

Comparison the diagnostic accuracy of hysterosalpingography and hysteroscopy in the detection of intrauterine abnormality in recurrent pregnancy loss

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Abstract

Background: Recurrent pregnancy loss and delay natural fertility are observed in patients with intra uterine pathologies. The finding and correction such abnormalities may improve pregnancy rates.

Objective: The purpose of this study was to compare the diagnostic accuracy of hysterosalpingography (HSG) versus hysteroscopy in the recognition of intrauterine abnormality in recurrent pregnancy loss patients.

Patient and Methods: the study was performed in Obstetric and Gynecological Department at AL-shafaa private hospital, it included one hundred patients complained from recurrent pregnancy loss, over a 2-year period between January 2016 and January 2018. Radiologic outcomes on HSG were assessed and compared with hysteroscopy results to evaluate the uterine pathology as a cause of pregnancy loss.

Results: Abnormal HSG finding concerning uterine cavity was thirteen percent while twenty percent had abnormal HSC result (Chi-square value 1.77, $P > 0.05$). On the view of 10% women who had normal HSG some defect was discovered on HSC. Also, 3% of women with abnormal HSG had a normal finding on HSC. The sensitivity of HSG in identifies uterine cavity deformity was 50% and specificity 98.1%. The positive Predictive value was 76.9% and negative Predictive value was 88.5%. Outcomes of HSG was false negative in 10% of patients and false positive in 3%.

Conclusion: hysteroscopy considerably offers more information on the identification of uterine cavity defects. So it must be essentially involved in the evaluation of woman had a history of recurrent miscarriage.

Keywords: hysterosalpingography; hysteroscopy; recurrent miscarriage; a uterine cavity.

INTRODUCTION

Recurrent miscarriage is defined as a sequence of three or more repeated spontaneous abortions before 20 weeks. It may be primary or secondary (having previous viable birth) [1]. This stressful problem is affecting about 1% of all women in childbearing time of life, the risk rises with each following abortion reaching above 30% after three repeated losses [2]. The reasons for recurrent abortion are complex and most often unclear. More than one factor may operate in a case. Factors may be classified as non-recurrent that can be treatable or untreatable recurrent etiologies. The potentially treatable causes are structural defects (Mullerian or acquired abnormalities (submucous myomas, endometrial polyps, and synechia), endocrine irregularities (luteal phase defect, thrombotic pregnancies thrombophilia or autoantibodies) and immunological conditions (immunoglobulins and immunization) and untreatable cases are genetic faults and idiopathic etiologies [3,4]. Hysterosalpingography (HSG) have been used for assessment tub-ovarian pathologies, although Hysterosalpingography had sensitivity 85% to 100% to detect tubal problems, it is only 44 to 75% can detect uterine pathology [5,6].

Whoever of the main developments in the imaging methods, hysteroscopy is the golden typical implement for the endometrial cavity assessment and direct endometrial imagining [7]. It has sensitivity 100% and specificity 95% in detection of uterine pathology that considers as a cause of miscarriage and can be cured by hysteroscopically, that successful pregnancy will result [8]. In this study, we carried out to recognize the important value of diagnostic hysteroscopy in the identification of uterine pathology and its relation with recurrent miscarriage and compared it with Hysterosalpingography finding (HSG).

PATIENTS AND METHODS

The study was performed at AL Shafaa Private Hospital from January 2016 to January 2018, after approval of the Research Ethics and Committee of Diyala University, where 100 non-pregnant women had been examined for unexplained repeated pregnancy loss before 20 weeks. Complete full history and examination containing general and gynecological examination were performed.

Inclusion criteria

1-non-pregnant women with a history of abortion (> three or more repeated unexplained first or second-trimester miscarriages earlier than 20 weeks).

2- no pelvic infection (recent).

3-Hystrosalpingograph were done.

Exclusion criteria

1-Women with identified etiology of repeated pregnancy loss include:

(carrier of balanced chromosomal anomalies or Abnormal karyotype), a medical disorder such as diabetes, hypothyroidism and antiphospholipid antibodies.

2-Women with definite pregnancy.

3-. Women with severe or current pelvic infection.

