88 | 94 |
| Yes | 0 | 0 | 7 | 12 | 6 |
| Total | 50 | 100 | 50 | 100 | 100 |

Table 2: Chi-square tests

| Pearson Chi-Square | Value | DF | Si |
|---|---|---|---|
| | 1 | 0. 012 | 6. 383 |

uterus and 14% of patients had endometrial polyps. In 6% of patients submucous fibroids were detected.

**Detection of endometrial polyp in TVS and SIS:** In the detection of endometrial polyp no cases were found using transvaginal sonography method, whereas out of fifty cases seven cases were found by using saline sonohysterography. Chi-square test is carried out to test the association between endometrial polyp and the diagnostic methods used. In transvaginal sonography method all the fifty cases falls under non-traceable by using, whereas out of fifty cases seven cases are traceable by using saline sonohysterography method. The calculated Chi-square value 6.383 and the corresponding p-value 0.012 confirms that there is significant association between the detection of endometrial polyp and different diagnostic methods used.

## DISCUSSIONS

In patients with abnormal uterine bleeding the exact diagnosis is very important because the treatment modality entirely depends on it. Endometrial polyp in most cases causes abnormal uterine bleeding. Polyps appears as normal or mere endometrial thickening in transabdominal sonography and transvaginal sonography. With saline sonohysterography an intracavitary polyp is surrounded by anechoic fluid well demonstrating the polyp and its stalk. In addition colour Doppler can be used to demonstrate the vascularity of the polyp.

In our study transvaginal ultrasound revealed that the majority i.e. 54% of cases had intramural fibroid. In 26% of the patients the study appeared normal with no obvious intracavitary lesions and 2% of patient showed endometrial hyperplasia. Rani *et al*.[14] study showed that the most common diagnosis found in patients with AUB was intramural fibroid (42%) followed by submucous fibroid (21%). In the present study, Saline sonohysterographic evaluation showed intramural fibroid in 52%, submucous fibroid in 6% and endometrial polyp in 14% of cases. Combination of intramural fibroid with polyp were seen in 3 cases. Thus saline sonohysterography detected seven endometrial polyps which was previously diagnosed as endometrial hyperplasia or normal in transvaginal sonography. Jacques *et al*.[13] made a study to assess the accuracy of saline infusion sonohysterography versus transvaginal sonography in detecting intracavitary uterine pathology. Polyps were accurately diagnosed in 91.3% of the patients whereas by transvaginal sonography, polyps were correctly diagnosed in only 34% of the patients. In the present study there was statistically significant association between the detection of endometrial polyp and the diagnostic method used (Chi-square-6.383 and p = 0.012).Out of 50 cases SIS detected seven endometrial polyps whereas in TVS the corresponding cases were diagnosed as normal[2], endometrial hyperplasia[1] or as intramural fibroid[4]. From this, it is concluded that SIS is superior to TVS in detection of endometrial polyps[11]. Also the diagnostic efficacy of both the test were compared using paired t-test showed significant difference between TVS and SIS [t-value-2.824 and p = 0.007]. From the mean value observed it was concluded that SIS [mean = 0.52060] was more effective method than TVS [mean = 0.44309].

The overall sensitivity of the Saline infusion sonohysterography was 92.5%, specificity was 100%, the negative predictive value was 76.9% the positive predictive value was 100% and the accuracy rate was 94%.

## CONCLUSION

In saline infusion sonohysterography saline outlines the uterine cavity and appears to be very sensitive in the detection of endometrial polyps which are often missed when transvaginal ultrasound alone is done as a diagnostic method. Thus saline infusion sonohysterography when combined with transvaginal sonography is more sensitive, accurate and simple method in detecting endometrial polyp as a cause of abnormal uterine bleeding.

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