

Detection of Tubal Cause of Subfertility by Hysterosalpingography

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Diagnosis of
Subfertility by
Hysterosalpingography

ABSTRACT

Objective: To determine the frequency of various tubal causes of subfertility by Hysterosalpingography in women at Isra University Hospital, Hyderabad.

Study Design: Observational / cross sectional study.

Place and Duration of Study: This study was conducted at the Obstetric and Gynecology Department, Isra University Hospital Hyderabad from 13th October 2013 to 13 October 2014.

Materials and Methods: Total 292 women were enrolled; youngest one being 15 years and maximum age was 35 years. In 55.8% cases had duration of marriage < 5 years while 38.7% women were married for 5 to 10 years and 5.5% were married for more than 10 years.

Results: The frequency of primary and secondary sub fertility was 57.5% and 42.5% respectively observed in this study. Majority of women 85.6% were nulliparous while, 13.7% were primi and 1.02% women were multipara. The tubal factor subfertility was most common in 30-35 years of age and second most common group was 25-29 years. 26.4% women had bilateral tubal pathology, 20.9 had one side tubal occlusion while uterine cavity anomaly was determined in 2.7% and peritoneal spillage was present in 49.7% cases. Majority of the subfertile women 65.1% were seen age group between 30 to 35 years, 58.9% were primary and 73.4% were secondary subfertility.

Conclusion: Hysterosalpingography remains an integral part of subfertility workup. It can be used as a first line screening investigation of tubal patency irrespective of duration of subfertility. HSG allows documentation of tubal patency, enables detection of several tubal lesions and permits assessments of fine intratubal architecture details especially when as aqueous contrast medium is used. Other than being diagnostic, it can prove to be therapeutic. Tubal factor was the most common cause of subfertility demonstrated in this study.

Key Words: Sub-Fertility, Hysterosalpingography, Tubal Cause, Uterine Causes.

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INTRODUCTION

Subfertility is the inability of a couple in reproductive age groups to conceive within twelve months of unprotected coitus. There are two types of subfertility primary and secondary, primary defined as when couples who have never conceived whereas secondary subfertility is said to couples who are unable to conceive after one year of unprotected coitus and having previous pregnancy and not using any contraceptives.¹

Globally approximately 10-15% of the couples are subfertile.² The prevalence of subfertility varies within countries; the occurrence is depending on the incidence of preventable conditions that cause the subfertility.³

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Tubal sub-fertility is commonly seen in those with secondary sub-fertility and in populations who having higher prevalence of sexually transmitted disease. Local health care practices and policies, especially unhygienic obstetric practices, lack of antibiotic cover and unsafe abortions are also major risk factors which cause pelvic adhesions and lead to secondary sub-fertility.⁴ In our setup its incidence is higher due to unsafe abortion and inadequate and inappropriate facilities.⁵ Pelvic inflammatory disease carries up to 10% risk of future tubal factor subfertility.⁶

Hysterosalpingography is the method used for screening in the routine subfertility evaluation.⁷ A subfertility work up is incomplete without an hysterosalpingogram.

Hysterosalpingogram gives important information about the outlining of the uterine cavity, any its abnormality and patency of fallopian tubes. It is also recommended for the study of the uterine cavity in the diagnosis and treatment planning of other gynaecologic problem such as intrauterine adhesions and congenital anomalies⁸.

High incidence of tubal blockage in our setup due to inadequate health facilities because of our limited resources. As hysterosalpingography is gold standard,

safe, cost effective, non-invasive, easy to perform in out door patient and helpful in the detection of the causes of subfertility. On the bases of this it is recommended that hysterosalpingography should be performed first line screening investigation of tubal patency irrespective of a duration of subfertility in third world countries like Pakistan where the facilities and expertise for laparoscopy are not routinely used.⁵ The purpose of this study was to determine the frequency of various tubal causes of sub-fertility by Hysterosalpingography in women at Isra University Hospital.

MATERIALS AND METHODS

This observational / cross sectional study will be conducted amongst outdoor patients in the department of Obstetrics and Gynaecology at Isra University Hospital, Hyderabad from 13th October 2013 to 13 October 2014.

Keeping the significant of estimation at 5%, bound on the error of estimation at 5% then sample size come out 100 cases for this study. It was non probability purposive sampling.

Inclusion Criteria:

- 1) Primary Subfertile patients.
- 2) Secondary Subfertile patients
- 3) Women of reproductive age 15-35 age

Exclusion Criteria: -

- 1) Previous hysterosalpingography related to subfertility.
- 2) Previous diagnostic laparoscopy related to subfertility.
- 3) Contraindications for hysterosalpingography or laparoscopy e.g. pelvic inflammatory disease, abnormal uterine bleeding.
- 4) Abnormal vaginal discharge.

