ROLE OF LAPROSCOPY IN DETECTING PELVIC CAUSES OF FEMALE SUBFERTILITY IN OBSTETRICS AND GYNAECOLOGY UNIT PESHAWAR

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Abstract

Background: The cause of female subfertility is influenced by multiple factors, and its diagnosis requires an invasive treatment including laparoscopy.

Objective: To ascertain the prevalence of various factors contributing to female subfertility by the utilization of laparoscopy.

Material and methods: From July 31, 2021, to January 30, 2022, we carried out a cross-sectional research at the Department of Obstetrics and Gynecology, Hayatabad Medical Complex, Peshawar. 185 females with subfertility, ages 18 to 40, participated in the research. To choose the participants, we employed the non-probability consecutive sampling approach. To investigate the causes of subfertility, each female participant had laparoscopic surgery.

Results: Our investigation included a cohort of 185 female participants, whose average age was 28.6±5.9 years. The mean duration of marriage was 8.12±1.3 years. The mean duration of subfertility was 4.74 ± 2.3 years. Primary subfertility was observed in 50.3% of females, while secondary subfertility was observed in 49.7% of females. Polycystic ovarian syndrome was the primary cause of subfertility, accounting for 21.1% of cases. This was followed by pelvic inflammatory disease (17.8%), tubal occlusion (14.6%), endometriotic deposits (13%), ovarian cysts (9.7%), peritubal and peri-ovarian adhesions (8.1%), and fibroids (6.5% of females). During laparoscopy, no identifiable cause may be detected in 9.2% of females.

Conclusion; laparoscopy is an invaluable diagnostic technique for people experiencing subfertility.

Keywords: subfertility, laparoscopy, polycystic ovarian syndrome.

INTRODUCTION

Subfertility impacts around 10-15% of couples in their reproductive years and is characterised as the inability to achieve pregnancy after one year of regular unprotected sexual intercourse. Subfertility can be classified into two categories: primary subfertility, which refers to individuals who have never been pregnant before, and secondary subfertility, which refers to individuals who have had at least one pregnancy. [1]

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Subfertility is associated with factors such as reproductive health, psychological well-being, economic circumstances, trauma, and stress, particularly in communities that place a strong emphasis on having children. [2] Subfertility can arise from a pathological condition affecting either the female or male reproductive system. [3] Female subfertility may have a detrimental impact on the female reproductive process. A health issue might arise for several causes. The endocrine system, a collection of organs and glands that produce and regulate hormones in the body, may be the cause. Hormones are substances that have a wide range of effects on your body, including how it develops, consumes energy, and reproduces. An illness when the immune system unintentionally targets the body's own tissues and cells might be another factor. We refer to this as an autoimmune illness. A third factor might be the individual's lifestyle and surroundings, including their diet, level of stress, exposure to pollutants, and interactions with potentially dangerous materials. This health issue, which is more prevalent in women than in males, is linked to three other issues that impact the female reproductive system. These include endometriosis, which is the growth of tissue that

normally lines the uterus outside of it, polycystic ovarian syndrome (PCOS), which is the production of too many male hormones by the ovaries and causes many small cysts, and premature ovarian failure (POF), which is the stopping of the ovaries before the age of 40. Problems with hormones, menstruation, and fertility can all be brought on by these three concerns. This is a common health issue that affects a lot of women worldwide [4].

Precise identification of the condition is crucial for effective therapy. The evaluation of the female partner commences with a thorough assessment of her medical history and a comprehensive physical examination. Conducting the appropriate inquiries holds greater significance than carrying out a sequence of examinations. Priorities conducting routine, straightforward, minimally invasive, and highly predictive investigations initially. Hysteroscopy (HSG) and laparoscopy are diagnostic procedures that can be employed to identify the underlying reason of subfertility. Studies have demonstrated that HSG is inadequate in accurately predicting tubal patency in certain patients who are at risk of pelvic adhesions. The sensitivity of HSG in these cases ranges from 0.0% to 83%, while the specificity ranges from 50% to 90%. [5] Since its development by Kalk in 1929, laparoscopy has become an extensively utilised diagnostic procedure for visualising the pelvic organs, especially in cases of subfertility. Diagnostic laparoscopy is mostly performed to investigate subfertility, which is the leading indication for this procedure, accounting for 55.5% of cases. [6]

Laparoscopy is a diagnostic procedure that offers information on the condition of the fallopian tubes and ovaries, as well as any abnormalities in the uterus. It is considered the standard method for identifying a range of pelvic diseases, including pelvic inflammatory disease, endometriosis, pelvic congestion, and TB. In addition, it is the most effective means of evaluating the openness of the fallopian tubes. Following a standard hysterosalpingography, laparoscopy uncovers aberrant findings in 21.68% of couples experiencing infertility. Untreated pelvic inflammatory disease, post-abortal, postpartum infection, and tuberculosis are prevalent conditions that contribute to subfertility in underdeveloped nations. [7]

A previous study found that among subfertile females who underwent laparoscopy, 21.9% had tubal occlusion, 15.6% had polycystic ovary, 12.5% had endometriotic deposits, 6.3% had peritubal and periovarian adhesion, 6.3% had fibroid, 6.3% had ovarian cyst, and 3.1% had pelvic inflammatory disease. [7]

The objective of this study is to ascertain the diverse aetiologies of female subfertility through the utilisation of laparoscopy, given its minimally invasive nature and widespread accessibility in all medical facilities. Early detection of the many reasons of subfertility can greatly improve the chances of achieving pregnancy by allowing for timely treatment. It will enhance the quality of life for women with subfertility.

