



STUDY OF DISTRIBUTION OF REPRODUCTIVE TRACT ANOMALIES IN INFERTILE WOMEN THROUGH HYSTEOSALPINGOGRAPHY IN CENTRAL INDIA

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ABSTRACT **Context:** Infertility has risen to be a public health problem in India, National Family Health Survey (NFHS) – 4 estimates showing 5.2% of the women in reproductive age group to be infertile. Infertility can be due to male factors, female factors and in some cases unexplained; female factors comprising of 40-45% of the total cases. Amongst the female factors anatomical congenital anomalies as well as acquired abnormalities of the reproductive tract may cause primary or secondary infertility. **Aims:** This study aimed at looking at the distribution of congenital anatomical anomalies of the uterus and fallopian tubes as well as the distribution of anatomical changes in uterus and fallopian tubes due to pathological conditions through Hysterosalpingography (HSG) in infertile women. **Methods & Materials:** 103 women attending Obs. and Gyneac. OPD for diagnosis and treatment of infertility in a tertiary care hospital in Central India were selected in this observation study. Sampling was purposive. HSG was performed and the data was obtained from the department of radiology. Descriptive analysis was done, and where applicable bi-variate analysis was done with chi-square test. **Results:** There were 63 cases of primary (mean age = 25 years \pm 3.2) and 40 cases of secondary infertility (mean age = 30 years \pm 2.9). 24% of the total cases had tubal occlusion, 16.5% had hydrosalpinx, 4% had arcuate and bicornuate uterus each and 1% had unicornuate uterus, filling defects in uterus, deviation of uterine cavity, T-shaped uterus and sub-mucous fibroid each. 47% of the cases had normal HSG findings. **Conclusions:** The results show that acquired causes of tubes were most common findings in HSG of infertile women, pointing to preventable and easily manageable cases of infections of reproductive tract. Timely management of such cases at primary health care level can help reduction of infertility cases.

KEYWORDS : Infertility, Hysterosalpingography, Tubal Occlusion, Congenital abnormality

INTRODUCTION

Infertility is described clinically as a disease of the reproductive system defined by the failure to achieve a clinical pregnancy after 12 months or more of regular unprotected sexual intercourse.¹

Socially, most societies are organized, especially in the developing countries, such that children are necessary for care and maintenance of older parents. The conflux of personal, interpersonal, social, and religious expectations brings a sense of failure, loss, and exclusion to those who are infertile.²

The important factors for pregnancy to occur involve normal functional ovaries, fallopian tubes, uterus, presence of normal sperms, fertilization followed by implantation of embryo. There are various factors that may cause infertility; viz., male factors, cervical factors, endometrial and uterine factors, tubal factors and adulatory factors.³ Female factor attributes in about 40-45% of cases of infertility, male factor in 25-40% cases whereas 10% cases can have unexplained infertility.⁴ Amongst the female factors, congenital as well as acquired abnormalities of the reproductive tract may cause infertility, primary or secondary.

National Family Health Survey -4 (NFHS – 4) estimates childlessness as 5.2% in the currently married 15-49 years of women in India, 8.5% being primary infertility cases; these figures have increased from a previous NFHS – 3 report showing 2.8% infertile women of 15-49 years of age and 4.8% amongst those without any children.^{5,6} These figures show that infertility has risen to become a public health problem and hence it is imperative to understand the etiological factors pertaining female infertility. With this background, present study was undertaken to find the common etiological factors with special emphasis on anatomical defects of female reproductive tract.

OBJECTIVES

1. To study distribution of anatomical variation of uterus and fallopian tubes in infertile women through hysterosalpingography (HSG).
2. To study distribution of anatomical changes in uterus and fallopian tubes due to pathological conditions in infertile women through hysterosalpingography.

METHODS

This was an observational study; women of reproductive age group with complaints of infertility in a tertiary care hospital in central India were selected with Purposive sampling. HSG was performed at Radiology department of the referred woman from Gynaecology department as a part of her investigation of infertility. HSG was

performed in the proliferative phase of the menstrual cycle as the endometrium is thin during this phase which facilitates image interpretation. Four images were taken for each HSG procedure performed. The data from radiology register was recorded for the study in the proforma and images were sought in soft copy of the findings of HSG. Data was analysed with the use of SPSS software version 15.0. Descriptive statistics were calculated for age, type of infertility, congenital tubal and uterine anomalies, acquired tubal and uterine abnormalities. Bi-variate analysis was done using t-test and chi-square test.

RESULTS

103 women's data was collected, 63 cases of primary infertility and 40 secondary infertility. Mean age of the study population was 26.92 with standard deviation of \pm 3.808. Mean age in primary infertility cases was 25 years (\pm 3.2) and that in secondary infertility cases was 30 years (\pm 2.9).

Table 1: Type Of Fertility By Tubal And Uterine HSG Findings

HSG findings	Primary Infertility (%)	Secondary Infertility (%)
Normal Tubal Findings	65.08	50
Abnormal Tubal Findings	34.92	50
Normal Uterine Findings	84.13	92.5
Abnormal Uterine Findings	15.87	7.5

Chi-square test used – no statistical significant difference found between normal and abnormal tubal findings; and normal and abnormal uterine findings.

The cases with normal tubal HSG findings were more in cases of primary infertility and secondary infertility compared to abnormal uterine findings on HSG.

Table 2: Side Of Tubal Abnormalities And Site Of Occlusion On HSG

	Left n (%)	Right n (%)	Bilateral n (%)
Side of tubal abnormality			
Hydrosalpinx	4 (23.5)	3 (17.7)	10 (58.8)
Tubal Occlusion	10 (40)	6 (24)	9 (36)
Total	14 (33.3)	9 (21.4)	19 (45.2)
Site of occlusion			
Proximal occlusion	1 (4)	6 (24)	2 (8)
Distal occlusion	9 (36)	0 (0)	7 (28)
Total	10 (40)	6 (24)	9 (36)

As per the side and site of abnormality, bilateral Hydrosalpinges were most common and left sided distal occlusion was more common than right or bilateral and proximal.

