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LAPAROSCOPIC EVALUATION OF FEMALE INFERTILITY CASES FOLLOWING FAILED OVULATION INDUCTION IN A TERTIARY CARE HOSPITAL

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ABSTRACT

Introduction: Diagnostic laparoscopy is generally not a part of initial infertility evaluation, however, number of reports have shown that it is effective procedure for evaluation of long- term infertility. Laparoscopy 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. **Objectives:** To determine the frequency of various pelvic pathologies in female infertility patients following failed ovulation induction for consecutive three cycles. **Materials & Methods:** A total of 200 women with primary infertility, 18 to 40 years of age were included. Patients with hyperprolactinemia, hypothyroidism, hyperparathyroidism, absolute or relative contraindication for laparoscopy e.g. any preexisting cardiovascular or respiratory condition, generalized peritonitis, intestinal ileus or obstruction and abdominal hernia were excluded. All women were undergone diagnostic laparoscopy by a consultant gynecologist (at least 5 years post-fellowship experience) and various pelvic pathologies i.e. polycystic ovarian syndrome, endometriosis, tubal occlusion, pelvic adhesion and fibroid were noted. **Results:** On laparoscopy, frequency of various pelvic pathologies in female infertility patients following failed ovulation induction for consecutive three cycles was found to be as follows; tube blockage in 91 (45.50%), Polycystic ovarian syndrome in 46 (23.0%), fibroids in 33 (16.50%), endometriosis in 16 (8.0%) and pelvic adhesions in 14 (7.0%) patients. **Conclusion:** This study concluded that tubal pathology is the most common pelvic pathologies in female infertility patients following failed ovulation induction for consecutive three cycles followed by PCOS and fibroid.

KEYWORDS: Infertility, Laparoscopy, Tubal pathology.

INTRODUCTION

Infertility is defined as inability of a couple to conceive after 1 year of unprotected regular intercourse. Infertility can affect a woman's social and psychological life, leaving her miserable and insecure especially in developing countries like Pakistan.[1] Providing these underprivileged people with the latest medical advancements at an affordable cost should be the mainstay of treatment in this part of the world. Infertility can be caused by multiple factors including ovulatory disorders, tubal diseases, uterine or cervical factors, endometriosis and male factor infertility.[2,3] The main reasons however, in the developed world are different from those in the developing world. According to World Health Organization, the major causes on a global basis are pelvic tuberculosis, malnutrition, post abortion and postpartum infections leading to tubal blockade.[4]

Primary infertility is defined as the absence of a live birth for women who desire a child and have been in a union for at least five years, during which they have not used any contraceptives. The World Health Organization also adds that 'women whose pregnancy spontaneously miscarries, or whose pregnancy results in a still born child, without ever having had a live birth would present with primarily infertility'. Secondary infertility is defined as the absence of a live birth for women who desire a child and have been in a union for at least five years since their last live birth, during which they did not use any contraceptives.[5]

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. Assessment of the tuboperitoneal factor requires investigation of the patients by hysterosalpingography (HSG) which gives information about tubal patency, tubal dilatation, presence of diverticulosis, and configuration of the mucosal folds, but it lacks the precise diagnosis of the presence or absence of adnexal adhesions and peritoneal endometriotic lesions. Latter lesions can be easily diagnosed by laparoscopy. Laparoscopy is performed at the end of the infertility work-up, or immediately after HSG in cases of abnormal tubal findings.[6]

Diagnostic laparoscopy is generally not a part of initial infertility evaluation, however, number of reports have shown that it is effective procedure for evaluation of long- term infertility.[4,5] Laparoscopy 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.[6] In a study, on laparoscopy, the most common finding was tubal blockade accounting for 36.7%, ovarian factors contributed to 21.7%, uterine factors 15% and peritoneal factors in 16.7% of infertility patients. No cause was found in 10% patients.[7] In another study, most common laparoscopic finding was PCOS in 32.34% patients followed by peritubal and periovarian adhesions in 17.65% patients, Bilateral tubal block in 16.91% patients, Endometriosis in 11.03%, unusual tortuous and lengthy tube in 11.03% patients and fibroid in 8.09% patients.[8]

The importance of this topic is highlighted by the above mentioned facts. That is why the researcher conducted this study in our local population to highlight the role of diagnostic laparoscopy in determining the frequency of various pelvic pathologies in female infertility. This will enable us to decide the optimal management plan for these infertile couples in order to achieve the goal of pregnancy in such patients. This study will add in the national data and will also be comparable with other international studies.

