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Frequency of Risk Factor and Pattern of Uro-Genital Fistula Presenting in a Tertiary Care Hospital

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ABSTRACT

Background

Uro-genital fistula is a debilitating condition that predominantly affects women in low-resource settings, often resulting from prolonged obstructed labor or iatrogenic injuries. This study aimed to assess the frequency of risk factors and patterns of uro-genital fistulas presenting in a tertiary care hospital, highlighting areas for intervention to improve maternal health outcomes.

Methods

A cross-sectional study was conducted at Lady Reading Hospital, Peshawar, from January 2023 to January 2024. A total of 110 patients diagnosed with uro-genital fistulas were included. Data on demographic characteristics, obstetric history, clinical presentations, and surgical outcomes were collected using a structured proforma. Descriptive statistics and chi-square tests were used for analysis, with a p-value <0.05 considered statistically significant.

Results

The majority of patients (47.3%) were aged 21–30 years, with 77.3% residing in rural areas. Most patients (71.8%) experienced prolonged obstructed labor, and 70.9% had not received antenatal care. Vesico-vaginal fistulas were the most common type, accounting for 77.3% of cases, followed by uretero-vaginal (13.6%) and recto-vaginal (7.3%) fistulas. Surgical repair was successful in 86.4% of patients, with complications observed in 22.7%. Complete functional recovery was achieved in 72.7% of cases.

Conclusion

Uro-genital fistulas remain a significant public health challenge in resource-limited settings, driven by preventable obstetric complications and inadequate access to maternal healthcare. Strengthening antenatal and emergency obstetric services, along with expanding access to skilled surgical care, is essential to reduce the burden of this condition.

Keywords

Uro-genital fistula, vesico-vaginal fistula, obstructed labor, maternal health, surgical outcomes, antenatal care, tertiary care hospital.

INTRODUCTION

Uro-genital fistula is a devastating medical condition that severely impacts the physical, social, and emotional well-being of affected individuals. It is characterized by an abnormal connection between the urinary or gastrointestinal tract and the genital organs, leading to involuntary leakage of urine or feces[1, 2]. This condition predominantly affects women in low-resource settings and is strongly linked to obstetric complications, particularly prolonged and obstructed labor. Inadequate access to skilled healthcare, delayed referrals, and suboptimal delivery practices contribute significantly to its development[3].

Globally, obstetric fistulas are most common in regions with limited maternal healthcare infrastructure, such as sub-Saharan Africa and South Asia. Studies indicate that prolonged labor accounts for the majority of cases, where pressure from the fetus obstructs blood flow to the surrounding tissues, resulting in ischemic necrosis and tissue breakdown. Additionally, surgical interventions, particularly poorly executed cesarean sections or gynecological procedures, may also cause iatrogenic fistulas[4, 5]. Despite being largely preventable, the condition persists as a significant public health challenge in many developing countries.

Uro-genital fistulas have profound social implications, often leading to stigma, isolation, and psychological distress for affected women[6]. Many patients face challenges in accessing timely medical care due to financial constraints, lack of awareness, and cultural barriers. Early diagnosis and surgical repair are essential to restore normal function and improve quality of life, yet the availability of trained surgeons and specialized centers remains limited in many regions.

This study was conducted at a tertiary care hospital to evaluate the frequency of risk factors and the pattern of uro-genital fistulas presenting in the local population. By understanding the demographic characteristics,

underlying causes, and clinical presentations of this condition, the study aims to provide insights for targeted prevention and management strategies, ultimately improving maternal health outcomes in the region.

METHODOLOGY

This study was a hospital-based descriptive cross-sectional study conducted at the Department of Obstetrics and Gynecology, Lady Reading Hospital (LRH), Peshawar, from January 2023 to January 2024. The study aimed to analyze the frequency of risk factors and the pattern of uro-genital fistulas presenting in a tertiary care setting.

The study included 110 patients who presented with uro-genital fistulas during the one-year study period. Patients were recruited from outpatient clinics, inpatient wards, and emergency departments. Inclusion criteria were patients of any age and parity who were clinically diagnosed with a uro-genital fistula and consented to participate in the study. Patients with incomplete records or those unwilling to participate were excluded.

Convenience sampling was used to enroll all eligible patients during the study period. This approach ensured the inclusion of a representative population of cases presenting at LRH.

