

HYSTEOSALPINGOGRAPHY (HSG) FINDINGS: OF INFERTILE PATIENTS IN ILORIN

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ABSTRACT

Purpose/Background: Infertility is a major gynecological complaint in Nigeria, constituting about fifty percent (50%) of gynecological clinic attendance¹⁻³.

Hysterosalpingography (HSG) is used as a first line investigative procedure for evaluating infertility cases. An analysis of HSG findings of patients with primary and secondary infertility problems was done to sensitize the patients as well as the physicians to the benefits and value of this investigation.

The study Design was prospective starting from January 2009 to January 2011.

HSG findings of patients, who were being investigated for infertility, were documented after each examination on duplicate forms before the results were sent out. The setting was in a private medical diagnostic centre in Ilorin Metropolis. All prospective patients consented to the examination and were mostly referrals from other medical centers around. Each patient was given an antispasmodic injection, before each examination, in-order to eliminate false or physiological fallopian tube blockage due to tubal spasm. The following variables were later analyzed: **Age of patient, type/duration of infertility, patency or blockage of the fallopian tubes (and the side that was blocked); presence of fibroids, adhesions and hydrosalpinx.**

Results: Of the 100 records analyzed, 93 (93%) had abnormal findings and 7 (7%) were normal. The age range was between 20 and 48yrs with a mean of 32.14yrs and mode of 30yrs. Majority of the cases of infertility were of less than 5yrs (55%), followed by those lasting between 6 and 10yrs (19%). Thirty-seven percent (37%) of the patients (constituting the majority) were engaged in trading and 3 business ventures; followed by those engaged in teaching profession (14%) and the civil servants (13%) respectively. Secondary infertility (58%) was more common than the primary infertility cases with 38 (38%), while 4 cases (4%) were unidentified.

Concerning frequency of tubal pathology, single fallopian tube blockage, (SFTB) was the highest; with 45 cases (45%) while double tube blockage (DFTB) came second with 36 cases (36%), the remaining 19 cases (19%) had bilateral FP patency (BFTP). However when selectively evaluated for individual pathology, **tubal patency (TP)** was more frequent on the right side (20%) than on the left side (12%). And out of the lots (100 cases), Twenty-nine (29) of them, were found to have partial tube patency or were recorded as having forced spillage usually through a hydrosalpinx (es).

A higher percentage (42.11%) of the patients (pts) with primary infertility had bilateral tube blockage (BTB), 16 out of 38, compared to (32.75%), 19 cases from 58 in those with secondary infertility. Also the number of primary infertile pts with SFTB was 20, compared to 23 cases from secondary infertility cases, almost at par.

Another finding was that a very low percentage of the primary infertility (PI) cases had bilateral tube patency (BTP), 2 cases (5.26%) only, compared to 16 cases (27.59%) from secondary infertile (SI) group. In terms of association, out of 77 cases that had either pelvic or cervico-uterine adhesions, only 15 of them exhibited bilateral patency of their fallopian tubes.

Conclusions: A very low percentage of the primary infertility cases had bilateral tube patency, 2 (5.26%) in this study, compared with 16 (27.59%) in secondary infertile cases. It is suggested that the investigation is needed by infertile couples, especially primarily infertile patients.

Secondly a greater proportion of the women seeking solution for infertility had anomalies or pathological findings that can be identified on HSG and these will help the physician to determine the next line of treatment for such cases.

Keywords: Female infertility, HSG, benefits and findings, Ilorin.

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INTRODUCTION

The experience of infertility is extremely challenging, especially for the female patients, particularly in Africa.¹⁻⁸ Hysterosalpingography (HSG) is widely used as a first line investigative procedure for infertility in the developed world. However, it is observed that the Investigation is being under-utilized in this environment, probably due to some misconceptions on part the part of patients. Some patients are reluctant to do the investigation, because of fear of pain and invasiveness of the procedure and the increasing costs of the technique 6-8. In order to encourage more patients to go 5 for HSG, it is necessary to know the frequencies or percentages of abnormal radiological findings from it that could result in or could be associated with infertility in this environment.

OBJECTIVE

To promote and to create more awareness on the benefits of HSG in management of female infertility in this environment.

It is also aimed at highlighting abnormalities identifiable on HSG, and their relationship with infertility and its management.

METHOD

Design-prospective; Period: January 2009- January 2011. The findings from hysterosalpingography (HSG) of patients, who under went the investigation for infertility, at the department of Radiology of the Blue Cross Diagnostic Center in Ilorin, were documented after each examination on duplicate forms before the results were sent out. All prospective patients consented to the examination and were mostly referrals from other medical centers.

