

A STUDY OF DIFFERENT TUBAL FACTORS CAUSING PRIMARY SUBFERTILITY IN PUMHS TERTIARY CARE HOSPITAL

Mehwish Mehmood¹, Muhammad Siddique Rajput², Altaf Hussain Memon³,
Ghulam Mujtaba Shah⁴, Nida Khaskheli⁵, Rukhsana Malik⁶

¹FCPS Trainee, Department of Gynecology & Obstetrics, PUMHS, Nawabshah

²Associate Professor, Department of Community Medicine, PUMHS, Nawabshah

³Associate Professor, Department of Physiology, PUMHS, Nawabshah

^{4,5}Assistant Professor, Department of Physiology, PUMHS, Nawabshah

⁶Assistant Professor, Department of Pharmacology, PUMHS, Nawabshah

²dr_rana82@yahoo.com

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Corresponding Author: *
Muhammad Siddique Rajput

Abstract

Primary subfertility can be defined as a medical condition in which couples are facing difficulty in conceiving after one year of regular and unprotected intercourse. The objectives of our study were to evaluate different tubal factors that cause primary subfertility and to examine the diagnostic procedures such as hysterosalpingography, sonohysterography, laparoscopy with chromopertubation, and pelvic ultrasound used to diagnose tubal factors leading to primary subfertility in patients in PUMHS in tertiary care hospitals

Methodology: This cross-sectional study was conducted at the Department of Gynecology and Obstetrics at Institute of mother and child care, Nawabshah - SBA over one year with a sample size of 200 patients. Different methods were used to collect data, such as medical-related surveys, free camps organized to collect data, and clinical evaluation by diagnostic procedures. All the patients were diagnosed with primary subfertility, hence evaluating the cause of infertility.

Results: The results showed that tubal defects are directly associated with difficulty in the fusion of the gametes in fallopian tubes. Tubal blockage appeared in 45% of females and hydrosalpinx in 38% of patients. Congenital anomalies were also found in 25% of females and fimbrial dysfunction in 65% of patients.

Conclusion: It is concluded that according to the findings, tubal defects are the main cause of primary subfertility in females in Institute of mother and child care, Nawabshah -SBA which include tubal blockage, tubal strictures, hydrosalpinx, tubal adhesion, and congenital anomalies of the uterus. In this context, there is a need for awareness in females for immediate treatment after diagnosis of tubal defects for reproductive health concerns (Tamrakar SR, 2022).

Introduction

It is noted that primary subfertility can be defined as a medical condition in which couples are facing difficulty in conceiving after one year of regular and unprotected intercourse. However,

the purpose of this study is to identify the various tubal factors comprehensively that contribute to primary subfertility (Parveen U, 2024). These tubal factors may include Tubal blockage (unilateral or bilateral), Hydrosalpinx (fluid-filled

fallopian tubes), Tubal adhesions (from endometriosis or surgery), Fimbrial dysfunction (impaired egg pickup), and Congenital tubal anomalies. A study presented by Khan UY in 2025 showed that tubal activity is considered one of the main factors that facilitates the transportation of gametes and serves as the site of fertilization. Disruption in fallopian tubes causes primary subfertility. There are different types of tubal deformity such as tubal adhesion, tubal blockage, hydrosalpinx, and fimbrial dysfunction. Primary subfertility is considered as the most emerging issue among young couples and tubal defects are the main cause of difficulty in conceiving (Khokhar JA 2021). Previous studies discussed the tubal factors corresponding to tubal deformities (uz Zaman M. 2022). It is critically focused that the research literature evaluated the complications and challenges associated with the increase in cases of primary subfertility because most couples continuously face primary subfertility (Haider G, 2021). However, different types of tubal factors contribute to primary subfertility in females (Gul R, 2022). This study particularly addresses the impact of different tubal defects on the reproductive health of females in Institute of mother and child care, Nawabshah -SBA. This study would help to identify the cause of why women are not conceiving after one year of regular and unprotected intercourse (Azeem A, 2022).

This study aims to evaluate different tubal factors contributing to primary subfertility among patients presenting at PUMHS Tertiary Care Hospital. Different data-collecting procedures were organized to evaluate patients through various lab investigations (Zahoor R, 2022). In this era tubal defects are the most common cause of primary subfertility hence, there is a need to completely evaluate the different tubal factors that cause primary subfertility Institute of mother and child care, Nawabshah -SBA (Hussain M, 2022). This study completely evaluates the causative tubal factor for the sake of significant results.

