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# Role of Hysterosalpingography in The Evaluation of Causes of Infertility

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## ABSTRACT

**Objective:** To find out the role of Hysterosalpingography (HSG) in the evaluation of causes of infertility. **Study Design:** Observational study **Settings:** It was conducted at the radiology department, SZMC/H Rahim Yar Khan & Punjab diagnostic center, Rahim Yar Khan. **Study Duration:** Five months, from November 2012 to March 2013. **Methodology:** In the study, a total of 44 infertile patients were selected for Hysterosalpingography. The data was collected on a performa which include questions about the complete history of patient like menstrual cycle irregularity, past surgical history, contraceptive measures, previous abortions, and primary or secondary infertility (inability to conceive or carry a pregnancy to term after successfully and naturally conceiving one or more children, 3 years after last childbirth). **Results:** Out of 44 selected patients for HSG 75% (n = 33) were less than 30 years of age (between 20-29 years), while 25% (n= 11) were in 30-39 years of age group. 80% (n = 35) of patients presented with primary infertility, while 20% (n=9) with secondary infertility. 70.5% (n=31) of patients have tubal blockage, 13.6% (n=6) have uterine abnormalities while 15.9% (n=7) of patients have normal findings on HSG. **Conclusion:** HSG is a highly specific investigation for tubal patency. It is also cost-effective and can be used as a sole radiologic evaluation tool for female infertility and complementary with radiological and non-radiological investigations such as pelvic sonography, laparoscopy, and MRI.



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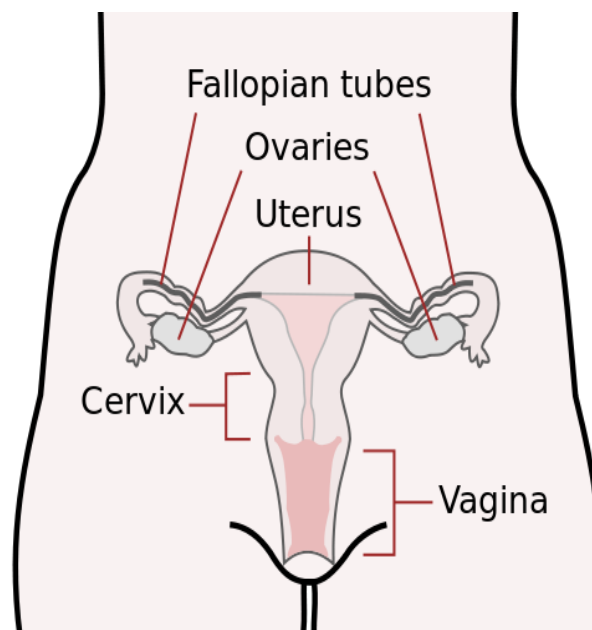
## INTRODUCTION

Infertility primarily refers to the biological inability of a person to contribute to conception. Infertility may also refer to the state of a woman who is unable to carry a pregnancy to full term. There are many biological causes of infertility, including some that medical intervention can treat. Infertility has increased by 4 percent since the 1980s, mostly from problems with fecundity due to an increase in age. About 40 percent of the issues involved with infertility are due to the man, another 40 percent due to the woman, and 20 percent result from complications with both partners. There are many reasons why a couple may not be able to conceive without medical assistance. Infertility affects approximately 15% of couples. Roughly 40% of cases involve a male contribution or factor, 40% involve a female factor, and the remaining 20% involve both sexes.

Although Pakistan is among the currently most populous countries of the world and has a population growth rate of around 2%, it also has a high rate of infertility (21.9%); 3.5% primary, and 18.4% secondary<sup>1</sup>. This signifies that more than one-fifth of the country's married population is directly associated with this problem.

### **Human female reproductive system**

The human female reproductive system<sup>2</sup> (or female genital system) contains two main parts: the uterus, which hosts the developing fetus, produces vaginal and uterine secretions, and passes the male's sperm through to the fallopian tubes; and the ovaries, which produce the female's egg cells. These parts are internal; the vagina meets the external organs at the vulva, which includes the labia, clitoris, and urethra. The vagina is attached to the uterus through the cervix, while the uterus is attached to the ovaries via the Fallopian tubes. At certain intervals, the ovaries release an ovum, which passes through the Fallopian tube into the uterus. If in this transit, it meets with sperm, the sperm penetrate and merge with the egg, fertilizing it.