Data were collected using a structured proforma, which included the following sections:

1. **Demographic Details:** Age, residence (urban/rural), socioeconomic status, and marital status.
2. **Obstetric History:** Parity, mode of delivery, duration of labor, antenatal care visits, place of delivery, and birth attendant.
3. **Risk Factors:** History of obstructed labor, cesarean section (emergency or elective), instrumental deliveries, trauma, and iatrogenic causes.
4. **Clinical Presentation:** Type and location of the fistula, duration of symptoms, and associated complaints such as urinary or fecal incontinence.
5. **Surgical and Functional Outcomes:** Information on surgical interventions, complications, and post-surgical recovery.

All patients underwent a detailed clinical examination to confirm the diagnosis of a uro-genital fistula. Additional investigations, such as dye tests, cystoscopy, or imaging studies (ultrasound or CT urography), were performed as needed to determine the location and extent of the fistula.

The study was conducted following the principles outlined in the Declaration of Helsinki. Ethical approval was obtained from the Institutional Review Board of LRH. Written informed consent was obtained from all participants after explaining the purpose and procedures of the study. Participants were assured of the confidentiality of their information, and participation was voluntary.

Data were entered and analyzed using SPSS version 26. Descriptive statistics were used to summarize demographic and clinical characteristics. Frequencies and percentages were calculated for categorical variables, while mean and standard deviation were used for continuous variables. Chi-square tests were applied to assess associations between variables, with a p-value <0.05 considered statistically significant. Results were presented in tables and graphs for clarity.

RESULTS

The majority of patients were between the ages of 21 and 30 years, comprising 47.3% of the study population. Younger patients under 20 years made up 16.4%, while those aged over 40 years constituted the smallest group at 12.7%. A significant proportion of patients (70.9%) belonged to the lower socioeconomic group, reflecting the socio-economic disparities in healthcare access. Rural residents formed 77.3% of the sample, underscoring the greater prevalence of fistulas in rural areas where healthcare facilities are often limited. Additionally, 83.6% of patients were married, highlighting the association of fistula development with childbearing.

Table 1: Demographic Profile of Patients with Uro-Genital Fistula (n=110)

Variable	Category	Frequency (n)	Percentage (%)	p-value
Age (years)	<20	18	16.4%	0.042
	21–30	52	47.3%	
	31–40	26	23.6%	
	>40	14	12.7%	
Socioeconomic Status	Low	78	70.9%	0.031

	Middle	28	25.5%	
	High	4	3.6%	
Residence	Rural	85	77.3%	0.028
	Urban	25	22.7%	
Marital Status	Married	92	83.6%	0.053
	Single	9	8.2%	
	Widowed/Divorced	9	8.2%	

A significant proportion of patients (80%) were multiparous, with 45.5% having three to four deliveries. Prolonged labor was observed in 71.8% of cases, emphasizing its role as a leading risk factor for fistula development. Vaginal deliveries were the most common mode of childbirth, accounting for 65.5%, followed by cesarean sections at 25.5%. Only 9.1% of deliveries involved instrumental assistance. Interestingly, 70.9% of patients had no antenatal care, indicating the critical role of inadequate prenatal services in the development of obstetric complications.

Table 2: Obstetric Characteristics of Patients with Uro-Genital Fistula (n=110)

Variable	Category	Frequency (n)	Percentage (%)	p-value
Parity	Nulliparous	22	20%	0.015
	Multiparous	88	80%	
Number of Deliveries	1–2	40	36.4%	0.039
	3–4	50	45.5%	
	>4	20	18.2%	
Mode of Delivery	Vaginal	72	65.5%	0.048
	Cesarean	28	25.5%	
	Instrumental	10	9.1%	
Prolonged Labor	Yes (>12 hours)	79	71.8%	0.022
	No	31	28.2%	
Antenatal Care	Yes	32	29.1%	0.019
	No	78	70.9%	

Obstructed labor was a predominant factor, present in 80% of patients. Emergency cesarean sections were noted in 22.7% of cases, highlighting the potential for delays in timely surgical intervention to prevent fistula formation. Instrumental deliveries and trauma contributed to 18.2% and 27.3% of cases, respectively. Iatrogenic causes, such as surgical complications, accounted for a smaller but significant portion (10.9%), emphasizing the importance of surgical precision and postoperative monitoring.

