Fortune J Health Sci 2022; 5 (2): 205-210 *DOI: 10.26502/fjhs.054*

Research Article

Role of Laparoscopy in Female Infertility

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Received: 21 March 2022; **Accepted:** 28 March 2022; **Published:** 08 April 2022

Citation: Laila Zeb, Anum Malik. Role of Laparoscopy in Female Infertility. Fortune Journal of Health Sciences 5 (2022): 205-210.

Abstract

Background: Infertility is the failure of couple to achieve a clinical pregnancy after 12 months or more of unprotected sexual intercourse. Laparoscopy is an important diagnostic procedure to identify the causes for infertility.

Aim and Objective: Emphasis on role of laparoscopy in diagnosing causes for female infertility.

Material and method: This Cross-sectional study was conducted in Obstetrics and Gynecology A Unit of Medical Teaching Institute, Lady Reading Hospital, Peshawar from 1st January 2019 till 31st December 2019. Sample size was 221 calculated by using Open-Epi calculator. The patients who refused procedure or with male factor infertility or having medical disorders like hypertension, cardiac disease, un- controlled diabetes were excluded. Non-probable convenient sampling technique used and a structured questionnaire filled. P-value > 0.005 and 95% Confidence interval considered as significant. Data analyzed using SPSS version 20. For statistical analysis, frequencies, percentages and Mean ± SD were used for continuous variables.

Results: Total 221 patients were selected. 158 (71.4%) patients had primary, 63 (28.5%) secondary infertility. Mean age at presentation 27.6 years and 28.8 years in primary and secondary infertility. The mean duration of marriage was 4.51 years in primary and 5.05 years in secondary infertility. 180 (81.4%) patients had pelvic pathology, 41 (18.5%) had normal findings. Pathologies in primary infertility were Polycystic ovaries (PCO) 29(18.5%), Pelvic inflammatory disease (PID) 38(24.05%), blocked tubes 23 (14.43%), Endometriosis 22 (14%), and fibroid uterus 09(5.6%). In Secondary infertility, PCO 43(19.4%), PID 20(32%), blocked tubes 19

(30%), Endometriosis 27 (12.2%) and fibroid uterus 10(4.5%).

Conclusion: Laparoscopy is minimally invasive, convenient, safe and economic procedure for diagnosis of infertility in females.

Keywords: Laparoscopy, primary infertility, secondary infertility

1. Introduction

Infertility is a disease of reproductive age and affects 10–15% of couples [1]. It is defined as failure of couple to conceive despite unprotected sexual intercourse for 1 year regardless of the cause of infertility [2], and in couples with advanced female age (>35 years), inability to conceive after 6 months of unprotected intercourse, not using any contraceptive methods [3]. The age of woman more than 40 years or any well-defined cause leading to infertility needs instant diagnosis and treatment [4]. There are multiple male and female causes, of which male factors constitutes about 40 to 50%. The practice committee of the American Society for Reproductive Medicine (ASRM) has published guidelines for a standard infertility evaluation [5]. Among these, laparoscopy is a gold standard diagnostic test, as much pathology undetected by ultrasound can be seen with naked eyes and can be cured like minimal endometriosis [6]. Although laparoscopy is not indicated in routine for evaluation and diagnosis of causes of female infertility but some diseases especially mild to moderate endometriosis, mild to moderate pelvic inflammatory disease or tubal factors leading to subfertility needs to be evaluated early. With laparoscopy, it is also possible to visualize and manipulate the uterus, fallopian tubes, and ovaries and see the rest of peritoneal cavity for definite diagnosis [7].

Although diagnostic laparoscopy is an invasive, safe and effective procedure but because of increase in surgical training skills and availability of endoscopic surgical instruments, it is considered as an important procedure to diagnose certain causes like endometriosis, mild PID, peri-tubal blockage, which cannot be diagnosed on transvaginal ultrasound and hyterosalpingograph (HSG). This study is basically conducted to highlight the role of laparoscopy for instant diagnosis of the causes leading to primary and secondary infertility.

