



# A COMPARATIVE STUDY OF TUBAL PATENCY HYSTEROSALPINGOGRAPHY AND SONOSALPINGOGRAPHY

Vijay Kishore Chakravarti<sup>1\*</sup>, Dr. Bijendra Kumar Meena<sup>2</sup>, Dr. Vaibhav Kanti<sup>3</sup> Dr. Paritosh Shukla<sup>4</sup>, Dr. Mohd. Arfat<sup>5</sup>, Dr. Mahendra Kumar Singh<sup>6</sup>

1-Ph.D Scholar NIMS University Jaipur-India.

2Associate professor Department of Radiology NIMS University Jaipur.

3- Associate professor Department of Obstetrics and Gynaecology UPUMS Saifai UP

4-Senior Consultant District Hospital Etawah Uttar Pradesh.

5-Department of Radiology Uttar Pradesh University of Medical Sciences, Saifai- UP

6-Principal ParaMedical College NIMS University, Jaipur Rajasthan .

## Abstract-

### Objectives-

To find out the comparative evaluation Hysterosalpingography and Sonosalpingography for determination of tubal patency in cases of primary and secondary infertility.

### Methods –

In this study , trial of 50 women complaining of infertility ,suspected tubal pathologies underwent various radiological modalities.Hysterosalpingography and Sonosalpingography was performed in all cases .

### Result-

The Tubal patency was correctly indicated by Sonosalpingography in 94% and Hysterosalpingography 90%.Thus Sonosalpingography is superior to Hysterosalpingography to use tubal patency as it has no radiation and contrast reactions

## Conclusion –

Several modalities have been suggested for the diagnosis of suspected Tubal patency ,however Sonosalpingography the initial most useful technique to confirm or exclude tubal patency .

**Keyworld** – Hysterosalpingography ,Sonosalpingography , Tubale Patency,Infertility

## Introduction –

Infertility is defined as the ability to conceive after unprotected intercourse for a period of one year of couples in which the woman is under 36 years of trying for couples in which the women is over 36 years of age. Primary infertility is a condition in which no previous pregnancies have occurred. Secondary infertility is a condition in which a prior pregnancy, although not necessarily a live birth has occurred. 6.1 million people in the united states or roughly 10-15% of the individuals belonging to the reproductive age group are affected by infertility there were an estimated 48.5 million infertile couple worldwide from 1990 to 2010. There is only little change noted in the overall prevalence of infertility in most of the countries (1).The prevalence of female infertility has increased since 1990, but secondary infertility has decreased overall. Tuboperitonneal factors are responsible for about 32- 42 % of female infertility in India (2).The prevalence of pelvic disease , Genital tract tuberculosis , Chronic Infection etc. is quite common in our country so the incidence of Tubale factors in Infertile women is high. Rubin described the tubale Insufflation test in 1920 by using Corbondioxide (3).Various methods have been developed for Tubale patency evaluation . HSG –Hysterosalpingography and SSG – Sonosalpingography are widely used. Sonohysterosalpingography popular know as Sonosalpingography (SSG) is evolved(4).

(SSG) Sonosalpingography ia a letest Procedure , It was first used by DR.RICHMAN from the United States.Sonosalpingography utilizing saline as contrast media (non ionic –Iohexol) is a realible, Sonosalpingography simple and well tolereted procedure to assess tubale patency in an out patient setting(5) . The procedure can be performed without prophyletic antibiotics using a regular pediatric Foley’’ catheter instea of an expensive Hysterosalpingography catheter (6).

This study is to bring to focus the value of the female pelvic sonogram in assist tubal patency in order to overcome the radiation hazared associated with hysterosalpingogram reduce the cost of examination. Hysterosalpingography –office based procedure diagnosis of female infertility. Sonosalpingography has been suggested as the first line method to study of the tubal patency. The Sonosalpingography is a simple procedure which should be used in the preliminary assisment of the uterine cavity and the fallopian tube . it use will reduce the need for Hysterosalpingography (7).

## Material and Methods –

The research was conducted in the Department of Radiodiagnosis NIMS University Jaipur , Rajasthan in collaboration with Obstetrics and Gynaecology in Uttar Pradesh University of Medical Sciences, Saifai , Etawah , Uttar Pradesh between 10 May 2021 to 20 May 2022 .All patients with primary infertility who fit in the inclusion and Exclusion criteria were selected in the study .The patient's detail history was taken clinical examination was done and baseline investigation according to the infertility protocol including semen analysis of male partner, Haemoglobin, urine analysis ,blood, and blood sugar tests were obtained.

### Inclusion Criteria –

- ❖ All cases of infertility between 20 years to 40 years.
- ❖ Normal seminal and other parameters of the partner.
- ❖ Patient not suffering from others illness.

