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RESEARCH ARTICLE
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LAPAROSCOPY VERSUS HYSTEROSALPINGOGRAPHY FOR FALLOPIAN TUBES IN EVALUATION OF FEMALE INFERTILITY

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Abstract

Introduction: Laparoscopy and hysterosalpingography are the most requested examinations in developing countries for tubal factor exploration for female infertility.

Objective: To compare the results of hysperosalpingography and laparoscopy in patients assessed for infertility.

Patients & Methods: It was an experimental study carried out at Obstetrics and Gynecology department Gajju Khan Medical College Swabi from Jan 2023 to Dec 2023. All the patients were recruited through convenience sampling and assigned into two groups randomly. Total 80 patients were included in the study and equally divided into two groups. Group I had 40 patients who undergone hysterosalpingogram and group II had 40 patients who undergone diagnostic laparoscopy. Both these investigations were carried out to look for tubal patency in patients with infertility. Common parameters that includes dye spillage, uterine shape, peritoneal adhesions and hydrosalphinx were looked for.

Results

A total of 80 patients were enrolled in the study. 40 patients were in group I that includes patients who undergone hysterosalpingogram and group II includes patients who undergone diagnostic laparoscopy.Mean age of the patients was 28.51±5.58 years. 63.75% (n=51) patients had primary infertility and 36.25% (n=29) patients had secondary infertility. . In HSG group, bilateral spillage was observed in 67.5%(n=27) and 22.5%(n=09) has unilateral intraperitoneal dye spillage while 10%(n=04) has no spillage .In Laparoscopy group,27.5%(n=11) and 17.5%(n=07)has bilateral and unilateral spillage respectively while 55%(n=2) has no spillage. Regular uterine shape was observed in 70% and 72.5% cases in HSG and Laproscopy group respectively. Peritoneal adhesions were only observed in laparoscopy group which was 40% bilateral and 15% unilateral.

Conclusion

The results of HSG and those of laparoscopy are complementary in tubal infertility evaluation. HSG seems to be reliable when the tubes are patent while laparoscopy helps to reveal false tubal obstructions observed with HSG, and also helps in the diagnosis of pelvic adhesive bands and endometriosis.

Keywords: Hysterosalpingography, Laparoscopy, infertility, Pelvic pathologies

Introduction

Infertility is a one of the most common disorders confronting gynecologists and is defined as inability to conceive despite having regular unprotected intercourse during one year or the inability to carry a pregnancy to full term is considered as infertility[1, 2].Generally, the prevalence of infertility is about 10-15% among young couples [3]. The prevalence of infertility has increased in the last decade or so, because there is an increase in sexually transmitted diseases resulting in pelvic inflammatory disease and increased tendency to delay child bearing. Tubal pathology is one of the main cause of infertility and accounts for 25-35% of the cases of infertility[1] . Evaluation of an infertile couple is a complex process and involves many steps which are anatomical and functional. Evaluating the female involves morphological and biological complementary examinations. Laparoscopy and hysterosalpingography are two procedures used in the fallopian tubes morphological exploration[4]. HSG is widely used as first line approach to assess the patency of fallopian tubes and uterine anomalies in the routine infertility workup.[5] However, despite tubal patency being demonstrated by HSG, laparoscopy is necessary step to rule out peritubal adhesions and endometriosis[6].Both HSG and laparoscopy are invasive techniques, however,HSG is much less invasive than laparoscopy and its relatively inexpensive, simple and rapid diagnostic test ,so it continues to be the first line approach in assessing the tubal patency. Royal College of Obstetricians and Gynecologists recommends laparoscopy and dye insufflations for tubal patency as investigation of choice for infertility[7]. The aim of this study is
to assess the diagnostic values of HSG with LS for patency of the fallopian tube and peritoneal disease in infertile women.

Methodology

It was an experimental study carried out at Obstetrics and Gynecology department Gajju Khan Medical College Swabi from Jan 2023 to Dec 2023. All the patients were recruited through convenience sampling and assigned into two groups randomly. Total 80 patients were included in the study and equally divided into two groups. Group I had 40 patients who undergone hysterosalphingogram and group II had 40 patients who undergone diagnostic laparoscopy.
Technique:

Both these investigations were carried out to look for tubal patency in patients with infertility. Common parameters that includes dye spillage, uterine shape, peritoneal adhesions and hydrosalphinx were looked for.

Results

A total of 80 patients were enrolled in the study. 40 patients were in group I that includes patients who undergone hysterosalphingogram and group II includes patients who undergone diagnostic laparoscopy.

