

Comparison Of Transvaginal Sonography Hysterosalpingography And Hysteroscopy In Female Patient With Infertility Having Uterine And Tubal Pathology

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ABSTRACT

Introduction

Infertility is defined as 1 year of regular unprotected intercourse without conception. . Eighty percent of the couples achieve conception if they so desire, within one year of having regular intercourse with adequate frequency (4–5 times a week). Another 10 percent will achieve the objective by the end of second year. As such, 10 percent remain infertile by the end of second year. For evaluating infertility TVS, HSG and hysteroscopy are recommended.

Objective- To Assess the Diagnostic value of Transvaginal sonography and hysterosalpingography (HSG) and hysteroscopy In Female Patient With Infertility Having Uterine Pathology

Design- Prospective Comparison Study

Method- This study was carried out in the Department of Obstetrics and Gynaecology INDEX MEDICAL COLLEGE AND HOSPITAL Source of the Patients: All the patients Attending Sterility Clinic at IMCHRC, INDORE, was include under the study.

Result- We identified infertility patients prior to initiation of assisted reproductive technology who had baseline TVS, HSG, and HSC within 180 days of each other. From medical record review, we compared frequencies of each finding between modalities. Of the 45 patients who received a baseline TVS over one year, 30 had TVS and HSG within 180 days and 25 patients had TVS, HSG and HSC. Of the , TVS detected fibroids more often than HSG and adenomyosis more often than HSG .HSG detected tubal obstruction more often than TVS .

Key Words- Infertility , Transvaginal Sonography , Hysterosalpingography , Hysteroscopy

INTRODUCTION

- **Infertility is defined as 1 year of regular unprotected intercourse without conception.**¹

The term subfertility is used interchangeably to describe women or couples who may not be sterile but exhibit decreased reproductive efficiency.

Approximately 85–90% of healthy young couples conceive within 1 year, most within 6 months.^{2,3} **Infertility therefore affects approximately 10–15% of couples and represents an important part of clinical practice.**⁴

Contrary to popular perception, the overall incidence of infertility does not seem to have increased over the past three decades.⁵

NICE definition- Infertility is failing to conceive after two years of regular unprotected sex.

By Shaw - Infertility implies apparent failure of a couple to conceive after 1 year of unprotected and regular intercourse.

By Phelps JY- Infertility is defined as failure of a couple of reproductive age to conceive after 12 months or more of regular coitus without using contraception.

OBJECTIVE

- to compare the diagnostic accuracy of TVS, HSG, and HSC for diagnosing uterine and tubal abnormalities in women with infertility to determine if all three modalities are necessary in the work up of these patients

Material and Methods

- Our study was a Descriptive type of Observational study carried out at Department of Obstetrics and Gynaecology, Index medical college hospital & Research Centre , **India** between March 2021- December 2021.
- Study subjects were 45 Subfertile women who consented to be a part of the study with primary and secondary infertility with no hormonal and male factors.
- Myometrial abnormalities were categorized as fibroids or adenomyosis; endometrial abnormalities as polyps, cysts, cavity distortion (e.g., synechia, stricture), or nonspecific asymmetry; and tubal abnormalities as obstruction.
- For each abnormality, the frequency of detection by each modality (TVS, HSG, HSC) was tabulated.
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Inclusion Criteria

- Married women from reproductive age group of 19-40 years with primary/secondary infertility
- No evidence of hematological disorder/medical illness/surgical complications so as to avoid any anesthetic or surgical risk during hysteroscopy.
- Normal semen analysis of the husband

Exclusion Criteria

- Subjects having cardiac or respiratory illness, acute generalized peritonitis, allergy to iohexol dye, pelvic inflammatory diseases
- Male partner having abnormal semen parameters.
- Women with Endocrinal cause of infertility.

Result

- A total of 45 patients received a baseline TVS as part of a work up for infertility during the study period.
- Among these patients, 30 underwent a diagnostic HSG within a 180-day interval of the sonogram and comprise our study population.
- Among our 30 study patients, 25 also underwent HSC.
- Among the study population of 30 patients (Table 1), 6 (20 %) had fibroids and 1 (3.3 %) had adenomyosis as diagnosed by either modality.
- Endometrial abnormalities were found in 3 (10 %) patients on TVS And 1 (3.3 %) patients HSG.
- Tubal obstruction was found in 18 (60 %) patients, more commonly unilateral (12 patients) than bilateral (6 patients).

