

Study of Causes and Outcome of Primary and Secondary Infertility at Tertiary Care Centre

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Abstract

Infertility, one of the most common disorders confronting gynecologists, has multifactorial etiology. Infertility is a public health problem during the reproductive age, affecting about 10-15% of couples attempting to achieve pregnancy in worldwide. Infertility is defined as a condition of the reproductive system in which there is a failure to achieve clinical pregnancy after 12 months of regular unprotected sexual intercourse. Study was conducted and the various causes diagnosed in the eligible couples with history of infertility based on clinical examination, Investigations and procedures like hysteroscopy and diagnostic laparoscopy, second aim is to determine the outcome of these studies after intervention carried out in infertile couples. Study was performed in tertiary care centre over a period of 1 year from June 2018 to July 2019, infertile couple with primary and secondary infertility aged between 20 and 45 years were included in the study. In present study 40 infertile patients were evaluated. On detail investigation it was found that causes of infertility were PCOD, multiple adhesions, Fallopian tube adhesions, TO mass, hydrosalpinx, uterine anomaly, Fibroid, blocked fallopian tube. Patients were given treatment like myomectomy, PCO drilling, antibiotics, adhesiolysis septal resection, AKT, ovulation induction depending upon cause of infertility. 10 patients conceived, 10 patients didn't conceive after taking treatment. 5 patients left the study in between and 15 patients didn't come for followup. Detail evaluation of infertile patient should be done to diagnose cause of infertility. There are many common causes of infertility in females which should be evaluated and given treatment. Patient should be explained significance of follow up to have good outcome of infertility treatment.

Keywords: Infertility, HSG, DHL, woman.

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INTRODUCTION

Infertility is a public health problem during the reproductive age, affecting about 10-15% of couples attempting to achieve pregnancy in worldwide [1]. Infertility is defined by the failure to achieve a natural pregnancy after 12 months or more of regular unprotected sexual intercourse [2]. For many couples, the inability to bear children is a shocking tragedy leading to serious physical, social, psychological and sexual dysfunction in their lives [3]. According to World Health Organization (WHO), the term primary infertility is used when a woman has never conceived and secondary infertility is the incapability to conceive in a couple who have had at least one successful conception in the past [4]. Infertility can be attributed to

anomalies associated with either male or female reproductive systems or with both partners. Several factors can disturb the process of fertility at any step. For example, female infertility may be due to one or more reasons such as, polycystic ovary syndrome [5], hormonal disorders [6], premature ovarian failure [7], genital infections [8], endometriosis [9], fallopian tube obstruction [10], congenital uterine anomalies [11], uterine synechiae [12], or other medical complications (diabetes and thyroid disorders). Nevertheless, male infertility is due to hormonal imbalances, and sperm abnormalities. Other main causes of infertility could be age of a couple. The most common appreciated reproductive health problems in developing countries are high rate of infertility and childlessness. Child

bearing and raising is an important event in every couples life and are strongly associated with ultimate goal of completeness and family integration. Infertility is treated as medical condition with with psycho social consequences rather than socially constructed reality. Failure to procreate brings dismay and frustration to the couples and is a cause for mental stress and also financial burden required for the modalities to be seen for treatment of infertility. It's a global health issue with multidimensional problem with social, economic and cultural implications. Sub-fertility is defined as any form of reduced fertility with prolonged time of unwanted non conception. World health Organization Adverse Reaction Terminology (WHO-ART) defines infertility as "A disease of reproductive system defined by failure to achieve a clinical pregnancy after 12 months or more of regular unprotected sexual intercourse". Infertility can be primary and secondary. There are many causes of infertility among which tuboperitoneal pathology is responsible for infertility in 30 to 40% of the cases, whereas uterine pathology accounts for 15% of cases. Other factors include ovulatory dysfunction (20–40%). In 20 to 40% cases, infertility is due to male factor. The prevalence of infertility is about 10%–15% of reproductive age couples. According to the WHO; the overall prevalence of primary infertility in India is between 3.9 and 16.8% the prevalence of infertility is about 10%–15% of reproductive age couples.

The other factors that are responsible for infertility are high level of hormone prolactin, body weight either under or overweight, advanced age, hormonal disorders including hypothalamic disorder, thyroid disorders, addictions, mutation in genetic factor and many others.