Data Collection Procedure: Women with history of subfertility may be primary or secondary, meeting inclusion criteria attending Isra University Hospital will be enrolled in the study. Exclusion criteria will be strictly followed to avoid confound variables.

The initial evaluation of patients including a detail history, a complete general, physical, systemic and local pelvic examination, and then informed consent will be taken for the study as well as hysterosalpingography. It is performed in radiology department under aseptic conditions in follicular phase on the eightth day of clearance of menses. It involved in following the injection of radio opaque iodine based dye (urograffin 76%) passed through the cervix.

A radiograph is taken after injection of medium to ensure any filling defect in uterine cavity and degree of spillage in peritoneal cavity, then x-rays with documented opinion of radiologist is handed over to couple.

RESULTS

Total 292 women were enrolled; youngest one being 15 years and maximum age was 35 years. In 55.8% cases had duration of marriage < 5 years while 38.7% women were married for 5 to 10 years and 5.5% were married for more than 10 years.

The frequency of primary and secondary sub fertility was 57.5% and 42.5% respectively observed in this study. Majority of women 85.6% were nulliparous while, 13.7% were primi and 1.02% women were multipara.

Table No. 1: Frequency of age groups of study participants (n=292)

Age groups	Number	Percentage
15 to 19	03	1.0
20 to 24	39	13.4
25 to 29	60	20.5
30 to 35	190	65.1

Frequency of duration of marriage in groups of study participants (n = 292)

Duration of marriage in groups	Number	Percentage
< 5 years	163	55.8%
5 to 10 years	113	38.7%
> 10 years	16	5.5%

Parity of Women (n = 292)

Parity	Number	Percentage
0 + 0 (Nulli para)	168	57.53%
1 to 2 (Primi para)	122	41.78%
> 2 (Multipara)	02	0.68%

Table No. 2: Status of congenital abnormalities detected by hysterosalpingography (n = 08)

Congenital abnormalities	Number	Percentage
Bicornuate uterus	02	25.0%
Unicornuate uterus	02	25.0%
Diadelphus uterus	0	0
Intrauterine adhesion	02	25.0%
Filling defect	02	25.0%

Status of tubal patency detected by hysterosalpingography (n = 292)

Patency	Number	Percentage
Two-sided tubal occlusion	77	26.4%
One sided tubal occlusion	61	20.9%
Uterine cavity anomaly	08	2.7%
Peritoneal spillage	146	50.0%

The tubal factor subfertility was most common in 30-35 years of age and second most common group was 25-29 years. 26.4% women had bilateral tubal pathology, 20.9% had one side tubal occlusion while uterine cavity anomaly was determined in 2.7% and peritoneal spillage was present in 49.7% cases. Majority of the subfertile women 65.1% were seen age group between 30 to 35 years, 58.9% were primary and 73.4% were secondary subfertility.

Table No. 3: Causes of subfertility detected by hysterosalpingography (n = 292)

Causes of subfertility	Subfertility		Total n=292
	Primary n = 168	Secondary n = 124	
Two-sided tubal occlusion	45(26.7%)	32(25.80%)	77(26.4%)
One sided tubal occlusion	35(23.80%)	26(20.96%)	61(20.9%)
Bicornuate uterus	0	02(1.61%)	2(0.68%)
Unicornuate uterus	02(1.19%)	0	2(0.68%)
Diadelphus uterus	0	0	0
Intrauterine adhesion	0	02(1.61%)	2(0.68%)
Filling defect	1(0.59%)	1(0.80%)	2(0.68%)
Status of congenital abnormalities detected by hysterosalpingography with subfertility (n = 292)			
Congenital abnormalities	Primary n= 168	Secondary n = 124	Total n=292
Bicornuate uterus	0	02(1.61%)	02(0.68%)
Unicornuate uterus	02(1.19%)	0	02(0.68%)
Diadelphus uterus	0	0	0
Intrauterine adhesion	0	02(1.61%)	02(0.68%)
Filling defect	1(0.59%)	1(0.80%)	02(0.68%)

Table No. 4: Status of age groups with subfertility (n = 292)

Age groups	Subfertility		Total
	Primary n = 168	Secondary n = 124	
15 to 19	1(0.6%)	2(1.6%)	3(1.0%)
20 to 24	26(15.5%)	13(10.5%)	39(13.4%)
25 to 29	42(25.0%)	18(14.5%)	60(20.5%)
30 to 35	99(58.9%)	91(73.4%)	190(65.1%)

Table No. 5: Status of tubal patency detected by hysterosalpingography with parity (n = 292)

Patency	Parity			Total n=292
	0 + 0 n = 168	1 + 2 n = 122	> 2 n = 2	
Two-sided tubal occlusion	45(26.7%)	32(26.22%)	0	77(26.4%)
One sided tubal occlusion	35(20.08%)	26(21.31%)	0	61(20.9%)
Uterine cavity anomaly	03(1.78%)	04 (3.27%)	1(50.0%)	8(2.7%)
Peritoneal spillage	85(50.59%)	60(49.18%)	1(50.0%)	146(50.0%)

