

# Identification of Factors Contributing to Primary Female Subfertility by Diagnostic Hystero-Laparoscopy: An Experience of Private Hospital

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## ABSTRACT

**Background:** Management of subfertility is influenced by the diagnosis of its causative factor. Combined diagnostic hystero-laparoscopy has emerged as an effective procedure in identifying causative factors of female subfertility.

**Objectives:** This study aimed to identify contributory factors to primary female subfertility by diagnostic hystero-laparoscopy.

**Methods:** This descriptive study was conducted at department of Obstetrics and Gynecology of Hameed Latif hospital, Lahore, Pakistan from December 2021 to May 2022. Data was collected from 344 women with female primary subfertility, undergoing combined diagnostic hystero-laparoscopy. All the demographic data along with identified causative factors (tubal blockade, cervical Os stenosis, endometrial polyp, uterine septum, uterine fibroid, endometriosis, peri tubal adhesions and polycystic ovaries) during the procedure were recorded in predesigned study proforma. Data was analyzed through SPSS software 23.

**Results:** Mean age of the patients was 25±5.0 years and mean duration of subfertility was 3.8±0.55 years. Two hundred and eighty-four (82.56%) patients had abnormal findings, while sixty (17.44%) had normal findings. Out of 284 patients, 94(34%) had one identified factor, while 190 (66%) patients had two or more identified factors for primary subfertility. Polycystic ovaries were seen in 128(37.21%) patients, followed by tubal blockade in 81(23.54%), peri tubal adhesions/hydrosalpinx in 58(16.86%) patients.

**Conclusions:** Diagnostic hystero-laparoscopy is an effective diagnostic procedure for evaluation of female factor subfertility and may be helpful to gynecologists for devising further management plans.

**Key Words:** Diagnostic hystero-laparoscopy, Primary female subfertility

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## INTRODUCTION

Subfertility is defined as any form of reduced fertility with extended time of undesirable non-conception. Subfertility affects around 10-15% of couples in reproductive age group all over the world.<sup>1</sup> World Health Organization (WHO) reports that the overall prevalence of primary subfertility in developing countries is 10-25%. Primary subfertility is reported to have a higher prevalence (57.5%) as compared to secondary subfertility (42.5%).<sup>2</sup> Worldwide, primary subfertility has psychosocial effects

on the women's quality of life and is a matter of concern for the gynecologists throughout the world.

Management of subfertility is largely dependent on the underlying cause. Multiple causes have been identified leading to primary subfertility. These include ovulatory dysfunction, tubal blockage due to adhesions, uterine factors, endometriosis, male factor infertility, and immunological diseases. Despite the absence of above factors, 25% of the couples suffer from unexplained subfertility.<sup>3</sup> It is important to identify the factors so that appropriate treatment can be started. It has been proven that the time between diagnostic testing, and further management for subfertility can influence the success of treatment results.

Laparoscopy has been regarded as the gold standard for diagnosis of tubal blockage as well as early diagnosis of endometriosis and pelvic adhesions. Diagnostic laparoscopy allows the direct visualization of the abdomino-pelvic organs along with identification of other causes like adhesions and endometriosis. A tubal test performed at the end of the procedure can also help to diagnose tubal patency. On the other hand, diagnostic hysteroscopy is the gold standard for diagnosing the intracavitary uterine abnormalities like uterine fibroids, endometrial polyp, and uterine septum as well as the ostia.<sup>4</sup>

It has been seen that laparoscopy detects more abnormalities than hysteroscopy in both primary and secondary subfertility. In a study conducted by Varlas et al. laparoscopy detected 35% of cases while hysteroscopy led to identification of cases in 17% of cases in patients with primary subfertility.<sup>4</sup> Further in another study, it was shown that combined hystero-laparoscopy could detect

abnormalities in 26% of patients with either primary or secondary subfertility.<sup>5</sup> This led to the idea of having a combined diagnostic hystero-laparoscopy in patients with subfertility to look for causative factors, hastening the diagnosis and early intervention where required.