The exclusions criteria were:

1. Any abnormal uterine/vaginal bleeding less than 5 days before the procedure or ongoing menstruation.
2. Suspected pregnancy
3. A purulent discharge on inspection of the vulva or cervix, or diagnosed pelvic inflammatory disease (PID) in the preceding 6 months
4. History of contrast sensitivity (relative).

All the patients received buscopan (hyoscine bromide) injection, an antispasmodic drug as part of premedications. And after all the examinations, the following variables were later analyzed: **Age, type/**

duration of infertility, 6 patency or blockage of the fallopian tubes (and the side that is blocked); presence of fibroids, adhesions and hydrosalpinx, using the computer software SSPS version 11.5 package.

RESULTS

There were 100 cases recorded, out of which 93 (93%) had abnormal findings and 7 (7%) were normal. The age range was between 20 and 48yrs with a mean of 32.14yrs and mode of 30yrs, Table 1. Thirty-seven percent (37%) of the patients (constituting the majority) were engaged in trading and business ventures; followed by those engaged in teaching profession (14%) and the civil servants (13%) respectively, Table 2.

Majority of the cases of infertility were of less than 5yrs (55%), followed by those lasting between 6 and 10yrs (19%). Secondary types of infertility (58%) were more than the primary infertility, cases 38 (38%). No history of primary infertility lasting for 15yrs and above was documented, Table 3.

Among the groups, single fallopian tube blockage was more frequent; with 45 cases (45%) while double blocked tubes contributed 36 cases (36%), the remaining 19 cases (19%) demonstrated bilateral fallopian tube patency. Tables: 3, 4 & figures 1, 2, 3.

When the individual fallopian tube (FP) was selectively assessed for pathology, it was shown that the frequency for tubal patency was higher on the right (20%) than on the left side (12%). And out of the lots (100 cases), Twenty-nine (29) of them, had partial tube patency or were recorded as having forced spillage usually through a hydrosalpinx (es). Table 5 &, figure 2.

A higher percentage (42.11%) of primary infertility cases had bilateral tube blockage, sixteen (16) out of thirty-eight (38) cases compared to 32.75%, nineteen (19) cases from fifty-eight (58) in patients with secondary infertility. Also the number of primary infertile patients with single tube blockage was twenty (20), compared to twenty (23) cases from secondary infertility cases, Tables 5& 6 An additional interesting finding is that a very low percentage of the primary infertility cases had bilateral tube patency, 2 cases (5.26%) only, compared to 16 cases (27.59%) in the secondary infertility cases. See Tables 3 & 6 In terms of association, out of 77 cases that had either pelvic or cervico-uterine adhesions, only 15 of them exhibited bilateral patent fallopian tubes as revealed in Table 7

DISCUSSION

In the last two decades there has been a dramatic increase in the number of women seeking infertility evaluation^{6- 8}. In Nigeria, approximately 50% of women attending gynecological clinics complain of infertility¹⁻⁸. As the result of this study has shown nearly all the patients (93%) had one abnormality or the other. It should be noted that infertility is a complaint, not a diagnosis and one of the major causes of infertility is blockage of either end of the FPs. In fact, studies have shown that bilateral tubal occlusion from endosalpingitis is the commonest cause of infertility in Africa.^{2, 5, 6, 9-23}.

This is further confirmed in this study where only 19 out of a total of 100 patients (19%) had BFTP. Therefore, to properly manage a case of infertility, it is standard practice or crucial to establish the patency of the Fallopian tubes. Apart from HSG, laparoscopy is another investigation that can be done to confirm patency of the FP. Although laparoscopy yields complimentary information, it is more expensive, invasive and required experienced hands, sonohysterosalpingography (another test) has its own limitations as well, such as interference from bowel gases and inability to delineate the point of obstruction, except special contrast medium (echovist) is added^{3, 18-22}. In addition, the past several years have witnessed advances in the medical and surgical management of infertility. A couple opting for infertility management needs a few basic investigations such as: the Husband-Semen Analysis, Semen culture and Sensitivity, Anti-sperm antibody titre evaluation; while for the Wife, tests such as; Radio-immuno-Assay (RIA);assessment of FSH, LH, TSH, Prolactin, Progesterone and Estrogen levels; Diagnostic Hysteroscopy & Laparoscopy; HSG and Post-Coital tests are also done. These basic investigations will help to pin-point the factor responsible and treatment options will then become easier.

The option before the gynecologist and the patient really is to explore for tubal patency instead of proceeding on drug treatment, because with a blocked tube medical (drugs) treatment is ineffective. Also if it is known through HSG that the fallopian tubes are patent, both the Physician and patient will have confidence to continue on medical treatment. Another point to note is that assisted reproduction treatments are often limited in developing countries and there are several recommendations by different authors for the need

to reduce costly and time-consuming infertility investigations for both medical staff and patients in public sector⁸⁻¹⁰.

