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Original Research Article

Hysterosalpingography versus Sonohysterography for Assessment of Intrauterine Abnormalities

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Abstract

Background: The hysterosalpingogram (HSG) is commonly used to evaluate the uterine cavity and the fallopian tubes in the workup of infertile couples. The sonohysterogram (SHG) is getting popularity as part of this evaluation. This study compares HSG to SHG for the detection of polyps, cavitary fibroids, adhesions, and septae in infertile patients.

Materials & Methods: The retrospective study was done among 80 patients selected by convenient sampling method, who visited Hi-tech Medical College & Hospital, Bhubaneswar, Odisha, for infertility treatment. HSG and SHG were done by professionals, data was recorded and analyzed using SPSS version 23.0.

Results: The sensitivity of HSG and SHG was 57.2% and 80.8%, respectively. The specificity for HSG and SHG was 24.6% and 92.5%. The differences in sensitivity and specificity were both statistically significant. HSG had a general accuracy of 51.5%, while sonohysterography had a significantly higher accuracy of 76.8%.

Conclusion: HSG is the basic screening test for detecting intrauterine abnormality but SHG proves to be more specific, sensitive and accurate in finding results.

Keywords: Infertility, Intrauterine Defects, Hysterosalinography, Sonohysterography.

Introduction

Almost 34% to 62% of infertile women have persistent infertility due to anomalies in their uterine cavity. Many factors contribute to female infertility and hinder healthy pregnancy. Between 30 and 40% of women with infertility have tubal diseases as the underlying reason of their infertility, while 15% of women with infertility experience uterine abnormalities. Intrauterine adhesions, uterine fibroids, and endometrial polyps are a few of the uterine abnormalities that cause infertility. [1] In addition, between 20% and 40% of women with infertility are found to have ovulatory dysfunction, which is related to their male counterpart in 20% to 40% of cases. [2] To determine the precise cause of the infertility, a thorough and in-depth evaluation is essential. [3] The physical examination,

hormone tests, and imaging to check the uterus, endometrium, and fallopian tubes for anomalies or abnormalities that could potentially be impeding normal conception are some of the pre-treatment examinations.

The endometrial cavity and fallopian tubes are assessed with a contrast-enhanced flat plate examination called a hysterosalpingogram (HSG). As a minimally invasive technique to assess tubal patency, it has been a routine test in the evaluation of infertile couples. HSG findings also contain information on uterine size and filling errors in addition to vital details about tubal patency and shape. Findings in HSG reports frequently point to fibroids, polyps, adhesions, and septa.[4,5]

A relatively recent addition for intrauterine evaluation is the sonohysterogram (SHG). It aids in not only evaluating uterine cavity lesions but also in directing the technique and the equipment needed for surgical therapy. Additionally, it tackles issues with blind biopsy and helps determine the best biopsy site.[6-8]

Therefore, the aim of this observational research study is to investigate the diagnostic value of hysterosalpingography (HSG) for intrauterine abnormalities in comparison with Sonohysterography in women with infertility.

Materials & Method

The retrospective study was conducted for a period of one year in Hi-tech Medical College & Hospital, Bhubaneswar, Odisha, after the approval was obtained from institutional ethical committee.

Convenient sampling was used and total 80 patients who visited the center for treatment and gave informed consent were included in this study. Those patients who had seek any treatment in the past and having any other comorbidity were excluded from the study. All patients had a prior HSG and 43 patients underwent SHG. We performed HSG as part of the evaluation of women seeking assistance with conception. SHG is performed on infertile patients with suspicious uterine findings on transvaginal ultrasound performed during the initial evaluation.

All the procedures like hysteroscopy, HSG and SHG were planned and done by the professional experts. Written reports from HSG, SHG, and hysteroscopy were reviewed. Data collected included presence of fibroids, polyps, adhesions, or a septum. In the absence of these findings, the cavity was described as normal.

Statistical Analysis

Sensitivity, specificity, and accuracy were computed using findings at as the confirmatory result. Data are expressed as number of patients and percentage. Chisquare analysis was performed with SPSS 23.0. P value of less than or equal to 0.05 was considered as statistically significant.

Results

Of the 80 patients who underwent HSG and hysteroscopy, 65 had hysteroscopic abnormalities. HSG detected abnormalities in 54 of these patients for a sensitivity of 57.2%. Of the 15 normal cavities on hysteroscopy, 7 were described as having an abnormality on HSG for a specificity of 24.6%. Of the 43 patients who underwent SHG and hysteroscopy, 30 had hysteroscopic abnormalities.

SHG described an abnormality in 33 of these patients for a sensitivity of 80.8%. Of the 13 normal cavities on hysteroscopy, 5 was described as abnormal on SHG for a specificity of 92.5%. (Table 1)

Table 1: Showing Comparison of Results for Sonohysterogram (SHG) and Hysterosalpingogram (HSG)

	HSG	SHG	P value
Sensitivity	57.2%	80.8 %	0.001
Specificity	24.6%	92.5%	<0.001
Accuracy	51.5%	76.8%	<0.001

Accuracy of different techniques to detect polyp, fibroid, adhesion, or septum was also detected and it was found that SHG had more accuracy in detecting the problem of intrauterine abnormality as shown in table 2.

Table 2: Shows accuracy Results of SHG and HSG for Specific Lesions

Accuracy	SHG	HSG	P value
Fibroids	74%	53%	0.403
Polyp	68.7%	37.9%	0.006
Septum	51.7%	43%	0.518
Scaring	62.8%	26.9%	0.027

Discussion

The current retrospective study was done among 80 patients who visited to tertiary care centre for the treatment of infertility. The results suggested that HSG shows a false positive rate of almost 70% Goldberg *et al* [9] discovered a false positive rate of 20% in a similar study. This is in line with studies done in past also.

The false positive rate in our study may be higher than that in others due to a selection bias and the lack of physician blinding when compared to studies comparing HSG with hysteroscopy, which describe false positive rates in the range of 10% to 30%. [10,11]. Because to their infertility, the patients chosen for this study entered with a high index of suspicion for anomalies. This is made worse by the fact that patients with normal HSG and SHG values hardly ever hysteroscopy, which may have confirmed the disappointing results.

In our investigation, SHG's sensitivity and specificity were equivalent to those discovered in earlier research. Bonnamy *et al* [12] cite 95% and 77%, Ragni *et al* [13] cite 98% and 94%, while Krample *et al* [14] describe a sensitivity of 94% and specificity of 84%.

According to our secondary analysis, SHG is more precise than HSG at locating the particular lesion that is distorting the endometrial cavity. This is consistent with findings from earlier studies on infertile people and repeated pregnancy loss. [15,16] It's crucial to correctly identify the intracavitary lesion when getting ready for surgery. There were some limitations present in the study, firstly it was a retrospective study with no blinding of clinicians done and secondly the observations were made on the experience of clinicians these all factors can hamper the evaluation of results.

Conclusion

SHG is more sensitive, accurate, and has a higher positive predictive value than HSG for identifying intrauterine lesions. Although SHG is a more dependable diagnostic method for the evaluation of intrauterine abnormalities, HSG will still be a crucial screening tool in infertility due to its demonstrated capacity to assess the morphology and patency of the fallopian tubes.

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