This study aimed to identify the causative factors of primary female subfertility through combined diagnostic hystero-laparoscopy.

## **METHODS**

This cross-sectional study was conducted in department of Obstetrics and Gynecology of Hameed Latif Hospital, Lahore, Pakistan, from December 2021 to May 2022. Hameed Latif Hospital is a 324 bedded tertiary care hospital equipped with advanced infertility management in Lahore, Pakistan. Ethical approval from the Intuitional Review Board was taken before commencement of the study (HLH/HRD/2021-01). Archival record of all the female patients who presented with primary subfertility and underwent the combined diagnostic hystero-laparoscopy in the years 2020-2021, was taken and the information was recorded on a proforma designed for present study.

The information recorded on the study proforma included patient's age, duration of subfertility, and the operative findings of diagnostic hystero-laparoscopy. Any record with missed data was removed from the study.

## **Statistical Analysis**

The data was analyzed through SPSS software, version 23. The numerical data was presented as mean and standard deviation whereas categorical data was presented as frequencies and percentages.

## RESULTS

The mean age of the patients was  $25 \pm 5.0$  years. The mean duration of subfertility was  $3.8 \pm 0.55$  years. Regarding duration of subfertility, 3.77% has complaints for less than 2 years. While 53.48% patients had subfertility for past 2-5 years, followed by 35.36% patients having history of the subfertility for 6-10 year and 7.26 % of the patients having subfertility for more than 10 years (Table 1).

**Table 1: Demographic Characteristics of the Study Participants**

Demographic characteristics	Cases (n=28)	Percentage (%)
<b>Age in years</b>		
Up to 20	3	0.87
21-30	203	59.01
31-40	132	38.37
>40 year	4	1.16
<b>Duration of subfertility</b>		
<2 years	13	3.77
2-5 years	184	53.48
6-10 years	122	35.46
>10 years	25	7.26
<b>Identified factor</b>		
Single factor	94	34
$\geq 2$ factors	190	66

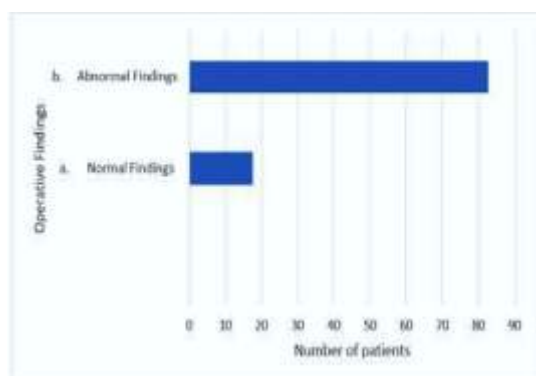


Figure 1: Distribution of patients according to operative findings

Fig:1 show distribution of patients according to operative findings. According to this figure, 284 out of 344 patients (82.56%) had been found to have abnormal findings, whereas 60 out of 344 patients (17.44%) had normal findings during the operative

procedure. Out of 284 patients, 94(34%) one identified factor while 190 (66%) patients had two or more identified factors for primary subfertility.

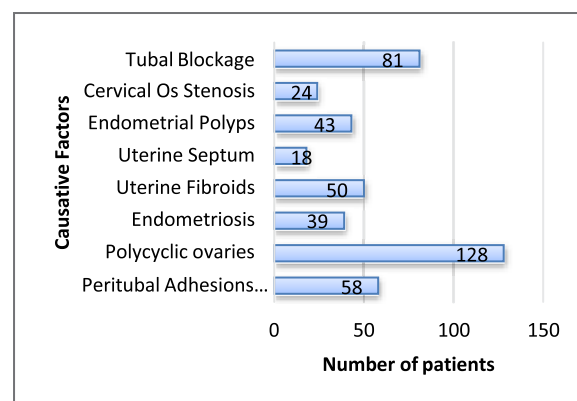


Figure 2: Frequency of causative factors for female primary subfertility

**Table 2: Types of Tubal Blockade as Identified during Procedure**

Tubal Blockage	Cases (n=81)	Percentage (%)
<b>Unilateral Block Tube</b>	35	43.2%
<b>Bilateral Blocked Tubes</b>	46	56.8%