Methodology

Study Design and Setting: A cross-sectional study was conducted at the Department of Gynecology and Obstetrics at Institute of mother and child care, Nawabshah -SBA over one year with a sample size of 200 patients. Ethical approval was taken from CPSP **IBR number:** OBG-2023-226-13541 and form the Institute.

Targeted population: All the patients were diagnosed with the primary subfertility hence, evaluating the cause of infertility. It is noted that in most cases, women are dealing with continuous disruption in the fusion of the gametes that would be more effective in the patient who is supposed to have regular and unprotected intercourse. This study completely evaluates the causative tubal factor for the sake of significant results. All female patients aged 20-40 years who are unable to conceive after one year of regular unprotected intercourse were included in our study. Females with uterine abnormalities, cystic uterus, defective endocrine hormone mechanisms, and secondary subfertility, patients with hysterectomy or any permanent blockage of the fallopian tubes were excluded.

Data Collection and Diagnostic Procedures

There are different methods used to collect data randomly such as medical-related surveys, different free camps organized to collect data, and clinical evaluation by diagnostic procedures. The medical investigation includes a complete history of the patient that would be beneficial for the effective diagnosis. All the patients underwent comprehensive examination with relevant laboratory investigation. Following are some diagnostic procedures used:

- **Hysterosalpingography (HSG):** It is noted that hysterosalpingography is an x-ray procedure that uses specific types of contrast or dye to evaluate the fallopian tubes and uterus (Rosielle K, 2024). This evaluation contributes to finding out the cause of primary subfertility such as tubal blockage and strictures (Chiegwu HU, 2024).
- **Sonohysterography:** Sonohysterography is a special type of ultrasound procedure that uses sterile saline to examine the uterus and fallopian

tubes (Pekar-Zlotin M, 2024). In this procedure, fluid is inserted by a thin plastic tube causing clear images of the uterus. It helps to assess tubal and uterine pathologies (Ahmad MI, 2025).

- **Laparoscopy with Chromopertubation:** This procedure is considered the gold standard modality for effective responses and detection of any pelvic disorder associated with tubal disruption and blockage (El Ony AE, 2025). In this context, tubal pathology, endometriosis, and

pelvic adhesions are easily detected (Sharma P, 2024).

- **Pelvic Ultrasound:** It is noted that pelvic ultrasound is one of the simplest techniques that uses ultrasonic waves to image the uterus of patients with some disruption. This modality helps to better diagnose any stricture and blockage in the fallopian tubes that hinder the gametes from fusing in the tubes (Cai L, 2024). In this context, it helps to assess the hydrosalpinx and other tubal abnormalities (Tong A, 2024).

Results

Table No. 01: Characteristics of the study participants (n = 200)

Sr. No.	Characteristics	Frequency (%)
1	Age Categories	
	➤ 18 to 28 years	132 (17.9)
	➤ 29 to 38 years	56 (44.8)
	➤ 39 years and above	12 (37.3)
2	Residence	
	➤ Urban	104(43.3)
	➤ Rural	96 (56.7)
3	Socioeconomic status	
	➤ Poor Class	82 (40.3)
	➤ Middle Class	102 (50.8)
	➤ Upper Class	16 (8.9)
4	Co-morbidities	
	➤ No	174 (56.7)
	➤ Hypertension	13 (17.9)
	➤ Diabetes	11 (25.4)
5	BMI Classification	
	➤ Under weight	55 (8.9)
	➤ Normal	63 (43.3)
	➤ Over weight and obese	82 (47.8)

Table No. 02 Mean Age, BMI, mean GB operative score and severity score of the participants.

Sr. No.	Characteristics	Mean & Standard Deviation
1	Age (years)	38.44 ± 7.96
2	Body Mass Index (Kg/m ²)	26.53 ± 3.58

Mean age of the study participants was 38.44 ± 7.96 years; Mean BMI of the participants was 26.53 ± 3.58 Kg/m²

Distribution of Tubal Factors

Table 1: Frequency Distribution of Tubal Blockage

Tubal Blockage	Frequency (N)	Percentage (%)
Yes	90	45%
No	110	55%
Total	200	100%

It is observed that 90 (45%) patients were diagnosed with tubal blockage and 110 (55%) of the patients showed negative responses in PUMHS tertiary care hospital. In this context, tubal blockage is considered one of the major

causes of primary subfertility in patients who are undergoing continuous and unprotected intercourse. It appeared a causative factor that hinders gametes from fusing hence, indicates a major barrier in most of the patients.