It is recognized that the best option for evaluation of the infertile couples of therefore, is a shortened regimen, and one way of doing this, is through a study like this, which gives credence to the value of HSG, in determining the next step to be taken in managing cases of infertility. HSG outlines the uterine cavity and fallopian tubes and apart from demonstrating normal patency of the fallopian tubes and their communication with the peritoneal cavity, it can also demonstrate congenital abnormalities of the uterine cavity or incompetence of the internal Ostium of the cervix which may cause recurrent abortions. In the course of this study some of the patients were found to have vaginal/cervical abnormalities such as vaginal/ cervical septas; severe cervical lacerations with multiple adhesions/ stenosis (pin-hole ostium); high-riding or abnormally positioned cervixes, apart from tubal blockage with varied degrees of pelvic adhesions and all of these could contribute to infertility as shown in table 7 and figures 2, 3.

Furthermore, it is realized that HSG is also used in monitoring the out-come of tubal surgery. For instance, it can be used to confirm occlusion of the tubes after sterilization, or after surgical intervention to restore patency of pathologically obstructed tubes^{11, 12}. A woman under thirty-five years of age is said to be infertile if she is unable to conceive after one year of unprotected intercourse, while in women over 35, the time is shortened to six months^{1, 2, 9, 10, 13-16}. Another good out-come of this study is that majority of the infertile patients were within age groups of 30-39 (54.0%) as illustrated in Table 1. And this compared with previous study by this author²⁰.

It is reasonable to advise a patient within this age group with infertility problem to go for HSG at once. Of course, medical and socio-economical factors, such as couples not staying together because of financial or job considerations must have been ruled out. The low rate of primarily infertile pts with tubal patency is also worrisome. The implication is that there is high incidence of tubal diseases in this group, and when cross- tabulated with frequency of pelvic adhesions in both groups (primary and secondary infertilities) secondary infertility group generated higher number of adhesions, which is not unexpected probably from complications of previous deliveries. So what then is responsible for high frequency of

tubal blockage in primary infertile patients? Congenital tubal anomaly may be a factor that needs to be considered or evaluated 1, 2, 7, 11-17.

Previous reports had indicated that FTB is more frequent on the right side than on the left side, because of complications from appendicitis 1, 2, 11, surprisingly in this study a higher figure (FTB) was recorded on the left side than the right side as shown in Table 5. This further confirmed the need to proffer other reasons for cause of fallopian tube blockage.

In a somehow related study conducted by Stewar t-Smythe, GW, and Van Iddekinge, through a retrospective analysis of hospital records of women presenting at Johannesburg Hospital for infertility; from a total of 206 women, 79(38.4%) had primary infertility and 127 (61.6%) had secondary infertility. Their analysis of hysterosalpingograms (HSG) showed only 38 women (18.5%) had fallopian tubes with no blockage. That was a significantly high sample size for blocked fallopian tubes, which compared favorably with the findings in this report especially for the primarily infertile pts¹⁴. studies like this present paper lend credence to the impression that poor access to health care especially during the first pregnancy and delivery, poor resources for midwifery care, possible poor midwifery practices, and a high incidence of complications, (such as in illegal abortions) that cannot be remedied or prevented may be important causes of infertility in this environment or in Africa in general.**1, 2, 3, 15—21.**

Table 1: Age- Group Distribution of Patients (n=100)

Ages (Yrs)	Frequency	Percent
20 – 29	33	33.0
30 – 39	54	54.0
40 – 49	13	13.0
Total	100	100.0

Table 2: Frequency Of Occupation (N=100)

	Frequency	Percentage
Artisans F / D;H/D	3	3.0
Banking/Accountancy	2	2.0
Civil-servants	13	13.0
Clergy / missionary	1	1.0
House – wife	9	9.0
Nursing	2	2.0
Others	6	6.0
Students	3	3.0
Teaching	14	14.0
Trading / Business	37	37.0
Undocumented	10	10.0
Total	100	100.0

Keys: F/D = Fashion Designer; H/D= Hair Dressing;

Others= Administrative officer, broadcaster, Youth-Corper, Office secretary.

Table 3: Frequency: Fallopian tubes status and types of infertility versus duration of infertility:

Tube Status and types of infertility		Duration of symptom or complaint (yrs)					Total
		1	2	3	4	5	
Single Blockage	Primary	13	3	-	-	4	20
	Secondary	17	2	2	-	2	23
	Not indicated	-	-	-	-	2	2
	Total	30	5	2	-	8	45
Double Blockage	Primary	5	6	1	1	3	16
	Secondary	6	5	3	-	5	19
	Not indicated	-	-	-	-	1	1
	Total	11	11	4	1	9	36
Bilateral Patency	Primary	2	-	-	-	-	2
	Secondary	11	3	-	1	1	16
	Not indicated	1	-	-	-	-	1
	Total	14	3	-	1	1	19

Key: Undoct = undocumented.