Hysterosalpingography and laparoscopy are two classic methods to evaluate tubal pathology for infertility and are complementary to each other. Though pelvic sonography and HSG are good enough to rule out gross intrauterine pathology but subtle changes in form of polyp, fibroid, adhesion are best picked up on magnification with hysteroscopy may obviate need for HSG as complete evaluation and treatment is possible in same setting. Exploration of female genital tract is essential element of infertility management.

Diagnostic hysteroscopy (DHL) has emerged as the essential tool for the evaluation of female infertility and is the gold standard investigation for tubal patency. The importance of DHL lies in the fact that it gives a detailed, direct visualization and analysis of the uterine cavity, endometrium, and tubal morphology and patency, uterine, ovarian, and adnexal pathology. These pathology findings are often missed in routine clinical examination and ultrasound scan. In addition to diagnosis, DHL also provides the additional benefit of therapeutic interventions in few conditions.

Hence this study is undertaken to determine causes and outcome in patients of primary and secondary infertility at tertiary care centre

MATERIAL AND METHODS

Aims and objective

To study the various causes diagnosed in the eligible couples with history of infertility based on clinical examination, Investigations and procedures like hysteroscopy and diagnostic laparoscopy. We also aim to determine the outcome of these studies after intervention carried out in infertile couples

INCLUSION CRITERIA

All patients having primary or secondary infertility visiting our hospital and willing to undergo treatment

EXCLUSION CRITERIA

- Male factor infertility
- Female with major medical illness

Study was performed in tertiary care centre over a period of 1 year from June 2018 to July 2019, infertile couple with primary and secondary infertility aged between 20 and 45 years were included in the study. Primary infertility patients were those who had never conceived before whereas secondary infertility patients had one prior conception before regardless of the duration, site, and outcome. The mean duration of infertility in primary and secondary infertility was 5.1 ± 2.2 years and 4.9 ± 2.7 years, respectively.

In our study for inclusion, as per definition, minimum 1 year of infertility was taken into account. That means, for primary infertility, inability to conceive after minimum of 1 year of unprotected sexual intercourse and for secondary infertility, the same duration and criteria after previous obstetrical event. Hence, the minimum period of infertility was 1 year. However, in our study, there was no upper limit of duration of infertility. Patients with abnormal hysterosalpingogram were also included in the study irrespective of the presence or absence of another male or female known etiology of Couples with abnormalities in semen analysis were also excluded. Patients having any relative and absolute contraindication to laparoscopy were also excluded. DHL with CPT was performed in the preovulatory (day 6–12 of menstrual cycle). Transvaginal sonography before DHL was not performed routinely. If at all performed, it was mainly to evaluate the antral follicular count. All the patients were selected based on abnormal HSG report (tubal block, hydrosalpinx, and uterine anomaly).

DHL was performed in the preovulatory period between days 6 and 11 of the cycle. First, hysteroscopy was performed-vagina and cervix were

examined for any abnormality (growth, polyp etc.), uterine cavity was examined for the presence of septum, any congenital malformation, fibrotic bands or synechiae, polyps, fibroid, and condition of the endometrium. Both the tubal ostia were visualized and looked for patency.

Pneumoperitoneum was created, and laparoscopy was performed and the peritoneal cavity fallopian tubes, ovaries, pelvic peritoneum, pouch of Douglas, following structures were carefully examined for any abnormality- and. On laparoscopy, pelvic cavity and organs were inspected. Uterus was inspected for its shape, size, position, surface, and presence of fibroid.

Cul-de-sac was examined for any adhesions, obliteration, endometriotic nodules or fluid. Ovaries were viewed for size, shape, surface, color, presence of cysts, and relation with tubes. Fallopian tubes were inspected carefully for size, shape, surface, kinking, dilatation, stricture or hydrosalpinx. Any features suggestive of infertility were looked for.

At last, CPT was performed to check for testing tubal patency on both the sides. Methylene blue dye was injected with a 20 ml syringe through Leech Wilkinson cannula or a 14F foley's catheter inserted in the uterine cavity. Spillage of the dye from the fimbrial end of tube visualized.