## Objective

The main objective of the study is:

- To find out the role of Hysterosalpingography (HSG) in the evaluation of causes of infertility.

## MATERIALS AND METHODS

This observational study was conducted at the radiology department, SZMC/H Rahim Yar Khan & Punjab diagnostic Centre, Rahim Yar Khan.

**Study Duration:** Five months, from November 2012 to March 2013.

## Inclusion criteria

- Patients of age 20-40 years having complaints of primary or secondary infertility were included.

## Exclusion Criteria

- The patients who have undergone a contrast study in the last 72 hours.
- Menstruation

### Data collection

The data was collected by me on a proforma which include questions about the complete history of patient like menstrual cycle irregularity, past surgical history, contraceptive measures, previous abortions, and primary or secondary infertility (inability to conceive or carry a pregnancy to term after successfully and naturally conceiving one or more children, 3 years after last childbirth).

### Data analysis

All data were analyzed on a computer-based program SPSS, and results were obtained in textual, graphical, and tabular form.

## RESULTS AND DISCUSSION:

### RESULTS

Out of 44 patients selected for HSG 75% were less than 30 years of age (between 20-29 years) mean age is 24.5 years, while 25% are between 30-39 years of age. 80% of patients presented with primary infertility and 20% with secondary infertility. 70.5% of patients have tubal blockage while 13.6% of patients have uterine abnormalities. Patients with normal findings on HSG are 15.9%. Out of 44 patients, only 6 have taken contraceptives. Menstrual cycle irregularity as shown by our study (irregular in 21 patients, regular in 23 patients) has no significant effect on infertility. Only 11 patients have a history of previous abortions due to different causes (polycystic ovaries, fibroids, congenital uterine abnormalities). Patients have a past surgical history (laparotomy, appendicitis, surgeries for cysts and fibroids).

**Table No. 1: Menstrual cycle irregularity (n=44)**

Menstrual cycle	Frequency	Percent
Regular	23	52.3%
Irregular	21	47.7%
Total	44	100%

**Table No. 2: Frequency of previous abortions (n=44)**

Previous abortions	Frequency	Percent
Yes	11	25.0%
No	33	75.0%
Total	44	100%

**Table No. 3: Frequency of contraceptive measurements (n=44)**

Contraceptive measures	Frequency	Percent
Yes	6	13.6%
No	38	
Total	44	100%

**Table No. 4: Frequency of ovulation induction (n=44)**

Ovulation induction	Frequency	Percentage
Yes	10	22.7%
No	34	77.3%
Total	44	100%

**Table No. 5: Frequency of tubal blockage (n=44)**

Tubal blockage	Frequency	Percent
Yes	31	70.5%
No	13	29.5%
Total	44	100%

**Table No. 6: Frequency of normal findings on HSG (n=44)**

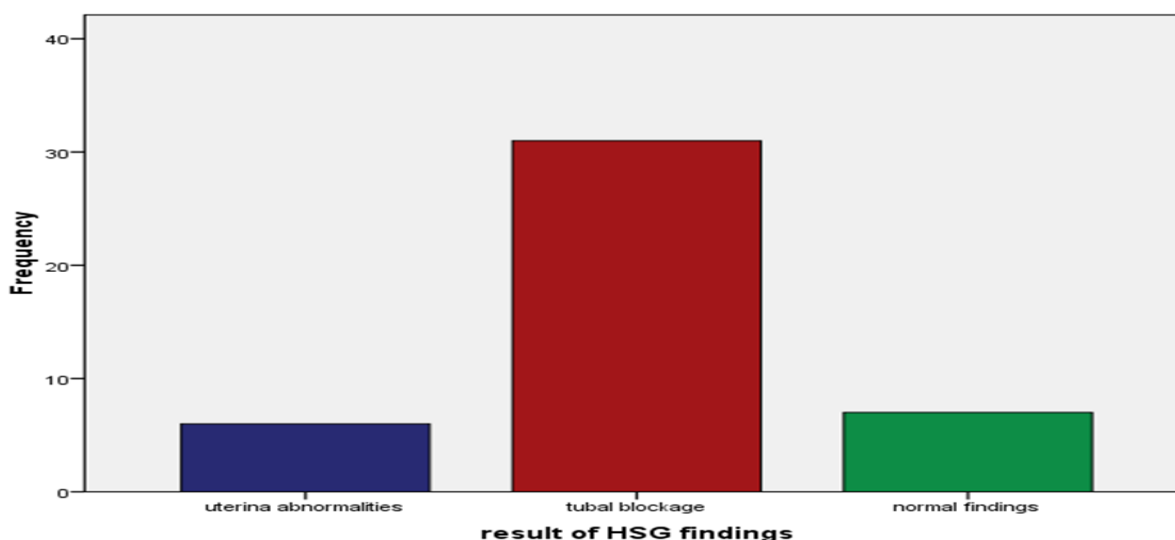
Findings	Frequency	Percent
Normal	7	15.9%
Abnormality seen	37	84.1%
Total	44	100%

