CAUSES OF INFERTILITY WITH REFERENCE TO LAPAROSCOPIC FINDINGS

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ABSTRACT

BACKGROUND

Infertility is best defined as the inability to conceive after one year of unprotected regular intercourse. An accurate diagnosis is the key to successful treatment. Laparoscopy is considered the clinical reference test for diagnosing tubal pathology. Laparoscopy allows visualization of periadnexal adhesions and the presence of endometriosis, which cannot be done with HSG. It provides information regarding tubal and ovarian status, uterine normality and standard means of diagnosing various pelvic pathology.

OBJECTIVES

To identify various causes of infertility based on diagnostic laparoscopy.

RESULTS

The incidence of normal sized uterus on ultrasonography is 49.29%, small sized uterus is 10.62% and enlarged uterus is 3.86%. The incidence of normal sized uterus in laparoscopy is 79.70% and the incidence of small sized uterus is 12.07% and enlarged uterus is 6.27%. The incidence of patent tubes on hysterosalpingography is 52.3% and blocked tube is 29.36%, while the incidence of patent tubes on laparoscopy is 75.75% and that of blocked tubes is 23.26%. The incidence of normal sized ovaries on laparoscopy is 47.33%, streak ovaries is 1.94%. The incidence of polycystic ovaries is 4.34% and that of ovarian cyst is 2.9%. In 2 (0.97%) subjects, both ovaries were not visualized and in 2 (0.97%), only one ovary was visualized.

CONCLUSION

Laparoscopy is an important adjuvant in the investigation of infertility. It is better than ultrasonography and hysterosalpingography in management of infertility.

KEYWORDS

Laparoscopy, Ultrasonography, Hysterosalpingography, Infertility.

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INTRODUCTION

Infertility is best defined as the inability to conceive after one year of unprotected regular intercourse. Total infertility is divided into primary and secondary infertility. Primary infertility is defined as the inability to conceive within one year among women 15 to 49 years old with contact with sexually active partners and no contraceptive use. Secondary infertility refers to the inability to conceive following a previous pregnancy.[1]

Fertility varies across regions of the world and is estimated to affect 8 to 12 percent of couples worldwide.[2] For many couples, infertility and its treatment cause a serious strain on their interpersonal relationship and cause disturbed relationships with other people.[3] The common factors responsible for infertility in females are anovulatory disorder, tubal factors, endometriosis, uterine and cervical factors. One-third of infertility cases are due to anatomical abnormalities of the female reproductive tract such as tubal blockage.[4,5]

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An accurate diagnosis is the key to successful treatment. The workup of the female partner begins with history and examination. It is more important to perform the relevant investigation in a logical order at the correct time than to perform a series of tests as a routine, simple, least invasive and most predictive investigations should be performed first. A number of diagnostic tests are being used in clinical practice to assess tubal patency as part of the work-up for sub-fertility.[6]

Conventional way to assess the uterine cavity, tubal structure and tubal patency was Hysterosalpingography, but it has now been largely superseded by laparoscopy and hysteroscopy. Laparoscopy is considered the clinical reference test for diagnosing tubal pathology.[7] Laparoscopy allows visualization of periadnexal adhesions and the presence of endometriosis, which cannot be done with HSG.[8] It provides information regarding tubal and ovarian status, uterine normality and standard means of diagnosing various pelvic pathology, e.g. pelvic inflammatory disease, endometriosis, pelvic congestion and tuberculosis. Untreated pelvic inflammatory disease, post-abortal, postpartum infection and tuberculosis are common factors of infertility in developing countries.

Diagnostic laparoscopy is generally not a part of initial infertility evaluation; however, number of reports have shown that it is an effective procedure for evaluation of long-term infertility.

MATERIALS AND METHODS

A total of 207 patients were studied from March 2013 to June 2015 at Shri V. N. Government Medical College and Hospital, Yavatmal, Maharashtra. Out of 207 patients, 202 patients with primary/secondary infertility and 5 patients with primary amenorrhea were selected for study.

Study subjects were screened and evaluated clinically with detailed history. All the investigations of both male and female partners were carried out. Before doing laparoscopy, patients were informed of the diagnostic nature of the test and the potential risks involved and consent obtained. Laparoscopy was done during pre-menstrual phase of the cycle. Patients were admitted a day before laparoscopy and after thorough evaluation, preparation and fitness patients were posted for diagnostic laparoscopy.

Standard basic laparoscopic principles were followed during the procedure. Patient in lithotomy position. Per-vaginal and per-speculum examination done and anterior lip of cervix was caught with Vulsellum and Manipulator was inserted in cervical canal. Umbilicus was used for camera port and assistant manipulates the uterus per-vaginally with manipulator. Uterus, ovaries, tubes and cul-de-sac were inspected and findings noted. Next chromopertubation test was done with 10-15 mL of 1% aqueous methylene blue via the Leech-Wilkinson cannula was inserted and findings noted.

The patient was discharged next day after counselling about the further plan of treatment depending upon the whole investigative workup.

OBSERVATIONS

Total 207 patients were studied. Mean age of the population studied was 26.71 years (Range 19-39 years). Maximum patients (41.54%) were in age group 26-30 years; 81.16% patients had primary infertility, 16.43% patients had secondary infertility and 2.41% had primary amenorrhea. Maximum patients had 3 to 5 years of infertility (Mean 5.21 years for primary infertility, 4.57 years for secondary infertility) at presentation. The incidence of study subjects having one abortion is 2.47%, 2 abortions is 6.43% and those having 3 or more abortions is 0.99%.