RESULTS

Table-1: Demographic data of all patients with infertility

Patients	Primary infertility (28) Mean \pm SD	Secondary infertility(12) Mean \pm SD
Age of Woman (years)	25.23 \pm 2.81	27.75 \pm 2.48
Age of husband(years)	27.48 \pm 3.05	30.83 \pm 3.23
Number of years since marriage(years)	4.77 \pm 2.26	5.58 \pm 1.49

Table 1 shows mean age of woman and husband. It also shows number of yeasers since marriage.

Table-2: HSG findings in infertile women

HSG findings	Primary infertility(n=28)	Secondary infertility (n=12)
Normal	16	10
B/L blocked tubes	3	1
U/L blocked tube	1	0
Hydrosalpinx	0	1
Uterine anomaly	1	0
Not done	7	0

Table 2 shows HSG findings in primary and secondary infertility patients. 16 primary and 10 secondary infertile patients had normal HSG findings. 4

primary infertility patients had blocked fallopian tube. In 7 patients HSG was not done.

Table-3: USG findings in infertile women

USG findings	Primary infertility(n=28)	Secondary infertility (n=12)
Normal	9	3
PCOD	5	4
Free fluid in POD	2	1
Hydrosalpinx	6	1
Uterine anomaly	2	0
PID	0	2
Fibroid	1	1
TO Mass	3	0

Table 3 shows usg was normal in 9 patients of primary infertility and 3 patients of secondary infertility.

Table-4: Findings of Diagnostic Hysteroscopy

DHL findings	Primary infertility(n=28)	Secondary infertility (n=12)
PCOD Drilling	5	6
Beaded Tube Multiple Adhesion	4	0
Tubal Adhesions	3	2
TO Mass	2	1
Hydrosalpinx	1	1
Uterine Anomaly	4	1
Fibroid	3	1
Blocked Tube	5	0
Vaginal Septum With Normal Uterus	1	0

Table 4 shows various findings of Diagnostic hysteroscopy in primary and secondary infertility patients.

Table-5: Various treatments given to infertility patients

Treatment given	Number of patients
Myomectomy	3
PCO drilling	4
Antibiotics	2
Adhesiolysis	4
Septal resection	1
AKT	7
Ovulation induction	4

Above table shows various treatments given accordingly to infertility patients.

Table-6: Outcome of Infertility patients

Outcome	Number of patients (40)
Concieved	10
Treatment taken but not conceived	10
Left treatment	5
No follow up	15

Table 6 shows out of 40 patients 10 patients conceived. 10 patients took treatment but didn't conceive. 5 patients left the study in between. 15 patients didn't come for follow up.

DISCUSSION

Infertility is a complex disorder with significant medical, psychosocial, and economic problems. Data from population - based studies suggest that 10-15 % of couples in the world experience infertility. It is estimated that female factors and unexplained infertility accounts for 50-80%. Infertility may be caused by an underlying medical condition that may damage the fallopian tubes, interferes with ovulation, or causes hormonal complications. These medical conditions include pelvic inflammatory disease, endometriosis, polycystic ovarian syndrome, premature ovarian failure, uterine fibroids and environmental factors. Other causes of infertility in females include ovulation problems, tubal blockage, age-related factors, uterine problems, previous tubal ligation and hormone imbalance. Ovarian dysfunction could be caused by weight loss and excessive weight gain with body mass index (BMI) greater than 27 kg/m². Excess weight has also been found to have

effect on treatment efficacy and outcomes of assisted reproductive technique. Estrogen is produced by the fat cells and primary sex organs and thus, state of high body fat or obesity causes increase in estrogen production which the body interprets as birth control, limiting the chances of getting pregnant. Also, too little body fat causes insufficient estrogen production and thus menstrual irregularities with anovulatory cycle]. Proper nutrition in early life had been linked to be a major factor for later fertility. Fertility declines with age. Female fertility is at its peak between the ages of 18 and 24 years, while, it begins to decline after age 27 and drops at a somewhat greater rate after age 35. In terms of ovarian reserve, a typical woman has 12% of her reserve at age 30 and has only 3% at age 40. 81% of variation in ovarian reserve is due to age alone, making age the most important factor in female infertility. Ovulatory dysfunction is more common in younger than old couples. Fertility of an individual may be influenced by life style choice. Tobacco smoking and alcohol intake contribute to infertility. Cigarette smoking interferes with folliculogenesis (nicotine and other harmful chemicals in cigarettes interfere with estrogen synthesis), embryo transport, endometrial receptivity, endometrial angiogenesis, uterine blood flow and the uterine myometrium. Some damage is irreversible, but