All the demographic information of the patients as (age, Body mass index, parity, the Gestational age of abortion were documented, HSG were done by a radiologist in all the patients in the preovulatory phase (from day 5 to 9 of the phase of the cycle). About 5–10 mL of contrast medium mixed with water-soluble presented into the uterine cavity by insertion a catheter set for HSG. Four to Six-spot radiographs were thoroughly taking, to identify any filled or defect site of the uterus and assess the patency of fallopian tubes, both anteroposterior and oblique projections of the whole genital tract observing the spillage of dye at the pelvis. The filling defect either Only one filling defects were recognized as polyps or submucosal myomas or Many nodular filling faults involves the entire endometrial cavity were taken as endometrial hyperplasia and Uterine adhesions. Hysteroscopy examination was done to identify presence any intrauterine defects. A full details of the procedure was assumed by the surgeon and a signed informed constantly were done by all the women before the operation, which was carried out in operation theatre under general anesthesia during proliferative phase of the manse, then wash the vagina by betadine solution and using a 3 mm diameter lens rigid hysteroscope with distention of the uterine cavity by normal saline solution. Then visualization whole uterine cavity, both tubal Ostia and endocervical canal. All findings and results of both HSG and hysteroscopy were recorded. The hysteroscopic results had been used as an average reference to estimate sensitivity and specificity percentage and positive,

negative predictive values, and both false-positive and false-negative rates.

Statistical Methods

Documents were evaluated using SPSS Statistics version (statistical package of social science). Normally distributed arithmetic variables were calculated as the mean and standard deviation (M, SD) and intergroup variances were matched using the unpaired t-test. Chi-square 1.77, P-value<0.05 was measured statistically significant.

RESULTS

Profile in this study is the basal demographical shown in table 1, containing (age of woman, body mass index parity, gestational age of abortion). One hundred women were included in our study: the mean age was (27.9+3.4) years (range 20-35), their BMI was 26.3+2.3), The number of previous abortion (3.2+1.1), The number of previous trimester 1st and 2nd-trimester abortion were 78 ,22) respectively.

Table- 1- Demographic characteristic s of patients

		Mean ++ (SD) Number=100
Mean age		27.9_+3.4
Body mass index(Kg\m2)		26.3+_2.3
Previous gravity		4+-1.5
Gestational age(weeks)		13.85+_2.4
Previous abortion		3.2+_1.1
trimester abortion 1st	78(78%)	
2nd-trimester abortion	22 (28%)	
Nulliparous	68(68%)	
Multipara	32 (32%)	
Education		
<High school	55	
>High school	45	
Occupation		
House wife	51	
Employed \ business	49	

Table 2-Comparison of finding between HSG and Hysteroscopy{number=100}

	HSG	Hysteroscopy
Submucous myoma	1	6
Endometrial polyp	2	4
Didephlus uterus	1	1
Bicornuate uterus	1	1
Unicornuate uterus	1	1
Adhesions	2	4
Sub septate uterus	3	3
Uterine pathology(N)=	12(100)	20(100)
Chi-square 1.77	P-value>0.05	

Hysterosalpingography showed only (12) women with the abnormal finding in the uterine cavity, while hysteroscopy discovered abnormal finding in (20) women. Hysteroscopy examination was found more advantageous in the assessment of uterine pathology (Fibroid 6%, polyp4% Adhesion4%), otherwise, it is statically non-significant in comparison to the difference between(HSG&HSC).

Table 3-Hysterosalpingography (HSG) and Hysteroscopy Findings in 100 Women

Hysterosalpingography	Hysteroscopy		Total
	Normal	Abnormal	
Normal	77	10	87
Abnormal	3	10	13
Total	80	20	100

In comparative analysis showed 77% degree of agreement relation between Hysterosalpingography& Hysteroscopy, while only 10% of women were abnormal uterine finding are discovered in both. In13% of women had abnormal HSG, while 20% had an abnormal finding in Hysteroscopy. In normal HSG group,87% of women had a normal uterine cavity, whereas in 10% some irregularity was detected. finding as abnormal results on Hysteroscopy was 20% where 10% can be considered as normal in HSG. The sensitivity and specificity of HSG were 50% and 98.1% respectively. The positive predictive value was 76.9% and negative predictive value of HSG was 88.5%. Furthermore, outcomes were false –negative10% and false-positive in 3% of patients.

DISCUSSION

Methods of evaluation of uterine pathologies include; endometrial sample and culture, hysterosalpingography, saline sonography, Hysteroscopy, and laparoscopy.

For many years, HSG is a safe procedure, cost-effectiveness and the main role in screening, evaluation, and assessment of uterine cavity and patency of fallopian tube. Since of higher prevalence of congenital and acquired uterine malformation s which are estimated to act as the cause of infertility and recurrent or missed abortion, evaluation of uterine anomalies should be performed routinely to exclude anatomical factor [9]. The Hysteroscopy is safe, quick procedure and more accurate than HSG which allow direct visualization and repair correction of anomalies if required. While certain authors have recommended that HSG should be completely swapped by Hysteroscopy [10]. Others have recommended that hysteroscopy add little information when HSG results were negative [11].