METHODOLOGY

This descriptive, cross-sectional study was conducted at the Department of Urology, Shahida Islam Medical & Dental College/Teaching Hospital, Lodhran, and Kidney Centre, Bahawal Victoria Hospital, Bahawalpur, from July 2020 to June 2021. A sample of 200 women of age 18-40 years with primary infertility were selected through consecutive non probability sampling technique and by taking expected percentage of fibroid as 8.09%[8] using margin of error (d) = 4% and 95% confidence level. Women with hyperprolactinaemia (s/prolactin > 500 mIU/L), hyperthyroidism (presence of all these i.e. TSH <0.2 mIU/L and FT3 >4.2 pg/ml, FT4 >1.68 pg/ml) or hypothyroidism (presence of all these i.e. TSH >5.2 mIU/L, FT3 <1.5 pg/ml and FT4 <0.8 pg/ml) and patients with absolute or relative contraindication for laparoscopy e.g. any preexisting cardiovascular or respiratory condition, generalized peritonitis, intestinal ileus or obstruction and abdominal hernia were excluded. Informed consent was taken from each patient. All investigation including baseline blood test, serum profile, pelvic ultrasound, TFT and Prolactin Level were done from the laboratory. All women were undergone diagnostic laparoscopy by a consultant gynecologist (at least 5 years post-fellowship experience) and various pelvic pathologies i.e. polycystic ovarian syndrome, endometriosis, tubal occlusion, pelvic adhesion and fibroid were noted. All patients were managed as per ward protocol. This all data was recorded on a pre-designed proforma. The collected information was analyzed by computer software SPSS version 25.0. Quantitative variables were presented as mean and standard deviation. Qualitative variables were presented as frequency and percentage.

RESULTS

Age range in this study was from 18 to 40 years with mean age of 30.54 ± 5.77 years. Majority of the patients i.e. 113 (56.50%) were between 31 to 40 years of age. Mean duration of marriage was 4.53 ± 1.53 years. Mean BMI was 28.85 ± 3.90 kg/m2.

On laparoscopy, frequency of various pelvic pathologies in female infertility patients following failed ovulation induction for consecutive three cycles was found to be as follows; tube blockage in 91 (45.50%), Polycystic ovarian syndrome in 46 (23.0%), fibroids in 33 (16.50%), endometriosis in 16 (8.0%) and pelvic adhesions in 14 (7.0%) patients (Table I).

Table I: Frequency of various pelvic pathologies in female infertility patients following failed ovulation induction for consecutive three cycles.

Pelvic pathologies	Frequency	Percentage
Tubal blockage	91	45.50
Polycystic ovarian syndrome	46	23.0
Fibroid	33	16.50
Endometriosis	16	8.0
Pelvic adhesions	14	7.0

DISCUSSION

Infertility is a problem of global proportions, worldwide more than 70 million couples suffer from infertility.[9] The current evidence indicates 9% prevalence of infertility (of 12 months) with 56% couples seeking medical care in more developed and 51.2% in less developed countries.[10] In Pakistan the prevalence of infertility is reported as 21.9%.[11] The common factors responsible for infertility in females are anovulatory disorder, tubal factors, endometriosis, uterine and cervical factors.[12] 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. Diagnostic laparoscopy is generally not a part of initial infertility evaluation, however, number of reports have shown that it is effective procedure for evaluation of long-term infertility.[13,14] Laparoscopy provides information regarding tubal and ovarian status, uterine normalty and standard means of diagnosing various pelvic pathology e.g. pelvic inflammatory disease, endometriosis, pelvic congestion and tuberculosis.[15,16] Beside this it is the most useful method of assessment of the tubal patency. After normal hysterrosalpingography, laparoscopy reveals abnormal findings in 21.68% cases of infertile couples.[17] Untreated pelvic inflammatory disease, post-abortal, postpartum infection and tuberculosis are common factors of infertility in developing countries.[18,19]

I have conducted this study to determine the frequency of various pelvic pathologies in female infertility patients following failed ovulation induction for consecutive three cycles. Age range in this study was from 18 to 40 years with mean age of 30.54 ± 5.77 years. Majority of the patients i.e. 113 (56.50%) were between 31 to 40 years of age. These results were very much comparable to studies of Fouda UM et al[20] and Sherif F et al[21] who had shown a mean age of 28 years and 27 years respectively. On the other hand, Hussain NHN et al[22] in his study has shown a larger mean age i.e. 31 years, compared to our study. Age is the single most important determining factor affecting female fertility, Monga[23] and Pedersen et al[24] found that delaying marriage until after the 30s will affect the fertility rate, because fertility declines rapidly after 35 years of age. This late presentation in our society may be due to hakeem culture, lack of awareness, some social constraints and economic hurdles.