Mean age of the patients was 28.51±5.58 years. 63.75% (n=51) patients had primary infertility and 36.25% (n=29) patients had secondary infertility. Frequency and percentages for dye spillage is recorded in table 1. Frequency and percentages for uterine shape in shown in table 2. Frequency and percentages for peritoneal adhesions (only seen by laparoscopy in group II patients) and hydrosalphinx is shown in table 3 and 4 respectively. Chi square test was applied that shown significant correlation between both the procedures.

Table 1

INTRAPERITONEAL DYE SPILLAGE	BILATERAL SPILLAGE	UNILATERAL SPILLAGE	NO SPILLAGE
HSG (Group I)	67.5% (n=27)	22.5% (n=09)	10% (n=04)
Laparoscopy (Group II)	27.5% (n=11)	17.5% (n=07)	55% (n=22)
P-value	<0.001		

Table 2

UTERINE SHAPE	REGULAR SHAPE	IRREGULAR SHAPE
HSG (Group I)	70% (n=28)	30% (n=12)
Laparoscopy (Group II)	72.5% (n=29)	27.5% (n=11)
P-value	<0.001	

Table 3

PERITONEAL ADHESIONS	BILATERAL ADHESIONS	UNILATERAL ADHESIONS	NO ADHESIONS
Laparoscopy (Group II)	40% (n=16)	15% (n=06)	45% (n=18)

Table 4

HYDROSALPHINX	PRESENT	ABSENT
HSG (Group I)	47.5% (n=19)	52.5% (n=21)
Laparoscopy (Group II)	42.5% (n=17)	57.5% (n=23)
P-value	<0.001	

Discussion:

Tubal exploration for assessment of infertility is important. Hysterosalpingography is most often performed first especially in developing countries for evaluation of uterine anatomy and tubal patency. Laparoscopy is both diagnostic and therapeutic and helps to directly visualize the tubes, the uterus and the pelvis and is considered as the "gold standard" before pelvic exploration in cases of infertility by many authors. Laparoscopy is considered to be the reference exam in tubal evaluation in cases of infertility[4,15.]

Although LS is superior to HSG in detection of peritubal adhesions and other pelvic pathologies, use of LS is limited due to complications, costs, and stress imposed to patients. HSG should be used as a primary technique for the diagnosis of intrauterine pathologies; however, the use of this technique is not adequate for the diagnosis of all intrauterine pathologies [16].

In our study, accuracy of HSG and LS was compared in a study by Tvarijonaviciene et al., which showed the diagnostic value of HSG was low in general tubal pathology and peritubal adhesion detection and high in tubal occlusion. In our study, peritubal adhesion and tubal pathology detection were low in HSG group which is in agreement with the results of Tvarijonaviciene while tubal occlusion detection was high in laparoscopy group which was in contrast in study by Tvarijonaviciene et al[17] .

One study by Mol et al. showed that LS is better than HSG in the diagnosis of intra-abdominal injuries, HSG had a better performance in detection of intrauterine pathologies which in comparison with our study[4].

The superiority of LS in detection of ovarian, peritubal, and intra-abdominal pathologies was demonstrated by Sakar et al[16].

Waheed et al. showed a significant difference between HSG and LS techniques in diagnostic accuracy of patency of the fallopian tubes; however, there was no difference in diagnostic accuracy of hydrosalpinges between these two techniques [18], which was confirmed by our results.

In a study by Goynumer et al showed HSG is not appropriate for definitive diagnosis of tubal obstruction, endometriosis pathologies, peritubal pathologies, and other peritoneal lesions [19].

Based on our study, the diagnostic accuracy of both HSG and LS is relatively equal for detection of hydrosalpinges and intrauterine abnormalities. Since the HSG is less invasive and expensive in comparison with LS, it can be introduced as a better technique for diagnosis of these problems.

Generally, HSG had a median sensitivity and high specificity in diagnosis of fallopian tube occlusion, which is known as a major cause of female infertility [20]. LS is a costly and invasive procedure, with high risk of organ perforation and vascular injuries. Nevertheless, it is an efficient and sensitive technique for identifying some causes of infertility such as endometriosis and pelvic adhesions [18], which are not detectable by other diagnostic techniques, as was observed in our study.

Although HSG is a safe, cost-effective, and less invasive technique for the diagnosis of endometrial and tubal pathology, LS is a more appropriate and reliable technique in the diagnosis of

endometriosis, pelvic adhesions, and other intrauterine pathologies. Therefore, these two techniques cannot be used interchangeably, but can be used as complements.

Conclusion

Our study revealed that HSG is a reliable technique for the detection of tubal occlusion, hydrosalpinges, and uterine anomalies. However, LS is recommended to rule out adhesion and confirm tubal patency.

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