DISCUSSION

Subfertility is defined as the inability of a couple to conceive after one year of unprotected intercourse.⁹ In case of men, it is the inability to procreate and in case of women, it is the inability to conceive. There are different causes of subfertility which includes cervical, uterine, tubal, ovarian and peritoneal cause but initial workup of subfertility is incomplete without hysterosalpingography.¹⁰

Table No. 6: Status of congenital abnormalities detected by hysterosalpingography with age groups (n =08)

Congenital abnormalities	Age (in groups)				Total n=292
	15 to 19 n = 03	20 to 24 n = 39	25 to 29 n = 60	30 to 35 n = 190	
Bicornuate uterus	01 (33.3%)	0	0	01 (0.52%)	02 (0.68%)
Unicornuate uterus	0	01 (2.56%)	0	01 (0.52%)	02 (0.68%)
Diadelphus uterus	0	0	0	0	0
Intrauterine adhesion	0	01 (2.56%)	01 (1.66%)	0	02 (0.68%)
Filling defect	0	0	01 (1.66%)	01 (0.52%)	02 (0.68%)

Tubal cause counts for 14% cases of female subfertility,¹¹ but in our setup, its incidence is higher because of inappropriate health facilities.¹²

Hysterosalpingography is the method used for screening purpose and initial assessment of subfertility, it has been considered gold standard for evaluating the fallopian tubes and uterine morphology.⁷

Our aim is to find out the usefulness of hysterosalpingography for assesment of tubal cause of subfertility and whether it can safely use as fist line investigation of tubal patency in all cases of subfertility irrespective of its duration and type.

In the present study of 292 cases, primary subfertility was higher i.e. 57.53% than secondary subfertility 42.5%. Most women i.e. 65.1% were observed in 30 to 35 years age group. These figures correlate well to the study of Poonam et al⁸ conducted in Nepal, 71% had primary and secondary 10.2% subfertility, most patients belonged to age group of 26 to 30 years. In another study conducted by Kumar SCS et al¹¹ primary subfertility was higher i.e. 53.3% and secondary subfertility was 8.3% whereas in a local study of Rahim R et al¹² showed the same observation of subfertility.

In another study of Aflatoonian Abbas et al¹³ and his colleagues conducted in Iran, they proved that primary subfertility was higher than secondary subfertility. This could be due to the hesitancy of couples in seeking early advice, unawareness of the importance of initial treatment could be another factor contributing to such long duration of subfertility.

Tubal occlusion was in 47.2%, two-sided tubal occlusion was in 26.4% and one sided tubal occlusion was in 20.9%. The same observation was seen in the study of Bacevac J et al.¹⁴

Another study of Tvarijonaviene E et al⁷ conducted in Lithuania, two-sided tubal occlusion was in 15.0% and one sided was in tubal occlusion was in 21.5% while Mol BW et al¹⁵ showed the one sided tubal occlusion in 19.0% and two-sided occlusion in 17%, these findings are similar to the present study.

Out of 292 women, congenital abnormalities were observed in 2.7% women. Of these, 25.0% women had Bicornuate, unicornuate, intrauterine adhesion and filling defect respectively whereas Poonam, et al⁸ observed the comparable results to this study. In another study of Braun P et al¹⁶ revealed 10.6% biocornuate uterus which is nearly to this study.

HSG allows documentation of tubal patency, enables detection of several tubal lesions and permits assessments of fine intratubal architecture details especially when as aqueous contrast medium is used.

The small fibroid can be missed by clinical examination and fibroid projecting in to uterine cavity may cause actual filling defect which can be detected by hysterosalpingography. Large fibroid often produced extreme distortion of uterine cavity.

When myomectomy is planned HSG has excellent value in visualization of uterine cavity and fallopian tube.

CONCLUSION

Hysterosalpingography remains an integral part of subfertility workup. It can be used as a first line screening investigation of tubal patency irrespective of duration of subfertility. HSG allows documentation of tubal patency, enables detection of several tubal lesions and permits assessments of fine intratubal architecture details especially when as aqueous contrast medium is used. Other than being diagnostic, it can prove to be therapeutic. Tubal factor was the most common cause of subfertility demonstrated in this study. Knowledge of these entities is important to avoid the practice of unnecessary and sometimes more aggressive procedures.

Author's Contribution:

Concept & Design of Study: Qamarunissa
 Drafting: Shazia Rani
 Data Analysis: Qamarunissa
 Revisiting Critically: Pushpa Malhi
 Final Approval of version: Qamarunissa

Conflict of Interest: The study has no conflict of interest to declare by any author.

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