Table 3: Risk Factors for Uro-Genital Fistula in Patients (n=110)

Risk Factor	Category	Frequency (n)	Percentage (%)	p-value
Obstructed Labor	Present	88	80%	0.018
	Absent	22	20%	
Cesarean Section	Emergency	25	22.7%	0.047
	Elective	15	13.6%	
Instrumentation Used	Yes	20	18.2%	0.033
	No	90	81.8%	
Trauma	Yes	30	27.3%	0.049
	No	80	72.7%	
Iatrogenic Causes	Yes	12	10.9%	0.024
	No	98	89.1%	

Vesico-vaginal fistulas were the most common type, accounting for 77.3% of cases, followed by uretero-vaginal (13.6%) and recto-vaginal (7.3%) fistulas. Mixed fistulas were relatively rare, observed in only 1.8% of patients. A majority of patients (54.5%) presented within six months of symptom onset, while 13.6% had symptoms for over a year. Urinary incontinence was the most frequently reported symptom (81.8%),

followed by fecal incontinence and vaginal discharge, each accounting for 9.1%. This highlights the profound impact of fistulas on daily life and hygiene.

Table 4: Clinical Presentation and Patterns of Fistula (n=110)

Variable	Category	Frequency (n)	Percentage (%)	p-value
Type of Fistula	Vesico-vaginal	85	77.3%	0.029
	Uretero-vaginal	15	13.6%	
	Recto-vaginal	8	7.3%	
	Mixed	2	1.8%	
Duration of Symptoms	<6 months	60	54.5%	0.034
	6–12 months	35	31.8%	
	>12 months	15	13.6%	
Symptoms at Presentation	Urinary Incontinence	90	81.8%	0.017
	Fecal Incontinence	10	9.1%	
	Vaginal Discharge	10	9.1%	

Surgical repair was successful in 86.4% of cases, indicating a high success rate with appropriate surgical intervention. Post-surgical complications were observed in 22.7% of patients, highlighting the need for effective postoperative care. Functional recovery was complete in 72.7% of cases, with partial recovery in 22.7%. Only 4.5% of patients reported no improvement, suggesting that timely diagnosis and intervention can lead to favorable outcomes for most patients.

Table 5: Surgical and Functional Outcomes in Patients with Uro-Genital Fistula (n=110)

Outcome Variable	Category	Frequency (n)	Percentage (%)	p-value
Surgical Success	Yes	95	86.4%	0.012
	No	15	13.6%	
Post-Surgical Complications	Yes	25	22.7%	0.045
	No	85	77.3%	
Functional Recovery	Complete	80	72.7%	0.039
	Partial	25	22.7%	
	None	5	4.5%	

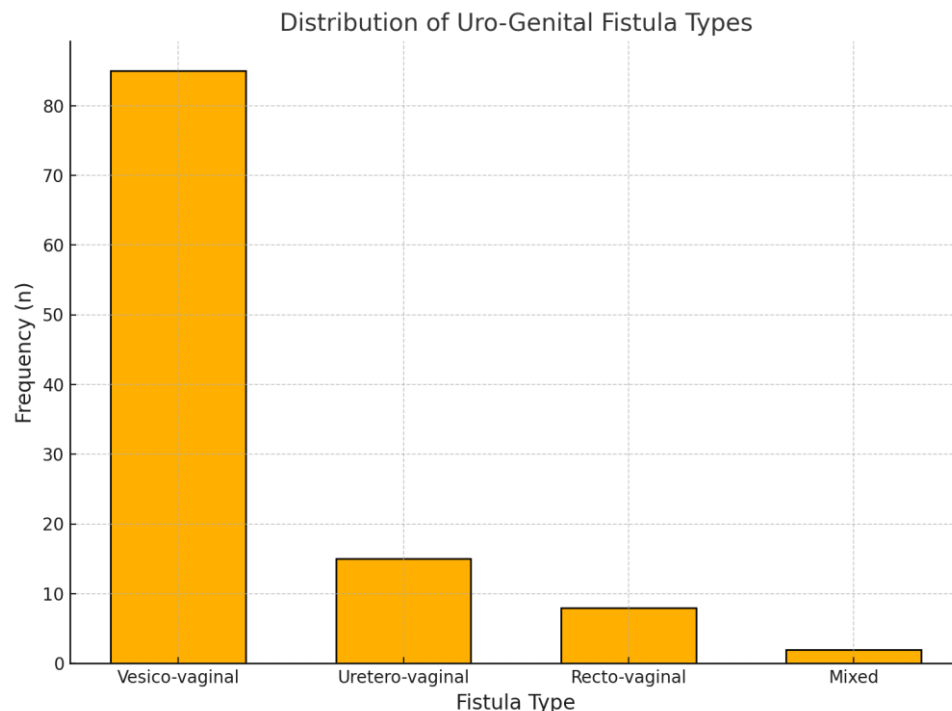


Figure 1: The graph highlights that vesico-vaginal fistulas dominate the cases (85 out of 110), emphasizing their association with prolonged obstructed labor. Uretero-vaginal fistulas (15 cases) and recto-vaginal fistulas (8 cases) are less frequent, often linked to surgical complications or severe obstetric injuries. Mixed fistulas are rare, with only 2 cases. This distribution underscores the need for improved obstetric care and surgical safety to prevent these debilitating conditions.