Table 1 : Myometrial, endometrial, and tubal abnormalities detected by transvaginal ultrasound and/or hysterosalpingography (N = 30)

Category	TVS	HSG	Statistical significance
Myometrium			
Fibroids	6 (20 %)	1 (3.3 %)	P<0.0001
Adenomyosis	1 (3.3 %)	0	P<0.0001
Cesarean Scar	1 (3.3 %)	0	
Endometrium			
Polyp	3 (10 %)	2 (6.6 %)	
Cavity distortion			
1. Septate	7 (23.3 %)	5 (16.6 %)	
2. Unicornuate	1 (3.3 %)	1 (3.3 %)	
3. Bicornuate	3 (10 %)	2 (6.6 %)	
4. Arcuate	2 (6.6 %)	1 (3.3 %)	
Fallopian Tubes			
1. Unilateral Block	0	12 (40 %)	
2. Bilateral Block	0	6 (20 %)	

Table 2 Myometrial, endometrial and tubal abnormalities detected by each modality (N = 25)

Category	TVS	HSG	HSC	Statistical significance
Myometrium				
Fibroids	6 (24 %)	1 (4 %)	1	P<0.0001
Adenomyosis	1 (4 %)	0	0	P<0.0001
Endometrium				
Polyp	3 (12 %)	1 (4 %)	4	
Cavity distortion				
1. Septate	5 (20 %)	3 (12%)	7	
2. Unicornuate	1 (4 %)	1 (4 %)	1	
3. Bicornuate	3 (12 %)	2 (8 %)	4	
4. Arcuate	2 (8 %)	1 (4 %)	3	
Fallopian Tubes				
1. Unilateral Block	0	12 (48 %)	3	
2. Bilateral Block	0	6 (24 %)	2	

Discussion

- Diagnostic imaging plays an important role in the assessment of women with infertility. Although no consensus protocol for work up of these patients exists, the majority of infertility patients undergo a baseline TVS and HSG.
- TVS is used for evaluating ovaries, fallopian tubes, and the adnexa and is a favoured imaging modality in the infertility population because it is readily available, relatively low cost, and does not use ionizing radiation.
- In contrast, HSG provides information about tubal patency and uterine cavity abnormalities such as anomalies, polyps, synechiae, and adhesions, any of which could interfere with embryo implantation .
- HSG offers limited evaluation of the cervix and myometrium and does carry the small risks of contrast reaction and of ionizing radiation exposure .
- At our institution, we begin the infertility assessment with an HSG. If there is evidence of an abnormal uterine cavity from etiologies such as uterine septa, submucosal fibroids, synchiae , or polyps, HSC is then typically performed .

- The standard practice at our institution is to perform HSC in the office setting, reserving operative HSC and laparoscopy for patients who are not able to tolerate office based procedures and for situations for which surgical correction is required, such as septoplasty for the correction of a subseptate uterus.
- Hysteroscopy is also performed prior to ART if there is a 6 month or greater delay between the HSG and ART. TVS is obtained when patients begin ART, and continues during folliculogenesis .

CASE-1

A- 30 -year-old nulligravida female with a history of infertility presenting for baseline assessment prior to initiation of ART. Coronal transvaginal sonographic image through the uterus demonstrates a 6.0 × 4.2 × 3.9 cm and 2.4 x 2 cm polyp seen on Endometrial Polyp.

B -HSG demonstrates a normal endometrial cavity without filling defects to suggest Polyp as seen on TVS. The fallopian tubes are normal in caliber and demonstrate free intraperitoneal spill of contrast bilaterally

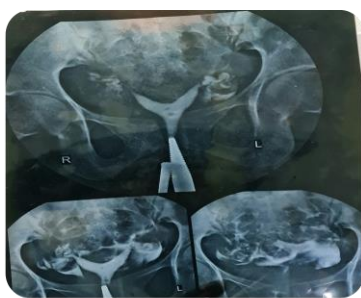
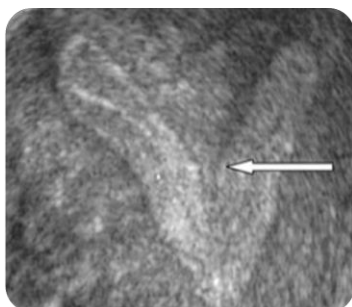
C- On Hysteroscopy Approx 2x1.5 cm Polyp Seen on Endometrial Cavity



CASE-2 -

32-year-old P1L1 female with history of Secondary infertility presenting for baseline assessment prior to initiating ART.

- ✓ Transvaginal sonography shows septate uterus with single endometrial cavity
- ✓ HSG demonstrates septate Uterus with Patent Bilateral fallopian tube spillage of DYE seen on both Fimbrial End
- ✓ Hysteroscopy shows septum in Uterine Cavity



CONCLUSION

- Our study compared the results from TVS, HSG, and HSC in a cohort of female infertility patients.
- TVS was superior for detecting myometrial pathology, HSG was superior for evaluating tubal patency, and HSC detected more endometrial polyps than HSG and TVS.
- No single modality provided accurate identification of all different pathologies.
- Complete work up of women with infertility may include all modalities, given the unique information obtained from each.
- However, with knowledge of the unique specificity of each imaging test to detect specific pathologies, a combination of HSG, HSC and TVS could be selected based on the clinical presentation of patients.

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CONFLICT OF INTEREST None

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