### Exclusion Criteria -

- ❖ Age less than 20 years and above 40 years .
- ❖ Patient having history of Tubal surgery .
- ❖ Pregnant patient
- ❖ Blood Pressure
- ❖ Hypersensitivity to Contrast media.
- ❖ Patient unfit for anesthesia.
- ❖ Cervical pathology.

Preparation of the Hysterosalpingography and Sonosalpingography for the patient , Bladder must be full, after informed consent ,Antispasmodic drug was given 30 minutes before the SSG test. Patient asked to void urine before the HSG procedure ,Injection Dexamethasone ,Injection Chlorpheniramine maleate was kept ready. Antispasmodic was also administered half an hour before the test.

To assess the tubal factors a prior written informed consent was taken from all patients and were posted for specialized test as Hysterosalpingography and Sonosalpingography finding of all the procedure were recorded.

Hysterosalpingography and Sonosalpingography both were done on 8<sup>th</sup> and 9<sup>th</sup> day of menstrual cycle after taking proper consent .patient not willing to participate in this study , with suspected history of genital Koch's with significantly abnormal semen analysis were excluded in this study. The procedure involves instillation of normal saline into the endometrial cavity during vaginal sonography and inspection of the tubes. The vagina and vulva was cleaned with antiseptic solution and speculum introduced into the vagina and mouth of cervix was held with

valsellum. A foley catheter no.of 08 size introduced the internal OS and balloon distended with 4ml of (NS) normal saline to prevent retrograde leakage of saline in the vagina. The speculum was removed and the transvaginal transducer of 7.5 MHz inserted in to the vagina . saline 25ml than injected slowly through the catheter under continuous Sonography control. the uterus scanned systematically in sagittal and coronal planes to delineate the entire endometrial cavity. Hysterosalpingography Examination was performed prior to between menstrual cycle days 5 to 10 to avoid potential pregnancy with lithotomy position after a balloon catheters was inserted in to the cervix . Contrast media (iodinated – Iohexol) was dissolved in 8-18cc of water and was injected in to the uterine cavity flow, flow in fallopian tube and collection in cul-de-sac were observed and recorded. Interruption of flow in tube formation of hydrosalpinx at some part are considered as patency of tube or tubes.

## Results

**Table No. 1:- Age group distribution (n=50)**

Age	Primary Infertility (n)	Secondary Infertility (n)
20-25	08	01
26-30	11	04
31-35	13	07
>36	02	04

Table no 1- Age wise distribution shows of the patient in which youngest one was 20 year and oldest was 36 year. Mean age of 30 year .in 71.5% of the patient reason for performing Hysterosalpingography and Sonosalpingography test for tubal patency was primary infertility and in 24.5 % it was secondary infertility.

**Table No:-2 Comparison of the HSG & SSG Test for all patient ( n=50)**

Nmae of Investication	Rt. side Tube Blockage	Lt. side Tube blockage	Bilateral patent tube	Bilateral tube blockage
Hysterosalpingogorphy	04	03	37(90%)	06
Sonosalpingogorphy	03	03	39 (94%)	05

**Table No.3:- Distribution of cases according to site of Tubal Blockage.**

Hysterosalpingography n=50	Sonosalpingographyn =50	Site of Obstruction
37	39	Patent Tubes
05	06	Fimbrial block
05	03	Mild sigment block
03	02	Cornual Block

Table No.2 and Table No. 3 :- Show the analysis of data obtain after performing both the test (HSG&SSG) in all patient n=50 by using Binomial proportion test. There is no significant difference between result of Hysterosalpingography and Sonosalpingography.

**Table No.4 : - Associated Pelvic pathology detected in this Study**

Pelvic Pathology	HSG	SSG
Endometrial Polyp	00	01
Hydrosalpinx	02	04
Fibroid Uterus	00	02
Tuboovarian Mass	00	03
Endometriosis	00	02

Table no. 4 : - Show that tubal pathologies like Tuboovarian Mass, Endometrial Polyp and Hydrosalpinx were better detected by Sonosalpingography.

**Table No.5 :-****Complication During Hysterosalpingography and Sonosalpingography**

Complication	HSG(n=50)	SSG(n=50)
Infection	01	00
Pelvic Pain	05	02
Allergic Reaction	02	00
Dye Intravasation	01	00
Bleeding	03	01
Total	12	03

**Table No. 5: -** Since HSG used Iodinated based contrast media ,the risk pf serious allergic reaction and Intra /extravasatiion reaction lies with it. Out of 50 patient in my study had severe allergic reactions requiring even ICU. More no of patient reported in minor complications like pelvic cramping pain , vaginal bleeding and infection during of after HSG than with SSG.thus SSG is more safe and comfortable to patient than HSG.

## DISCUSSION -

A present study was conducted in 50 infertility women .Most common technique used to diagnose tubal patency is Hysterosalpingography which is associated with following disadvantage-

1. Some contraindication like acute PID .
2. Insertion of Hysterosalpingography cannula is painful and sometimes traumatic also .
3. It can cause allergic manifestation to drugs used for it.