METHODOLOGY

This study was conducted from July 31, 2021, to January 30, 2022, at the obstetrics and gynecology departments of the Hayatabad Medical Complex in Peshawar. Being a descriptive cross-sectional research, its goal was to characterize and examine a population at a particular moment in time. The study was approved by the hospital's ethics committee prior to its initiation.

Women between the ages of 18 and 40 who were having trouble becoming pregnant, or subfertility, were the volunteers. Exclusions from the research included those with heart or lung disorders, severe stomach difficulties, hernias, and male reproductive concerns. Couples who had not lived together for a minimum of 12 months were also disqualified from participating. We employed successive sampling without probability, which entails a sequential inclusion of individuals without the use of a random selection procedure.

The participants in the study gave their express permission after being properly informed about it and voluntarily chose to participate. The researchers used free WHO software to calculate the required number of participants. With a 10% anticipated dropout rate, a 95% confidence level, 2.5% accuracy, and 3.1% as the least frequent reason of subfertility, they set their goals. A sample size of 185 patients was determined by this computation.

RESULTS

The study included 185 women, with an average age of 28.6±5.9 years. Table 1 displays the average duration of marriage, which was 8.12±1.3 years. Table 2 presents the average length of subfertility, which was 4.74±2.3 years. Table 3: In 50.3% of females, there was primary subfertility, and in 49.7% of females, subfertility was secondary. Table 4: The most common cause of subfertility was polycystic ovarian syndrome in 21.1%, followed by PID in 17.8%,

tubal occlusion in 14.6%, endometroitic deposits in 13%, ovarian cysts in 9.7%, peritubal and peri-ovarian adhesions in 8.1%, and fibroids in 6.5% of females. While in 9.2% of females, no cause can be found during laparoscopy. Table 5

Table 1: Age distribution of the sampled population

	N	Minimum	Maximum	Mean	Std. Deviation
Age (Years)	185	19	40	28.60	5.905

Table 2 displays the average length of time that marriages last.

	N	Minimum	Maximum	Mean	Std. Deviation
Duration of marriage (Years)	185	2	16	8.12	1.374

Table 3: Mean duration of subfertility

	N	Minimum	Maximum	Mean	Std. Deviation
Duration of subfertility (Years)	2.374	1	11	4.74	2.3

Table 4: Type of subfertility

Subfertility	**Frequency**	**Percentage**
Primary	93	50.3
Secondary	92	49.7
Total	185	100

Table 5: Frequency of causes of subfertility

Causes of subfertility	**Frequency**	**Percentage**
Polycystic ovary	39	21.1
Pelvic inflammatory disease	33	17.8
Tubal occlusion	27	14.6
Endometriotic deposits	24	13.0
Ovarian cyst	18	9.7

No cause found	17	9.2
Peri-tubal and per-ovarian Adhesions	15	8.1
Fibroids	12	6.5
Total	185	100.0

DISCUSSION

Subfertility is a significant global health concern. The estimated average prevalence of subfertility in underdeveloped nations is 6.9 to 9.3%,[8] whereas around 15% of couples attempting to conceive their first child experience unsuccessful outcomes. The World Fertility Survey conducted a comprehensive analysis of subfertility rates worldwide, revealing that Bangladesh has a subfertility rate of 4%, Nepal has a rate of 6%, Pakistan has a rate of 5%, and Sri Lanka has a rate of 4%. [9] Subfertility is the condition where a couple is unable to have a child after one year of having regular, unprotected sexual intercourse. This can be further categorised as primary infertility if the partners are unable to achieve a pregnancy after earlier attempts, and secondary infertility if a couple has had a previous pregnancy, even if it did not result in a live birth. The primary causes of subfertility are tubal illness, ovulatory abnormalities, uterine or cervical factors, endometriosis, and male factor subfertility.[9] Laparoscopy is an essential and routine technique used to investigate and evaluate females who are experiencing infertility. As per the criteria set by the World Health Organisation (WHO), diagnostic laparoscopy is still advised as a necessary step in examining female subfertility.

Because laparoscopy offers direct visibility to discover hidden problems, it is a highly successful procedure for evaluating infertility that doesn't make sense. Specifically, this study examines how laparoscopy contributes to our understanding of female subfertility. Sixty-two percent of a research conducted in 2020 on one hundred infertile women who had laparoscopy and had tubal illness (either one-sided or both sides obstructed) had adhesions around their fallopian tubes, and fifteen percent had hydrosalpinx, a fluid-filled fallopian tube. Fifty percent of patients had endometriosis, which manifested as adhesions, cysts, and obstructions in the Pouch of Douglas.

Another study found that the following conditions were linked to subfertility and could be detected by laparoscopy: polycystic ovarian syndrome (25.1%), tubal problems (30%), uterine anomalies (4%), and endometriosis (2.7%). In an Indian research, 121 women from poorer socioeconomic backgrounds—those with primary subfertility and 82 with secondary subfertility—were investigated. Ages 20 to 34 (mean age of 24.6 years) were the range for primary subfertility, while 26 to 35 (mean age of 28.4 years) were the range for secondary subfertility. Though previous studies found causes such as endometriosis (2.7%), polycystic ovarian syndrome (25.1%), tubal factors (30%), and uterine causes (4%), laparoscopy was unable to pinpoint a particular cause for subfertility. These results are consistent with what we found during our research.

CONCLUSION

Ovulatory problems were frequently observed in cases of primary subfertility, but tubal factors were the most prevalent in both forms of subfertility in this investigation. Early consideration of laparoscopy is recommended for women with a history of pelvic inflammatory disease (PID), pelvic surgery, and chronic pelvic pain in order to make optimal treatment decisions.

LIMITATIONS

The findings of this study lacked generalizability due to the limited scope of data collection, which focused solely on a single hospital in Peshawar.

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