2. Material and Methods

This cross sectional study was conducted in Obstetrics and Gynecology Unit of Medical Teaching Institute, Lady Reading Hospital, Peshawar from 1st January 2019 till 31st December 2019. Sample size was calculated by using Open-Epi calculator. Total 595 patients, who had history of primary or secondary infertility, were attended in outpatient clinic. Out of these, 221 patients were recruited after a specific consultation for diagnostic laparoscopy and dye test. They agreed to participate in the study and had signed the structured consent form for procedure. After detailed history, examination and evaluating medical records, they were provisionally considered as the suspected case of pelvic inflammatory disease, endometriosis, polycystic ovaries, and abnormal findings with blocked tubes and fibroid uterus. The exclusion criteria comprised: those who refused procedure or with male factor infertility or having medical disorders like hypertension, cardiac disease, UN-controlled diabetes. Laparoscopy was scheduled in luteal phase of menstrual cycle and performed as day case procedure after doing the baseline

investigations like Complete blood count, Random blood sugar, Hepatitis B surface antigen, Anti HCV antibodies. The ECG and X-Ray were also done if required for pre-anesthetic evaluation. All the data was analyzed using SPSS version-20. P-value < 0.05 with 95% Confidence interval was considered significant For statistical analysis, frequencies, percentages and Mean ± SD used for continuous variables.

3. Results

Total 221 patients were selected for diagnostic laparoscopy and dye test. 158 (71.4%) patients had primary, 63 (28.5%) secondary infertility. Mean age at presentation was 27.6years and 28.8 years in primary and secondary infertility. The mean duration of marriage was 4.51 years in primary and 5.05 years in secondary infertility. 180 (81.4%) patients had pelvic pathology, 41 (18.5%) had normal findings. Common findings in Primary infertility were Polycystic ovaries (PCO) 29(18.5%), Pelvic inflammatory disease (PID) 38(24.05%), blocked tubes 23 (14.43%) in primary, endometriosis 22 (14%), and fibroid uterus 09(5.6%). While the findings in secondary infertility were PID in 20(32%), blocked tubes 19 (30%), PCO 43(19.4%). endometriosis 27 (12.2%), and fibroid uterus 10(4.5%). None of the patients had intra or post-operative complications.

Table 1: Demgraphic Data

Type of infertility	Primary infertility in %	Secondary infertility in %	P-Value
	158(71.4%)	63(28.5%)	
Age			0
22-27 years	80(50.6%)	21(33.3%)	
28-35 years	51(32.2%)	32(50.7)	
>35years	27(21%)	10(15.8%)	
Mean age in years	27.6	28.8	
SD ratio	5.03	4.65	
Marital duration			0
1-5 years	109(68%)	41(65%)	
6-10 years	33(20.89%)	17(26%)	
More than 10 years	16(10.1%)	05(7.9%)	
Mean	4.51	5.05	
SD Ratio	2.49	3.144	
Education status			NA
Illiterate	106(67%)	34(53.9%)	
Primary education	35(22.1%)	13(20.6%)	
Secondary education	12(0.75%)	07(11.1%)	
Higher education	05(0.31%)	09(14.2%)	

Table: 2 Laparoscopic Findings (Sample Size N = 221)

Pathological Findings	Primary infertility in %	Secondary infertility in %	Total = 221
	158(71.4%)	63(28.5%)	
Idiopathic	37(23.4%)	4(6.3%)	41(18.5%)
Pelvic Inflammatory Disease (PID)	38 (24%)	20 (32%)	58 (26.2%)
Tubal blockage			
Unilateral	16 (10%)	12(19%)	28(12.6%)
Bilateral	7(4.4%)	7(11%)	14(6.3%)
Polycystic Ovaries (PCO)	29 (18.35%)	14 (22%)	43 (19.4%)
Endometriosis	22 (14%)	05 (08%)	27 (12.2%)
Fibroid Uterus	09 (5.6%)	01 (1.6%)	10 (4.5%)

4. Discussion

Infertility is a common medical problem. Pakistan is most populous country of the world having a growth rate of 2% and infertility rate of around 21.9%, of which primary infertility constitutes 3.5% and 18.4% secondary infertility (8, 9). Our study included patients mainly from rural and urban areas of Khyber Pakhtu\nkhwa as well as some patients from other provinces and from Afghanistan. The problem is very common as most of patients are illiterate and belongs to low socioeconomic class, they usually go to Hakeem and Dai's for infertility treatment, which leads to further worsening of disease and delayed presentation. In agreement with our results mean age at presentation was 27.6 years in primary and 28.8 years in secondary infertility group and the results are consistent with study conducted by Aziz N [10].