Table 2: Frequency Distribution of Hydrosalpinx

Hydrosalpinx	Frequency (N)	Percentage (%)
Yes	77	38%
No	123	62%
Total	200	100%

A question related to hydrosalpinx was asked to examine 200 patients in PUMHS tertiary care hospital by medical procedure. In response, 77 (38%) patients were diagnosed with hydrosalpinx. On the other hand, 123 (62%) female patients did not respond to hydrosalpinx. It is observed

that hydrosalpinx is considered moderately effective in the patients and if remains untreated, it leads to secondary subfertility despite primary subfertility in patients. It causes serious disruption in the tubal activities that creates more difficulties in conceiving.

Table 3: Frequency Distribution of Tubal Adhesions

Tubal Adhesions	Frequency (N)	Percentage (%)
Yes	164	82%
No	36	18%
Total	200	100%

It is noted that 200 female patients underwent medical investigation in the PUMHS tertiary care hospital. In response, 164 (82%) females were diagnosed with tubal adhesion. In contrast, 36 (18%) of the female patients were not

diagnosed with tubal adhesion. According to medical history, endometriosis and post-surgical defects are the most common causes of extra tissue growth in the fallopian tubes that restrict fertilization hence, cause difficulty in conceiving.

Table 4: Frequency Distribution of Fimbrial Dysfunction

Fimbrial Dysfunction	Frequency (N)	Percentage (%)
Yes	120	60%
No	80	40%
Total	200	100%

In the PUMHS tertiary care hospital, a total of 200 female patients were examined to find out the cause of difficulty in conceiving after one year of regular and unprotected intercourse. It

resulted that 120 (60%) patients were diagnosed with fimbrial dysfunction on the other hand, 80 (40%) patients were not diagnosed with it.

Table 5: Frequency Distribution of Congenital Anomalies

Congenital Anomalies	Frequency (N)	Percentage (%)
Yes	50	25%
No	150	75%
Total	200	100%

It is noted that 50 (25%) female patients were diagnosed with congenital anomalies when a total of 200 female patients were examined in PUMHS

Discussion

According to the results extracted by medical examination in Institute of mother and child care, Nawabshah -SBA, there is a direct contribution of tubal defects in causing primary subfertility in females. Tubal pathologies act as a primary factor in primary subfertility. In this context, females with any type of tubal disruption or disturbance, face difficulty in conceiving after at least one year of regular and unprotected intercourse (Tong A, 2024). However, this condition restricts the fusion of gametes. The findings suggest various types of tubal pathologies such as tubal blockage, stricture, hydrosalpinx, congenital anomalies, and fimbria dysfunction. It is observed that all these pathologies may be unilateral or bilateral with severe impact associated with reproductive health. Infection and inflammation both create tubal inefficiency. All the studies suggest that hydrosalpinx is associated with PID hence, requires early diagnosis and treatment (Dereli ML, 2025). Tubal defects need regular and immediate treatment to mitigate all the issues that are directly associated with reproductive tract infection and inflammation.

These studies completely describe the previous studies and on comparison with previous studies, it is noted that there is a high prevalence of this disease and considered an infectious etiology in developing regions. In this context, various medical procedures are used to completely examine the patient and identify the cause of primary subfertility in females (Thurston, 2019). The findings showed that about 70-80% of the females are facing tubal defects and difficulties in conception. The examination showed that 45% of the females were suffering from tubal blockage, 38% of the patients were suffering from

tertiary care hospital. This study was done to find out the effect of congenital anomalies of the uterus that take part in disruption in fertilization. hydrosalpinx, 60% with fimbrial dysfunction, and 25% of patients were dealing with congenital anomalies.

It is stated that ultrasound, x-ray, and laparoscopy appeared helpful in diagnosing pelvic disorders or tubal defects. Most of the patients were facing pelvic inflammation and infection. According to this information, there is a need to critically focus on the cause of tubal factors in primary subfertility (Andleeb, 2023).

Conclusion

It is concluded that tubal factors are considered one of the main causes of difficulty in the fusion of the gametes in the uterus. This cross-sectional study completely demonstrates that tubal blockage (complete or partial), tubal strictures, hydrosalpinx, and fimbrial dysfunction are predominant factors when investigating or researching in the PUMHS tertiary care hospital. It is also observed that the tubal defects are previously connected to infections and inflammation in the pelvic region with uterus deformities. As a result, it is stated that tubal defects need immediate and early diagnosis with treatment. It is critically focused that awareness programs and campaigns would help in reducing the risks of primary subfertility in young couples. Hence, diagnostic modalities appeared helpful however, more beneficial treatments and diagnostic techniques must be followed to improve the reproductive health of the females.

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