Fig: 2 shows the identified causative factors for female primary subfertility in this study. Polycystic ovaries were seen in 128 out of 284 patients (37.21%), followed by tubal blockade in 81 patients (23.54%). Peri tubal adhesions/hydrosalpinx were seen in 58 patients (16.86%), uterine fibroids in 50 patients (14.53%), endometrial polyps in 43 patients (12.5%), endometriosis in 39 patients (11.33%), cervical stenosis in 24 patients (6.97%) and uterine septum in 18(5.23%) patients. Polycystic ovaries were the most commonly identified factors followed by tubal blockade and adhesions/hydrosalpinx. Table 2 shows the type of tubal blockade seen while carrying out tubal patency test during the procedure.

Out of 81 cases of tubal blockade, 35 were with unilateral tubal block and 46 were with bilateral tubal blockade.

## DISCUSSION

This study aimed to determine the causative factors for primary female as diagnosed by combined hystero-laparoscopy. A data of 344 patients was studied for this purpose. In the present study, 284 (82.54%) patients had one or more abnormal findings. This was an important aspect to consider as the remaining 60(15.46%) patients did not have any findings and may be a case of the 'unexplained subfertility'. Infertility was identified to be single factorial in 34 percent of cases as compared of being multifactorial in 66 percent of patients.

Another important observation in present study was polycystic ovarian disease (PCOD) being the most common causative factor of female subfertility. Worldwide, polycystic ovarian syndrome accounts for 5-15 % of female subfertility with an ovulatory infertility<sup>6</sup>, however, these rates are much higher in Pakistani population as quoted by Azhar et al (52%).<sup>7</sup> Present study reported that 37.21% of the patients presenting to the private hospital, had PCOS. This is in accordance with the study conducted by Fatima et al who reported the overall incidence of PCOS to be 54% among Pakistani women.<sup>8</sup>

Tubal blockade was the second common causative factor in the present study found in 81 (23.54%) of the patients. Worldwide, the overall incidence of tubal blockade is 30-40% accounting for subfertility<sup>9</sup>, which was similar to our findings. However, WHO reported an increased incidence of tubal blockade in one out of four patients with female subfertility in developing countries.<sup>10</sup> Tubal factor seemed to be more common in

Pakistan as compared to the data provided by WHO. Possible explanation may include poor hygiene, low immunity, and susceptibility to recurrent pelvic infections. Among infections, tuberculosis has been inflicted to be a major cause of secondary tubal blockage in Pakistan.<sup>11</sup> Other pathologies influencing tubal patency include peri tubal adhesions and hydrosalpinx which was reported in 58(16.8%) of cases.

All the above-mentioned factors were diagnosed by diagnostic laparoscopy. However, other factors like uterine fibroids-whether indenting the uterine cavity-could only be diagnosed during hysteroscopy. Hence, performing a combined diagnostic hystero-laparoscopy hastens the early diagnosis and timely intervention in female patients with subfertility.<sup>12-14</sup> Zhang et al reported that combined hystero-laparoscopy allows the gynecologists to identify the cause and do any necessary therapeutic intervention, if needed.<sup>13</sup>

## CONCLUSION

Primary female subfertility in Pakistan is caused by multiple factors. Diagnostic hystero - laparoscopy is an effective diagnostic procedure for evaluation of female factor subfertility and can guide treating gynecologists for further successful management plans.

### Limitations

This retrospective study was single centered, and data was collected over limited time duration. Further studies are recommended with data collection from multiple centers all over the country as well as outside the country to compare the results to see recent updates in causative factors for femalesubfertility.

### Conflict of interest:

All authors declared no conflict of interest.

## Contributors

**YL:** Idea conception, Manuscript writing, critical review

**SI:** Data collection, data analysis, and manuscript finalization, critical review

**ZS:** Data analysis, manuscript writing and critical review.

All authors approved the final version and signed the agreement to be accountable for all aspects of work.

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