In this study, 20% of patient had an abnormal finding in Hysteroscopy and only12% of them detect such abnormalities on HSG which is statically non-significant (Chi-square 1.77, P-value>0.05). It is Similar to Shakya et al [12] where notice only 2% of abnormal cases on HSG and 12% of malformation on HSC. In contrast to Ganglion et al [13] who found less number of the patient had uterine malformation detected on HSC (41.4%) than HSG (47.1%) in his study due to endometrial hyperplasia that noticed by HSG and not confirmed by HSC as the endometrial hyperplasia has insignificant prominence as recurrent abortion is concerned.

This study showed 10% of cases had a normal finding on HSG but some abnormalities were detected by Hysteroscopy. Almost similar to other studies where found by workers [12,13,14]. in our study 3% of cases with abnormal HSG but normal hysteroscopy finding which is similar to Roma et al [14] who found 19% of patient had abnormal HSG and normal HSC whereas such cases of patients were 18.5% and 5% had been found by Ganglion et al [13] and Kumar et al [15] respectively. Anatomical uterine defects counting Mullerian abnormalities, submucosal fibroid and adhesion are often discovering in women recurrent miscarriage [16]. Fibroid detects by hysteroscopy 6 cases while only one detects by HSG, while the endometrial polyp detects by hysteroscopy only one case that HSG had been evaluated Three cases. while in three normal cases found by HSG, Hysteroscopy identified polyps. Air bubbles may have occurred

by introducing dye to the uterus that gives a picture of the bubble and false results noticed. So hysteroscopy superior to HSG as diagnostic and therapeutic in intrauterine polyp as it can affect implantation and making it a hostile environment to embryo for embedding [17,18]. In the present study, HSG identified three cases of intrauterine adhesion which. Hysteroscopy definite only two of them, this false positive result or defect may have occurred due to the excessively large amount of dye, mucus, and debris which give a picture of a defect. Where Hysteroscopy confirmed four cases from the total patients, in three of these cases the HSG was normal. Intrauterine synechiae were the frequently atypical result (11%) in a patient with abortion as a result of a decrease in the endometrial area for embryo for implantation [19]. Companies diagnostic laparoscope and Hysteroscopy were frequently used to differentiate between septate and bicornuate uterus which HSG can't differentiate between them. In our study, HSG revealed two of patients had a bicornuate uterus which is confirmed by hysteroscopy also. Likewise, three cases septate uterus and one case of syphilis uterus confirmed by HSG and Hysteroscopy. It seeming that HSG can be used for primary diagnosis of congenital uterine malformation and confirmed by hysteroscopy is essential. The sensitivity of HSG in the current study is just 50% in the prediction of the uterine problem, although other studies showed more percentage (80.2%, 79.1%, and 60%) respectively [13,14,15]. So the HSG isn't screening procedure in the detection of uterine problems as previously done, as it advocated primarily for assessment tubal patency. This differences between the diagnoses gained on HSG and hysteroscopy are appraised because HSG focuses the defects, While Hysteroscopy is more beneficial in evaluation all entire uterine walls, visualization of tubal ostia, and allow direct endometrial biopsy for histopathology evaluation. it is recommended for diagnostic and therapeutic surgery when is indicated [20]. So, HSG makes available facts and information about the uterine cavity and tubes, it mandatory in the evaluation of uterine cavity. When an intrauterine abnormality is noticed, hysteroscopic visualization is needed to assess the nature, size, and localization of the lesion.

Once HSG illustrates no defect, the proposal of hysteroscopy has been questioned. We accept as true that when HSG shows no deformity, the suggestion of hysteroscopy must not be rejected since it enhances information about hormonal, trophic, inflammatory and infectious conditions that could be accountable for poor pregnancy results in nearly 25% of cases.

CONCLUSION

We rely on that these two techniques are corresponding to the assessment of women with recurrent pregnancy loss; each method evaluates the uterine cavity in a dissimilar way and each one has benefits and limits. HSG is a beneficial but indirect test and remainders as one of the first stages in the assessment of uterine cavity and tubal patency, so hysteroscopy should not totally replace HSG. this study proves that hysteroscopy is a useful implement in the diagnosis and treatment of a patient with history recurrent miscarriage. As the cause of abortion due to uterine anomalies in is about 41.5%.

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