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RESEARCH ARTICLE

“A STUDY ON THE ROLE OF CONTRAST HYSTEROSALPINGOGRAPHY AS A TEST FOR TUBAL PATENCY IN THE ASSESSMENT OF INFERTILITY”

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Abstract

Aim and Objectives: To assess the value of Hysterosalpingography in evaluating the uterine abnormalities and tubal patency in infertile patients and to compare its results with established methods like hysterosalpingography 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 was performed in all cases.

Result: The results of 50 cases of Infertility for Tubal patency by HSG 36 cases were of primary infertility and 14 cases of secondary infertility. Mean duration of primary and secondary infertility were 5.79+3.19 and 5.97+3.36 years respectively. Maximum number of cases had duration of infertility between 1 to 4 years [45.2%]. The average age in subjects of primary infertility were 26.25+3.85 years and in subjects of secondary infertility were 29.73+4.87 years. Up to 70% of cases had a high school or less than high school education and 92% of women were not employed. 29 patients had bilateral patency, in 14 patients had bilateral block, in 7 patients had unilateral block (either proximal or distal). Findings in sonosalpingography, bilateral patency in 34 cases, findings at laparoscopy, bilateral patency number of cases 32 (64%), bilateral block no. of cases 12 (24%) and unilateral block no. of cases 6 (12%). In the group of patients with Bilateral Patency there were 2 false Negatives for HSG i.e. 22%, HSG and laparoscopy are in agreement with 94%. There were 2 false positives for TVS i.e. 22%, between TVS and laparoscopy were in agreement with 94%. In the group of patients with bilateral block there was 100% agreement between TVS and Laparoscopy. There was 2 false positive for bilateral block, agreement between HSG and Laparoscopy being only 94%. In the group of patients with unilateral block there were 2 false negatives for TVS rate 22% agreement between TVS and

Laparoscopy being 67% for HSG false positive rate 11% , agreement between HSG and Laparoscopy being 85.5%.

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 .

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Introduction:-

Contrast media is a dye basically it is used for enhancing the pathology. Hysterosalpingography[HSG] is a special radiological procedure that is performed to check the fallopian tube pathology we can say to other words it is basically performed to check infertility in the female. After injecting a radio-opaque contrast agent into the cervical canal, a procedure known as Hysterosalpingography (HSG) evaluates the uterine chamber and fallopian tubes radiographically. The first evaluation of fallopian tube abnormalities linked to infertility is frequently conducted using this method [1]. Injecting a Bismuth solution into the uterus in 1910 was Rindfleisch's first attempt as doing HSG[2]. Heuser demonstrated the uterine cavity in 1925 using the oil-soluble material Lipiodol[3] . A tubal patency test can be conducted if necessary as part of the reproductive workup, which also includes determining the risk for tubal disease. To rule out tubal disease, Hysterosalpingography (HSG) has historically been the test of choice for tubal patency[4,5]. Despite the fact that HSG was first developed as a diagnostic test , tubal flusings therapeutic benefits, particularly when combined with oil-based contrast, have received substantial research[6,7]. Oil-soluble contrast media thereafter took over as the preferred contrast medium for the following 50 years . However as a result of side effects such as pulmonary oil embolism, acute tubal obstruction, reactivation of tubal infection , and granuloma development , it lost appeal. The development of water –soluble contrast media helped to lessen these issues[8]. Because it was linked to the superior radiographic quality and fewer severe side effects, water soluble contrast media became popular for HSG in the 1960s and 1970s . The first water soluble contrast material was ionic and hyperosmolar [less 1000 osmolar per kg], which caused the majority of the negative effects[9] .

Aims & Objectives:-

1. To comparative the result of contrast Media with that of Hysteroslpingography in the evaluation of tubal patency in infertility patients.
2. To evaluate patency by Contrast media Hysterosalpinography.

Materials And Methods:-

Hysterosalpingography was performed on 50 patients of infertility on an outpatient basis .

The research was conducted in the Department of RADIOLOGY in NIMS University Jaipur , Rajasthan in collaboration with Obstetrics and Gynaecology in Uttar Pradesh University of Medical Sciences,Saifai ,Etawah ,Uttar Pradesh between 15 Octobers 2021 to 20 September 2022 .All patients with primary and secondary 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 .After obtaining University Ethical Committee clearance 37 cases of primary Infertility and Secondary Infertility who fit in to the inclusion criteria were selected in this study.

Inclusion Criteria:-

Cases of unknown tubal function with complaints of infertility and willing to participate were required for the study. History of the both wife and Husband . Clinical examination .**Ovulation factor** : by Basal Body Temperature (BBT), Endometrial biopsy and Ultrasound. **Cervical Factor** :by quantity and quality of cervical mucus and post coital test .**Hormonal Factor** :**Male Factor** : Semen analysis

Exclusion Criteria:

1. Active Pelvic Infection or PID
2. Refused Participation
3. Patients with suspected pregnancy
4. Age less than 20 years and above 40 years .

5. Patient having history of Tubule surgery .
6. Pregnant patient
7. Blood Presser
8. Hypersensitivity to Contrast media.
9. Patient unfit for anaesthesia.
10. Cervical pathology.