Table 4: Frequency of Fallopian Tube Blockage and Patency (n=100)

Tube Status	Freq	Percentage
Single Blockage	45	45.0
Double	36	36.0
Both patent, in the same pts.	19	19.0
Total	100	100.0

Table 5: Pattern of Individual Tubal Blockage/Patency

Tubal blockage/patency	Frequency	Percentage
Both tubes patent	19	19.0
Rt. Tube patent	20	20.0
Lt. Tube patent	12	12.0
Partial/forced spill	29	29.0
Totally blocked Tubes	20	20.0
Total	100	100.0

Table 6: Types of infertility And Frequency of Tubal Blockage (n=100)

Types of infertility	Tubal blockage/patency			Table
	Single Blockage	Double Blockage	Both patent	
Primary	20	16	2	38
Secondary	23	19	16	58
Unspecified	2	1	1	4
Total	45	36	19	100

Table 7: Frequency: Type Of Infertility And Presence Of Adhesions:

Type of infertility	Presence of adhesions		Total
	Yes	No	
Not indicated	2	2	4
Primary	26	12	38
Secondary	49	9	58
Total	77	23	100

Table 8: Frequency: Tubal blockage/patency and presence of adhesions

Status of Tubes	Presence of adhesions		Total
	Yes	No	
Single Blockage	34	11	45
Double Blockage	28	8	36
Both Patent	15	4	19
Total	77	23	100

Key: Adhesions- include cases of cervical; intra-uterine and extra-uterine adhesions such as peri-fimbrial adhesions

CONCLUSION

A high percentage of infertile women in this environment have abnormal HSG findings especially fallopian tube anomalies that could lead to infertility. It is of critical importance therefore to explore for the status of the fallopian tubes, in this environment.

In addition, more of the primarily infertile patients have bilateral tubal blockages and knowing this will help the physician to determine the next line of treatment for such cases.

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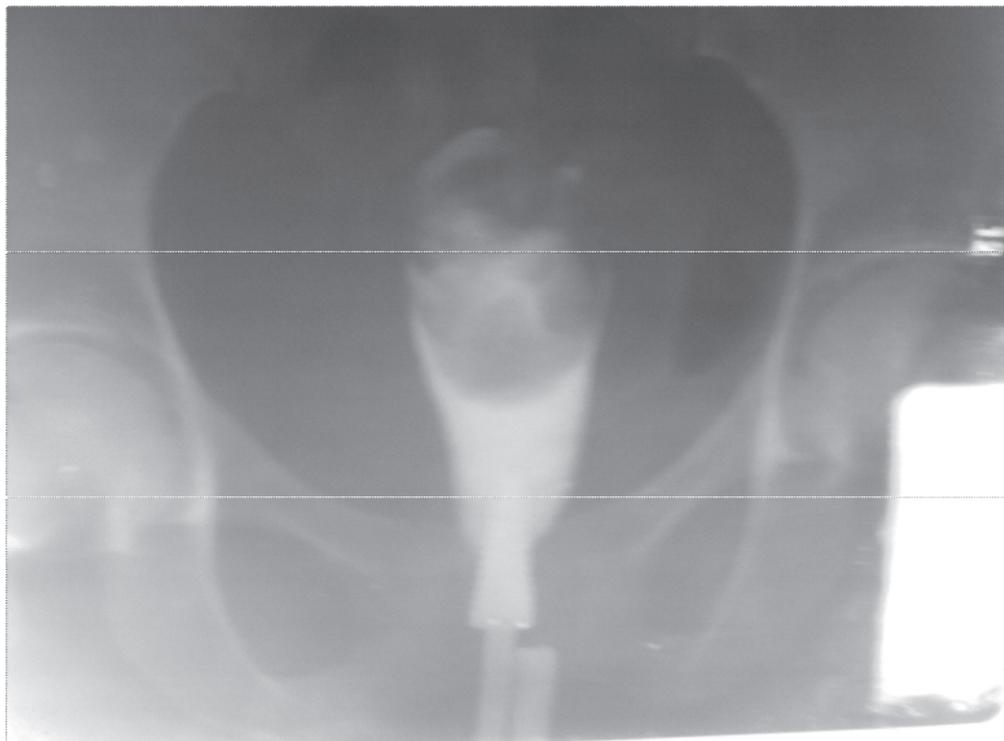


Figure 1: HSG, showing fundal filling defect due to uterine fibroid occluding both fallopian tubes (FPS).



Figure 2: HSG, showing forced spill from diseased tubes.



Figure 3: Delayed radiograph of figure 2, confirming bilateral hydrosalpinges.