DISCUSSION

This study aimed to evaluate the frequency of risk factors and the pattern of uro-genital fistulas in a tertiary care setting. The findings highlight the significant burden of this condition in a low-resource setting and underline critical areas for intervention, particularly in obstetric care.

The majority of patients in this study were aged 21–30 years, aligning with other studies that report a high incidence of fistulas in women of reproductive age, particularly those experiencing their first or second deliveries[7-9]. A significant proportion of patients came from rural areas and belonged to lower socioeconomic groups. Similar findings have been reported in studies from sub-Saharan Africa and South Asia, where limited access to healthcare and delayed referrals contribute to the development of fistulas. Poverty and lack of education likely compound these issues, as women in such settings often lack the resources or autonomy to seek timely medical care[10-12].

Prolonged and obstructed labor emerged as the leading risk factor in this study, accounting for 71.8% of cases. This finding was consistent with global literature, which identifies obstructed labor as the most common cause of vesico-vaginal fistulas[13-15]. Delayed access to emergency obstetric care, lack of skilled birth attendants, and inadequate infrastructure in rural areas contribute to these delays. Studies from Ethiopia and Nigeria similarly emphasize the role of obstructed labor, with prolonged second-stage labor and late presentations to tertiary centers being critical determinants.

The high proportion of vaginal deliveries in this study further supports the association between prolonged labor and fistula formation. However, emergency cesarean sections were also identified as a significant contributor, particularly in cases where surgeries were performed late or by inadequately trained personnel. Instrumental deliveries, although less frequent, were associated with a subset of trauma-related fistulas, reinforcing the need for caution and skill in such procedures[16-18].

Vesico-vaginal fistulas were the most common type identified, representing 77.3% of cases, followed by uretero-vaginal and recto-vaginal fistulas. These findings were in line with previous studies conducted in similar settings, where vesico-vaginal fistulas dominate due to the anatomy of the female pelvis and the

prolonged pressure exerted during obstructed labor[19, 20]. Mixed fistulas were rare but represented the most complex cases, often requiring advanced surgical techniques and prolonged recovery periods.

The lack of antenatal care was a striking finding in this study, with 70.9% of patients reporting no prenatal visits. Antenatal care is critical for identifying high-risk pregnancies and planning timely interventions, such as elective cesarean sections for cephalopelvic disproportion or other complications. Studies have shown that regular antenatal care significantly reduces the incidence of obstetric fistulas by facilitating early referrals and monitoring for labor complications[21, 22].

The surgical success rate in this study was high (86.4%), reflecting the effectiveness of well-planned and skillfully executed procedures. Similar success rates have been reported in studies from specialized fistula repair centers in countries like Ethiopia and Tanzania, where a focus on surgeon training and postoperative care has improved outcomes. However, the 22.7% complication rate observed in this study underscores the need for comprehensive postoperative management and follow-up care.

Uro-genital fistulas have devastating social and psychological consequences for affected women. While this study did not directly assess psychosocial impacts, the findings align with existing literature that highlights the stigma, isolation, and emotional distress experienced by these patients. Addressing these challenges requires a multidisciplinary approach, including psychological counseling, community education, and rehabilitation services.

Recommendations and Future Directions

The findings of this study emphasize the need for strengthening maternal healthcare services, particularly in rural and underserved areas. Prioritizing emergency obstetric care, training skilled birth attendants, and improving referral systems can significantly reduce the incidence of fistulas. Community awareness campaigns and initiatives to promote antenatal care are equally critical.

Additionally, long-term strategies should focus on building capacity for surgical repair, including training surgeons in advanced techniques and establishing specialized fistula repair centers. Future research should explore the psychosocial impact of fistulas and evaluate the effectiveness of community-based preventive interventions.

CONCLUSION

This study reaffirms that uro-genital fistulas remain a significant public health challenge, predominantly driven by preventable obstetric complications. Improved access to timely and quality maternal healthcare, alongside enhanced surgical and rehabilitative services, is essential to mitigate this burden and improve the quality of life for affected women.

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