Procedure:-

A patient detailed medical history was taken and general Gynaecological procedure was done in patients followed by Primary Infertility work up of the couple which include Husband semen analysis .The Pelvic ultrasound ,Harmon's analysis for Thyroid and prolactin. This is followed by Tubal patency by Contrast media Hysterosalpingography on day 07 to 09 of Menstrual cycle .Hysterosalpingography was performed in the Department of Radiology usually 1 day after HSG or in the subsequent or in the subsequent Menstrual cycle/ standard procedure.

Procedure Of Contrast Media Hysterosalpingography :

Under all aseptic and antiseptic precautions, Speculum was introduced in to the vagina and cervix visualized after cleaning the perineum and vagina with providing Iodine .A paediatric Foleys Catheter of size 8F was introduced in to the Uterine cavity beyond the internal Contrast Median (OS) and bulb inflated . The procedure was performed between days 06 and 12 of the Menstrual cycle at least 48 h after menses had ceased the women were advised to avoid unprotected intercourse in period .Hysterosalpingography (HSG) was performed using a sterile technique. The Infertility women's patients were placed in the LITHOTOMY Position , and a vaginal speculum instrument was inserted .the Balloon Catheter was inflated with in the endocervical canal and lower uterine cavity. Approximately 10-15ml of a water soluble Contrast media was injected manually through the cannula. HSG is a Fluoroscopic procedure was performed during the injection . Hysterosalpingography Examination 3 X-Ray film were taken Images of early and maximal pacification of the Uterine Cavity , Fallopian Tubes and Peritoneal Contrast Spillage were obtained. The patients were routinely premeditated prior to the procedure with oral mefenamic acid 500mg 3 times / day until 48 h after the procedure . the results of Hysterosalpingography were evaluated by Radiologists.

Discussion:-

Diagnostic imaging plays an important role in the assessment of women with infertility . Although no consensus protocol for work up of these patients exists, the majority of infertility patients undergo a baseline HSG. HSG is used for evaluating ovaries, fallopian tubes , and the adnexa and is a favoured imaging modality in the infertility population because it is readily available , relatively low cost , and does not use ionizing radiation . HSG is the test of choice for diagnosing polycystic ovary syndrome , and is helpful for identifying endometriosis and the sequel of PID .In addition, Hysterosalpingography is invaluable for monitoring ovarian folliculogenesis during treatment with ART . In contrast media , HSG provides information about tubal patency uterine cavity abnormalities such as anomalies, polyps , synechiae, and adhesions, any of which could interfere with embryo implantation . However , HSG offers limited evaluation of the cervix and myometrium and does carry the small risks of contrast reaction and of ionizing radiation exposure . Besides HSG , supplemental evaluation with SIS and hysterosalpingo –contrast sonography [HyCoSy] is sometimes performed . these imaging procedures are becoming more popular because of their ability to combine adnexal evaluation with HSG-like assessment of the Laparoscopy, sonosalpingography and hysterosalpingography play complementary roles in the investigation of the infertile female and are not competitive investigative procedures.

Ethical Approval :

Approval for the study “A Comparative Study of Tubal Patency Using Hysterosalpingography and Sonosalpingography” was obtained from the Ethical Committee of the NIMS University Jaipur Rajasthan. Written informed consent was obtained from the patients before enrolment for the study .The basic Ethical principal of autonomy ,non –malfeasance ,beneficence ,justice, veracity and scientific validity was strictly adhered to throughout the study.

Results:-

The results of 50 cases of infertility for Tubal patency by HSG, . 36 cases were of primary infertility and 14 cases of secondary infertility. Mean duration of primary and secondary infertility were 5.79=3.19 and 5.97=3.36 years

respectively. Maximum number of cases had duration of infertility between 1 to 4 years (45.2%). The average age in subjects of primary infertility were 26.25 + 3.85 years and in subjects of secondary infertility were 29.73+4.87 years . Up to 70% of cases had a high school or less than high school education and 92% of women were not employed. In 50 patients studied 29 patients had bilateral patency, 14 patients had bilateral block. 7 patients had unilateral Block (either proximal or distal) . There was bilateral spillage and fluid in POD showing Bilateral Patency in 34 cases. There was distension of uterus without spillage and no collection in the POD Showing Bilateral Tubal block in 12 cases . There was collection in POD and unilateral spillage in 4 cases .

Table No. 1:- Age group distribution.

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

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:- Examination of Patients :

Per Speculum Exam.	No. of Causes	%
Vulvitis	Nil	Nil
Vaginitis	2	4
Cervicitis	10	20
Pinhole Os	2	4
T.O.Mass	2	4

Table No.3:- Male factor associated and also endometrial biopsy.

Semen Analysis	No of cases	%
Normal Semen Analysis	36	77
Oligospermia	10	21
Azoospermia	4	2

Table No. 4:- Finding at Hysterosalpingography.

Findings	No.of cases	%
Bilateral Patency	29	58
Bilateral Block	14	28
Unilateral	7	14

Conclusion:-

Hysterosalpingography is a valuable tool in the evaluation in the uterus and fallopian tubes. Radiologists and Gynaecologist should become familiar with HSG technique , the interpretation of HSG images , and possible complications of this procedure.

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Conflict of interest:

None declared.

Ethical approval:

The study was approved by the NIMS University, Jaipur, Rajasthan Ethical Committee.

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