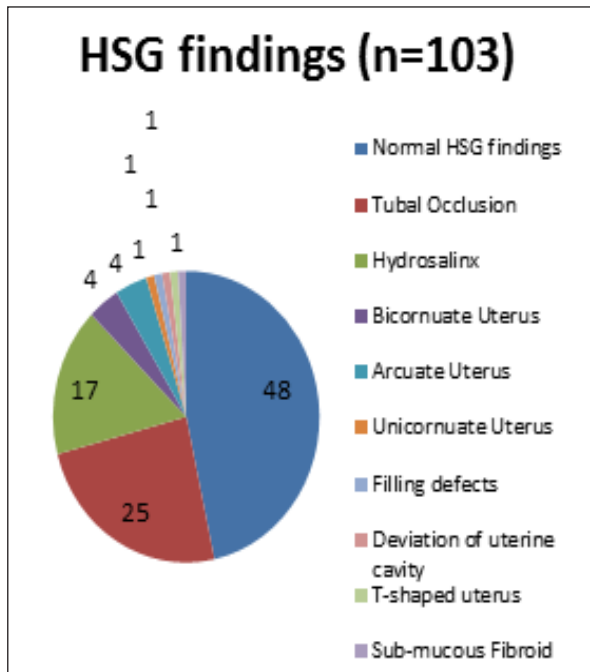


Figure 1: Abnormalities And Anomalies Detected On HSG In Infertility Cases (diagrammatic Representation)

There were no cases found for Beaded and wiry appearance of tubes and that of peritubal adhesion.

DISCUSSION

This study found overall abnormal HSG findings in about half of the cases of infertility. Abnormal tubal findings were more commonly found in secondary infertility cases whereas abnormal uterine findings were found more in primary infertility cases. Most common abnormal HSG finding was Tubal occlusion followed by Hydrosalpinx. Uterine abnormalities most commonly found were Arcuate and bicornuate uterus, although their proportion was less than that of tubal findings.

Overall abnormal HSG findings were observed in 53.4% cases in current study, similar with the study by Poonam in which abnormal HSG findings accounted for more than 50% of total cases.⁷ The reason behind this could be that the hospital being a tertiary centre, cases are reported from the periphery after being initially evaluated. Some studies noted varied abnormal HSG findings, some reporting 70% normal HSG findings to 70% abnormal HSG findings.^{8,9}

In the present study abnormal tubal findings were observed in 40.78% of cases; 50% of secondary infertility cases and 34.92% of primary infertility showed tubal abnormalities. Some researchers have reported higher prevalence of abnormal tubal findings⁸, whereas others have reported lower.^{7,10,11,12}

High prevalence of tubal pathology may indicate infection as the leading cause of infertility which may be due to increase in incidence of STIs due to change in sexual behaviour.⁸ Thus primary prevention of reproductive tract infection and STIs could be the key to reduce the unacceptably high prevalence of tuboperitoneal infertility in such cases.

Tubal pathology with tubal blockage due to PID is one of the most frequent causes of infertility. Proximal, distal and peritubal damage can be caused by number of pathological processes such as inflammation, endometriosis and surgical trauma. Uterine irritability due to infection, organic diseases, etc. closes the uterotubal junction temporarily. Similarly spastic condition of the sphincter also closes the cornua. This region does not undergo the normal cyclical changes of endometrium as such it becomes prone to infection, the infecting organism getting a relatively permanent nidus thus favouring fibrosis and occlusion. 5.71% of the cases had unilateral or bilateral hydrosalpinx which is usually produced as a result of catarrhal

inflammation of the tube following infections like gonococcal or tuberculosis of the genital tract. Eventually the fimbrial end closes by adhesions and the secretions are retained and the tube gradually distends. Beaded and wiry appearance of the tubes is a characteristic finding in later stages of genital tuberculosis involving the tube. Scarring of the fistula or abscess like cavities in the tube wall gives this appearance. There was no such finding in the present study.

Uterine anomalies were found in 3 to 4% of women with infertility in many studies.^{13,14,15} Butt F found that 83% uterine anomalies were found in secondary infertility cases and 17% in primary infertility cases.¹⁴

Tumours projecting into uterine cavity may cause actual filling defects which can be detected by hysterosalpingography. In patients taking oral contraceptives for long period, a small T – shaped uterus can be observed characterized by 1:1 ratio between the uterine body and the cervix which are normal proportions of premenarchal uterus. This appearance can also be observed in adult women with severe oestrogen deficiencies in which the uterus fails to attain post pubertal proportions because of absence of normal oestrogen stimulus.

The findings thus point to the tubal pathologies being more common in the cases of infertility. These pathologies can be reversed or the progress can be arrested early on in such cases if diagnosed and managed on timely basis; this could potentially lead to fewer cases of infertility, fewer DALYs loss, and lesser patient suffering.

The limitations of this study is that it included only HSG as an investigating tool for determining the uterus and fallopian tube congenital and acquired abnormalities. HSG may not detect all those abnormalities that may be present. The results of the current study can not be generalised to the population due to the method of sampling used which was purposive.

CONCLUSIONS

This study conducted in Central India shows the various HSG findings found in infertile women, both with primary and secondary infertility. The findings suggest more prevalent acquired tubal pathology causing infertility, which in most cases could have infectious pathology. These when diagnosed early with timely management may result in significant reduction in cases of infertility as well as reduce patients' emotional, physical and financial sufferings.

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