**Table No. 7: Distribution of patients depending on types of infertility (n=44)**

Types of infertility	Frequency	Percent
Primary infertility	35	79.5
Secondary infertility	9	20.5
Total	44	100%

**Table No. 8: Result of Hysterosalpingographic findings (n=44)**

Findings	Frequency	Percentage
Uterine abnormality	6	13.6%
Tubal blockage	31	70.5%
Normal findings	7	15.9%



**Figure No. 1: Result of HSG findings (n=44)**

## DISCUSSION

The current observational study “Role of Hysterosalpingography in the evaluation of causes of infertility” was conducted in SZMC/H for the academic requirement of BSC (Hons) MIT. 44 patients with complaints of infertility referred from the gynecology department to the Radiology department for Hysterosalpingography were selected. The data was collected on a performa which include questions about the complete history of patient like menstrual cycle irregularity,

past surgical history, contraceptive measures, previous abortions, and primary or secondary infertility (inability to conceive or carry a pregnancy to term after successfully and naturally conceiving one or more children, 3 years after last childbirth). Results were compared to determine the efficiency of Hysterosalpingography in the evaluation of causes of infertility.

In a study conducted in Mirpur, Azad Kashmir it was noted that out of 50 selected patients for HSG 54% (n=27) were less than 30 years of age, while 46% (n=23) were in the 32-42 years of age group. 76% (n=38) of patients presented with primary infertility, while 24% (n=12) with secondary infertility. However in my study out of 44 patients selected for HSG 75% (n=33) were less than 30 years of age (between 20-29 years) mean age is 24.5 years, while 25% (n=11) are between 30-39 years of age group. 80% (n=35) of patients presented with primary infertility and 20% (n=9) with secondary infertility. 70.5% (n=31) of patients have tubal blockage while 13.6% (n=6) of patients have uterine abnormalities. Patients with normal findings on HSG are 15.9% (n=7). Out of 44 patients, only 6 have taken contraceptives. Menstrual cycle irregularity as shown by our study (irregular in 21 patients, regular in 23 patients) has no significant effect on infertility. Only 11 patients have a history of previous abortions due to different causes (polycystic ovaries, fibroids, congenital uterine abnormalities). 19 patients have a past surgical history (laparotomy, appendicitis, surgeries for cysts and fibroids).

## CONCLUSION

Hysterosalpingography is highly sensitive and specific in the diagnostic work-up of patients with infertility. It is also cost-effective and can be used as a sole radiologic evaluation tool for female infertility and complementary with radiological and non-radiological investigations such as pelvic sonography, laparoscopy, and MRI. In some cases of female infertility, its therapeutic role is something to behold.

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**Role of Hysterosalpingiography in the evaluation of causes of infertility**

Patient's Name : \_\_\_\_\_ Patient's age: \_\_\_\_\_

Husband's name: \_\_\_\_\_ Occupation: \_\_\_\_\_

Husband's age: \_\_\_\_\_ Married for: \_\_\_\_\_

No. of children: \_\_\_\_\_

Menstrual cycle: (regular / irregular)

Previous abortions: \_\_\_\_\_

Contraceptive measures: \_\_\_\_\_

Past surgical history: \_\_\_\_\_

Ovulation induction / hormone therapy: \_\_\_\_\_

**USG findings**

Polycystic ovaries: \_\_\_\_\_ Fibroid uterus: \_\_\_\_\_

Congenital uterine abnormality: \_\_\_\_\_

**HSG findings**

Uterus: \_\_\_\_\_

\_\_\_\_\_

Fallopian tubes:-

RT: \_\_\_\_\_

Peritoneal spillage:- \_\_\_\_\_

LT: \_\_\_\_\_

Peritoneal spillage:- \_\_\_\_\_