On laparoscopy, frequency of various pelvic pathologies in female infertility patients following failed ovulation induction for consecutive three cycles was found to be as follows; tube blockage in 91 (45.50%), Polycystic ovarian syndrome in 46 (23.0%), fibroids in 33 (16.50%), endometriosis in 16 (8.0%) and pelvic adhesions in 14 (7.0%) patients. In a study, on laparoscopy, the most common finding was tubal blockade accounting for 36.7%, ovarian factors contributed to 21.7%, uterine factors 15% and peritoneal factors in 16.7% of infertility patients. No cause was found in 10% patients.[7] In another study, most common laparoscopic finding was PCOS in 32.34% patients followed by peritubal and periovarian adhesions in 17.65% patients, Bilateral tubal block in 16.91% patients, Endometriosis in 11.03%, unusual tortuous and lengthy tube in 11.03% patients and fibroid in 8.09% patients.[8]

According to the study of Ibrahim et al, diagnostic laparoscopy is not only a significant technique in diagnosing the cause, but it can also help in the treatment in certain cases. They found out that the causes of unexplained infertility were endometriosis and peritubular adhesions. Both of the pathologies can be fixed through laparoscopy. It was also narrated in the conclusion that both these issues are impossible to be detected without laparoscopic intervention.[25] Another similar study was conducted by Niaz et al in Peshawar. The study was conducted on 196 participants. They observed that 45% of the patients with collectively primary and secondary infertility had genital tuberculosis.[26]

Another similar study was conducted by Shinde et al. They had additionally combined hysteroscopy with laparoscopy to make a definitive diagnosis. They concluded that combining both diagnostic techniques is vital before starting treatment. According to their results, pelvic adhesions were the commonest root cause in both primary and secondary infertility. Pelvic tuberculosis was also predominant in primary infertility. Uterine anomalies, submucous fibroids, polyps, and Asherman's syndrome were other minor causes.[27] Talat et al also found that tubal blockage was detected more commonly in primary infertility. Similar results were obtained in our study.[28]

Tubal pathologies are amongst the most common causes of infertility seen in approximately 30– 35% of couples.[29] A provisional diagnosis of tuberculosis the study was made on finding unilateral/bilateral hydrosalpinx, tubo-ovarian mass, beaded appearance of fallopian tubes along with tubercles. Pelvic Inflammatory Disease was diagnosed in patients with unilateral/bilateral hydrosalpinx, tubo-ovarian mass with flimsy adhesions or clear fluid filled peritoneal cysts. Tuberculosis was further confirmed by histopathological and microbiological methods.

Recently Jain G et al analysed the results of 203 women, on whom, laparoscopy for the evaluation of infertility was done and observed that tubal disease was the responsible factor in 62.8% women with primary infertility and 54.8% women with secondary infertility followed by pelvic adhesions in 33% and 31.5%, ovarian factor in 14% and 8.5%, pelvic endometriosis in 9.9% and 6.1% women respectively which was consistent with the present study.[30]

In contrast to the findings of the present study, Kausar N, et al reported leading causes of infertility as endometriosis and fibroid of the uterus.[31] Other prevalent causes of infertility noted were pelvic inflammatory disease (6.9% in primary infertility and 18.5% in secondary infertility), pelvic tuberculosis (in primary infertility) and polycystic ovaries (46.5% in primary and 30% in secondary infertility). Another study by Nousheen Aziz et al on 50 patients concluded that most common causes responsible for infertility were tubal occlusion, endometriosis, peritubal and periovarian adhesions.[32]

In Pakistan, most of patients usually go to alternative medicine and un-trained health practitioners for the treatment of infertility, which leads to further delay in proper management. Laparoscopy not only helps in identification of unsuspected pathology, but also contributes to decision making. It should be considered initially as part of the infertility evaluation in women, especially those with a history of pelvic inflammatory disease, pelvic surgery, and chronic pelvic pain.[33]

CONCLUSION

This study concluded that tubal pathology is the most common pelvic pathologies in female infertility patients following failed ovulation induction for consecutive three cycles followed by PCOS and fibroid. So, we recommend that laparoscopy not only helps in identification of unsuspected pathology, but also contributes to decision making. It should be considered initially as part of the infertility evaluation in women, especially those with a history of pelvic inflammatory disease, pelvic surgery, and chronic pelvic pain.

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