Per-Vaginal/Per-Rectal Findings	No. of Subjects	Percent
1. Uterus		
No. uterus felt	4	1.93
Small sized uterus	23	11.21
Normal sized uterus	172	83.09
Enlarged uterus	08	03.87
Total	207	100
2. Adnexa		
Adnexa not palpable	112	54.10
Adnexa palpable	95	45.90
Total	**207**	**100**

Table 1: Gynaecological Examination of Patient

Approximately 83.09% patients had normal uterus, while 16.91% patients had abnormal uterus on examination; 45.90% patients had palpable finding in adnexa.

USG	No. of Subjects	Percent
Small sized uterus with small sized ovaries	11	5.31
Small sized uterus with normal sized ovaries	07	3.38
Small sized uterus with bigger sized ovaries	04	1.93
Normal sized uterus with small sized ovaries	38	18.36
Normal sized uterus with normal sized ovaries	102	49.29
Normal sized uterus with bigger sized ovaries	37	17.87
Enlarged uterus with normal sized ovaries	07	3.38
Enlarged uterus with bigger sized ovaries	01	0.48
Total	**207**	**100**

Table 2: Distribution of Study Subjects as per Ultrasonographic Findings

Uterus	No. of Subjects	Percent
Small sized uterus	25	12.07
Normal sized uterus	165	79.70
Large sized uterus	13	06.27
Mayer-Rokitansky-Kuster-Hauser syndrome	04	1.96
Total	**207**	**100**

Table 3: Distribution of Patients According to Laparoscopic Findings of Uterus

79.70% patients had normal uterus on laparoscopy, while 20.30% patients had abnormal uterine findings on laparoscopy.

The incidence of normal sized uterus on ultrasonography is 49.29%, small sized uterus is 10.62% and enlarged uterus is 3.86%. The incidence of normal sized uterus in laparoscopy is 79.70% and the incidence of small sized uterus is 12.07% and enlarged uterus is 6.27%.

Findings of Ovary	No. of Subjects	Percent
Streak with e/o ovulation	2	0.97
Streak without e/o ovulation	2	0.97
Normal size with e/o ovulation	98	47.33
Normal size without e/o ovulation	86	41.55
Polycystic ovary with e/o ovulation	1	0.48
Polycystic ovary without e/o ovulation	8	3.86
Ovarian cyst	6	2.9
Only one ovary visualised	2	0.97
Both not visualised	2	0.97
Total	**207**	**100**

Table 4: Distribution of Patients According to Ovarian Findings on Laparoscopy

The incidence of normal sized ovaries on laparoscopy is 47.33%, streak ovaries is 1.94%. The incidence of polycystic

ovaries is 4.34% and that of ovarian cyst is 2.9%. In 2 (0.97%) subjects both ovaries were not visualized and in 2 (0.97%) only one ovary was visualized.

Findings of Fallopian Tube	No. of Subjects	Percent
Small hydrosalpinx	26	12.56
Huge hydrosalpinx	9	4.34
Beaded tubes	24	11.59
Total	**59**	**28.49**

Table 5: Distribution of Patients According to Fallopian Tube Abnormalities on Laparoscopy

In present study 35 (16.90%) subjects had hydrosalpinx, while 24 (11.59%) subjects had beaded tubes; 10 (4.83%) subjects had tubercles over pelvic organs, i.e. uterus, tubes and ovaries.

Findings of HSG	No. of Subjects	Percent
Tubes patent	66	52.38
Tubes blocked	37	29.36
Unilateral hydrosalpinx	10	07.94
Bilateral hydrosalpinx	05	03.97
Beaded tubes	03	02.38
Tubes blocked with unilateral hydrosalpinx	02	01.59
Tubes blocked with bilateral hydrosalpinx	02	01.59
Tubes with beaded appearance	01	00.79
Total	**126**	**100**

Table 6: Hysterosalpingographic (HSG) Findings

In the present study HSG was done in 126 (62.38%) subjects, out of them 66 (52.38%) showed patent tubes, while 37 (29.36%) showed blocked tubes. HSG was not done in 76 (37.62%) subjects.

Results		No. of Subjects		Percent
Patent tube	153			75.75
Blocked tube		Unilateral	Bilateral	23.26
	Cornual block	4	5	
	Isthumal block	9	14	
	Fimbrial block	4	11	
	Total	17	30	
Not possible	2			0.99
Total	**207**			**100**

Table 7: Distribution of Patients According to Chromopertubation Findings

In 2 (0.99%) subjects, chromopertubation was not possible due to one subject with vaginal atresia and one had pelvic adhesions.

The incidence of patent tubes on hysterosalpingography is 52.3% and blocked tube is 29.36%, while the incidence of patent tubes on laparoscopy is 75.75% and that of blocked tubes is 23.26%.

Pathology	No. of Subjects	Percent
1. Structural adhesions		
Tubal	29	14
Ovarian	6	2.90
Both tubal and ovarian	27	13.04
Total	**62**	**29.94**
2. Endometriosis		
Mild	18	8.70
Moderate-to-severe	7	3.38
Total	**25**	**12.08**

Table 8: Distribution of Patients According to Various Pathologies on Laparoscopy

In present study, 29 (14%) had tubal adhesions while 6 (2.9%) had ovarian adhesions and 27 (13.04%) subjects had both tubal and ovarian adhesions. In 18 (8.7%) subjects, there was mild endometriosis and in 7 (3.38%) subjects there was moderate-to-severe endometriosis; 77 subjects had free fluid in Pouch of Douglas/Abdomen.

CONCLUSION

Diagnostic laparoscopy and hysteroscopy is a better modality for diagnosing uterine, tubal and ovarian causes of infertility compared to hysterosalpingography and ultrasonography. Most of the patients had normal ultrasonographic, hysterosalpingographic and laparoscopic findings. Out of the rest, structural adhesions were the most common cause of infertility among women in reproductive group.

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