As development updatation and wide use of Ultrasonography , nowadays transvaginal ultrasonography has become popular for evaluating many Gynaecological pathology .Sonosalpingography a termed coined in 1993. Results and analysis of our study showed that Sonosalpingography is equally sensitive and specific in diagnosing tubal patency with no significant difference by using Binomial proportion test.We found certain advantages in techniques of Sonosalpingography-

1. No Anesthesia required.
2. No Allergic reaction .
3. SSG help in diagnosis of various uterine and tubal pathologies.
4. There are no radiation hazards.

Hence the study clearly show that Sonosalpingography can be used as baseline investigation in all infertile women. It is equelly efficient method as Hysterosalpingography with many advantages.

## CONCLUSION –

We concluded that Sonosalpingography is highly Sensitivity , specific and is less invasive .Fallopian tube evaluation is important in infertility cases. The results of this study concluded that Sonosalpingography showed bilateral tubal patency in 94 % cases and Hystrosalpingography showed bilateral tubal patency in 90% in cases. So I said that the SSG is better than HSG Examination . Hysterosalpingography is a Gold standard techniquein the evaluation of tubal patency and uterine status.Sonosalpingography is cost effective and radiation free procedure .The outcome of Sonosalpingography is almost similar to the values of Hysterosalpingography.The Sonosalpingography should be used initially to access tubal patency in case of infertility ,if any abnormality is detected on Sonosalpingography .

## ACKNOWLEDGMENTS –

I would like to thank the University to allow them to carry out this study and to the women patients who participated in this study.

I would like to express our special gratitude to our guide Dr. Bijendra Kumar Meena , Asst.professor Department of Rdiology in NIMS University, Jaipur ,Rajasthan and their Co-guide Dr.Paritosh Shukla ,senior consultant Department of Radiology in District Hospital ,Etawah and Co-guide Dr. Vaibhav Kanti Asst.Professor Department of Obstetrics and Gynecology, UPUMS,Saifai,Etawah U.P.Who have helped them at every step in this study.

*Funding – No funding sources.*

*Conflict of interest – None declared.*

*Ethical approval – The study was approved by the NIMS U niversity ,Jaipur,Rajasthan Ethics Committee.*

## REFERENCES –

1. Inki P., Palo P, Anttila L.Vaginal Sonosalpingography in the evaluation of tubal patency; Acta Obstet Gynecol Scand. 1998 Nov; 77(10):978-82.
2. Kdous M. Hysterosalpingography in the assessment of tubal patency; Tunis Med. 2006 Aug; 84(8): 520-5. French.
3. A Strandell et al. The Assessment of endometrial pathology and tubal patency: a comparison between the use of USG and X-Ray HSG for the investigation of infertility patients; Ultrasound Obstet Gynecol. 1999 sep; 14(3): 200-4.
4. Luciano D. et al. Contrast Ultrasonography for tubal patency; J Minim Invasive Gynecol. 2014; 21(6):994-8.
5. Monte G. et al. Hysterosalpingo contrast sonography: let's make the point; Arch Gynecol Obstet. 2015 Jan; 291(1); 19-30.
6. J Bacevac et al. Diagnosis value of HSG in examination of fallopian tube in infertile women; Srp Arh Celok Lek. Oct 2001; 129(9-10): 243-6.
7. Gonca Yetkin et al The Relationship between HSG Proven Tubal Occlusion, Stimulated Intrauterine Insemination and Pregnancy Rate : Balkan Med J. 2017 Jan; 34(1): 60-63
8. David sutton ,text book of radiology & Imaging 6<sup>th</sup> Ed.churchill Livingstone ,vol II 1998:45,1247-48.
9. Allahabadiya GN.Fallopian tubes and ultrasound .The Sion experience .Fertile Steril 1992:58: 901-2 .
10. Richman TS & et al Fallopian Tubal patency assessed by ultrasound fluid injection Radiology 1984;152;507-10.



11. Jonathan S. Berek. Berek& Novak's Gynaecology. 15<sup>th</sup> edn. Gopsons papers ltd: Wolters Kluwer India pvt ltd; 2012.
12. Raussman Robabeh M, Roozbeh T. comparision of hysterosalpingography and laparoscopy in infertile Iranian women with tubal factors. Ginekol Pol.2012 nov; 83(11): 841-3.
13. Diechert U. Evaluation of tubal patency by hysterosalpingocontrast sonography(HYCOSY). In: Kupesie S. Ziegler D. (eds). Ultrasound and infertility.New York the Parthenon publishing group. 2000:263 and 284.
14. Omigbodun AO, Fatukasi JI, AbuduT. Ultrasonogrphy as an adjunct to hydrotubation in the management of female infertility. CentAfr J Med.1992 Aug;38(8):345-50.
15. L. Mastroianni et al : British Journal of obstetrics and Gynaecology,1982 Vol 98:619-623.