stopping smoking can prevent further damage]. Infertility resulting from ovarian dysfunction may be due to absence of eggs in the ovaries or due to a complete blockage of the ovaries. Ovarian dystrophy (physical damage to the ovaries, or ovaries with multiple cysts) and luteinized unruptured follicle syndrome (LUFS), in which case the egg may have matured properly but the follicle failed to burst or even burst without releasing the egg may occur and cause anovulatory cycle. Polycystic ovaries syndrome (PCOS) is usually a hereditary problem and accounts for up to 90% of cases of anovulation [13]. In PCOS the ovaries produce high amounts of androgens, particularly testosterone and thus amenorrhea or oligomenorrhea is quite common. The increased androgen production in PCO results in high levels of luteinizing hormone (LH) and low levels of follicle-stimulating hormone (FSH), so that follicles are prevented from producing a mature egg. The hyperandrogenism can cause obesity, facial hair, and acne, although not all women with PCOS have such symptoms. PCOS also poses a high risk for insulin resistance, which is associated with type 2 diabetes. Tubal (ectopic) and peritoneal factors of importance in infertility include endometriosis [14, 15], pelvic adhesions, pelvic inflammatory diseases usually due to Chlamydia, tubal occlusion [16] and tubal dysfunction. Tubal factors have similar prevalence as peritoneal factors. Endometriosis is a noncancerous condition and may cause adhesions between the uterus, ovaries, and fallopian tubes, thereby preventing the transfer of the egg to the tube and thus infertility. Uterine factors are uterine malformation such as abnormal uterine shape and intrauterine septum; polyps, leiomyoma, and Asherman's syndrome. Benign fibroid in the uterus are extremely common in women in their 30s. Large fibroids may cause infertility by impairing the uterine lining, blocking the fallopian tube, distorting the shape of the uterine cavity or altering the position of the cervix. Pelvic inflammatory disease (PID) comprises of a variety of infections affecting the pelvic organs caused by different microorganisms such as bacteria and inflammatory conditions of parts of the gastrointestinal tract that lies in the pelvic area such as salpingitis from septic abortion or ascending infection. PID may be caused by sexually transmitted diseases from Chlamydia trachomatis and Gonorrhoea and can eventually result into abscess formation, adhesions, scarring, tubal blockade, tubal damage, ectopic pregnancy and thus infertility. Congenital abnormalities that affect the genital tract may cause infertility. In Mullerian agenesis the vagina or the uterus fail to develop and thus infertility. Also, following pelvic surgery, postsurgical or postinfective uterine or abdominal adhesions and scarrings may occasionally result and this could restrict the movement of ovaries and fallopian tubes and cause infertility.

In present study 40 infertile patients were evaluated. on detail investigation it was found that

causes of infertility were PCOD, multiple adhesions, Fallopian tube adhesions, TO mass, hydrosalpinx, uterine anomaly, Fibroid, blocked fallopian tube. Patients were given treatment like myomectomy, PCO drilling, antibiotics, adhesiolysis septal resection, AKT, ovulation induction depending upon cause of infertility. 10 patients conceived 10, patients didn't conceive after taking treatment. 5 patients left the study in between and 15 patients didn't come for followup.

CONCLUSION

Diagnostic hysteroscopy is an effective and safe tool in comprehensive of infertility, particularly for detecting peritoneal endometriosis, adnexal adhesion, and septum in the uterus. These are correctable abnormalities that are unfortunately missed by routine pelvic examination and usual imaging procedure. Needless to emphasize that, it is a very useful tool that can detect various structural abnormalities in multiple sites like pelvis, tubes, and the uterus in the same sitting in patients with normal ovulation and seminogram. When done by experienced hands and with proper selection of patients, hysteroscopy can be considered as a definitive daycare procedure for evaluation of female infertility. This helps in formulating specific plan of management. Detail evaluation of infertile patient should be done to diagnose cause of infertility. There are many common causes of infertility in females which should be evaluated and given treatment. Patient should be explained significance of follow up to have good outcome of infertility treatment.

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