The prevalence of primary infertility in our study is 71.4% and of secondary infertility is 28.5%. Almost same prevalence was reported by Haider G et al. 2010 and Usmani AT, et al [11, 12]. Total 121 (76%) patients with primary infertility and 59 (93%) patients with secondary infertility had pelvic pathology while 37 (23.4%) patients with primary and 04 (6.3%) patients with secondary infertility had no pelvic pathology. Study conducted by Aziz N et al 2010 [10] 25% patients with primary and 11.1% patients with secondary infertility had no pelvic pathology. The difference is probably due to difference in the sample size. The main causes of infertility were pelvic inflammatory disease, tubal blockage, polycystic ovaries and endometriosis. While fibroid uterus and ovaries cysts were seen in few cases. Same pathologies were reported by Talib W et al 2007 [13].

Pelvic inflammatory disease was noted in 38 (24%) cases of primary and 20 (32%) cases of secondary infertility blocked tubes were seen in 23 (14.43% cases of primary and 19 (30%) cases of secondary infertility. Consistent with the study conducted by Haider G [11] and Zargar AH [14] and Nayak PK [7] while G Geol et al [15] has also stated in his study that tubal factor infertility is a major cause of infertility in developing countries. The study

conducted by Samal S et al [16] showed pelvic inflammatory disease (PID) in 1 (3.1%) and 2 (16.7%) cases of primary and secondary infertility respectively. While Tubal causes contributed about 28 cases (37.33%) of primary infertility and 06 cases (24%) with secondary infertility and the results were consistent with our study.

Polycystic ovarian disease is one of the most important endocrine disorders leading to infertility due an ovulatory cycle. In our study polycystic ovaries were found in 29 (18.3%) patients in primary and 14 (22%) patients in secondary infertility group. While high prevalence was reported by Talib W et al [13]. And a study conducted by Omokanye LO et al [17] polycystic ovaries was present in 3 cases (5%) of infertility. The difference in results was probably due to small sample size of the study.

Endometriosis is found in 5-10% of women at reproductive age and the percentage of infertility in women with endometriosis ranges from25- 50% [18]. It is an important cause of infertility which is usually missed on ultrasound and routine hysterosa-lpingogram. Laparoscopy is the gold standard for diagnosis and often can change the management [7]. Endometriosis can be treated at the same time and surgical excision can result in better reproducible prognosis for future pregnancy outcome. In our study endometriosis was noted in 22 (14%) cases of primary and 05 (8%) cases of secondary infertility. Endometriosis was found in 8 (13.3%) of the total cases of infertility in a study conducted by Rizvi SM [19]. In another study conducted by Haider G [11] the incidence was higher, when compared with our study.

Fibroid uterus is a rare cause leading to infertility without any other pathology. In our study, fibroid as a cause was seen in 09 (5.6%) and 01 (1.6%) cases of primary and secondary infertility. While more cases of infertility due to fibroids were present in a study by Kasem SB et al [20] that was 8.09% and 15.19% cases of primary and secondary infertility.

5. Conclusion

Laparoscopy is minimally invasive, more convenient, safe and economic procedure for diagnosis of pelvic pathologies. It should be a part of infertility work up in patients with suspected pelvic pathologies.

Author's contributions

LZ conceived, designed, drafted the initial manuscript, data analysis and supervised the project. AM did data collection, results analysis, carried out bibliography, did critical appraisal and data analysis.

Grant Support & Financial Disclosures: None

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