ORIGINAL ARTICLE

PSYCHOLOGICAL AND SOCIAL IMPACT ON THE LIVES OF VESICOVAGINAL FISTULA PATIENTS PRE- AND POST-SURGICAL REPAIR

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ABSTRACT

Objective: This study evaluated the psychological and social changes in patients undergoing surgical repair for VVF.

Materials & Methods: A cross-sectional study was conducted in the Department of Urology at Khyber Teaching Hospital, Peshawar, from May 2019 to September 2024. Seventy patients with confirmed VVF were enrolled. Diagnosis was established by cystoscopy and vaginoscopy. Surgical repair was performed 4–6 weeks after onset, followed by three days of hospitalization and regular follow-up. Psychological and social outcomes were assessed using validated tools and the Patient Global Impression of Improvement (PGI-I) scale at three months.

Results: The mean age of participants was 40.6 ± 10.2 years; 78.9% were multiparous. The mean fistula size was 11.5 ± 4.5 mm, with supratrigonal fistulas more common (60.6%). Hysterectomy was the leading cause (46.5%), followed by cesarean section (29.6%) and difficult labor (16.9%). The overall closure success rate was 90.1%, with higher rates in smaller fistulas ($p = 0.02$). Patients with failed repairs had longer hospital stays (5.1 ± 0.7 vs. 3.7 ± 0.7 days, $p < 0.001$). Minor complications occurred in 14.2% of cases. Psychological distress decreased significantly after surgery; persistent incontinence was associated with higher PTSD and depression. Over 90% reported symptom improvement (PGI-I < 3).

Conclusion: Early surgical repair of VVF yields high closure rates and substantial psychological and social recovery. Comprehensive care, including psychosocial support, is essential for optimal reintegration and quality of life.

Keywords: Vesicovaginal fistula (VVF), surgical repair, psychological impact, social reintegration, quality of life.

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INTRODUCTION

Vesicovaginal fistula (VVF) is a serious medical condition caused by an abnormal passage between the bladder and vagina. It leads to constant urine leakage. [1] The condition causes not only remarkable physical discomfort by means of a wet feeling, odor, and predisposing the self to irritation, but also fundamentally damages patients' mental health, social relationships, and sex life. The psychological and social consequences of VVF are well established, with patients often experiencing social isolation, stigma, marital discord, depression, and reduced quality of life. [6-9] These challenges emphasize the pressing need for a management strategy that addresses both the physical and psychosocial aspects of this condition.

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In this study, psychological impact refers to the emotional and mental health consequences of VVF, including depression, post-traumatic stress symptoms, and psychological distress. Social impact refers to the effects of the condition on interpersonal relationships, marital life, social participation, stigma, isolation, and reintegration into the community. Assessing both domains provides a comprehensive understanding of the burden of VVF before and after surgical repair. The causes of VVF are significantly different between developed and developing countries. In high-income nations, the condition is primarily associated with gynecological or pelvic surgeries, radiotherapy, and malignancies. [2] In contrast, in low-resource settings, obstructed labor is the leading cause of VVF. Prolonged labor with an obstructed fetal head can cause ischemic injury to the tissue, resulting in the formation of a fistula. The incidence of VVF in developed countries ranges from 0.3% to 2.0%, whereas in regions such as South Asia and Africa, the prevalence can reach up to 4.09 cases per 1,000 deliveries. [3, 6] Factors such as early marriage, poverty, low literacy rates, malnutrition, and lack of access to antenatal and emergency obstetric care all contribute to making the problem worse in these areas. [7] These dis-

crepancies strongly suggest that in both medical and economic terms, VVF must thus be confronted. Hysterectomy, whether cesarean or simple, is the most common surgical procedure associated with VVF (63%-91% of cases). [4] Unintended injuries to the urinary system during electro-coagulation treatment are also a significant cause, constituting 70% of such injuries diagnosed after surgery. [5] Various surgical techniques, including transabdominal, transvaginal, laparoscopic, and robotic approaches, have been used to repair VVF. [8]

However, no consensus has been reached on the optimal timing of surgical intervention. Even though the literature presents various opinions, most recommend waiting 3 months after a fistula is created for the inflammation to subside. But this delay only increases the psychological and social burden on patients. [8] VVF has long-term effects in both psychological and physical terms. Research has shown that early surgical intervention can significantly improve patients' quality of life and psychological well-being. [14,16] For example, research conducted in Ethiopia found a substantial drop in psychological distress among fistula patients two weeks after surgery. [17] Nevertheless, there are no published quantitative studies specifically examining the psychological and social issues that patients face when they return home, where they may encounter obstacles and hardships of a different nature. [15] This gap in the research indicates that the long-term psychosocial impact of VVF and the effect of early surgery need further scrutiny.T

he focus of the research is to evaluate whether early surgery can help resolve VVF arising from benign gynecologic procedures, and to explore how this treatment affects patients' quality of life psychologically and socially. Using a pre/post design, we aimed to measure changes in psychiatric symptoms and social consequences of bladder repair before treatment until 3 months after discharge from the hospital. The study will fill these knowledge gaps, adding to the already substantial body of data supporting early surgical intervention and supportive care for VVF sufferers. Such findings could be used to shape clinical practice and thus impact those who suffer from the condition.

MATERIALS AND METHODS

We conducted a cross-sectional study in the Department of Urology at Khyber Teaching Hospital, Peshawar, from May 2019 to September 2024. The study included 70 women aged 20–60 years with vesicovaginal fistula (VVF) secondary to benign gynecological surgeries, including abdominal or vaginal hysterectomy, cesarean section, myomectomy, and pelvic organ prolapse surgery. Patients with fistulas related to malignancy, radiotherapy, diabetes mellitus (fasting blood glucose >126 mg/dL), immunosuppressive conditions (e.g., HIV or genitourinary tuberculosis), or other fistula types (e.g., ureterovaginal or rectovaginal fistulas) were excluded.

Ethical approval was granted by the hospital's research committee. Participants were briefed on the study and its benefits, and written informed consent was obtained from each participant. Patients were recruited through the outpatient department (OPD) and underwent comprehensive clinical assessments, including a medical history, physical examination, and relevant preoperative tests.

Data Collection and Analysis: Clinical and demographic data were prospectively collected by the treating research team using a structured data collection form at admission, surgery, and follow-up visits. Psychological questionnaires were administered preoperatively and repeated at the three-month follow-up. All collected data were entered into SPSS version 20 after verification for completeness and accuracy, prior to statistical analysis. Quantitative variables (age, fistula size, etc.) were presented as mean and standard deviation, and categorical variables (parity, fistula location, etc.) were expressed as frequency and percentage. Comparisons were performed using the chi-square test and Student's t-test; a two-tailed p-value of ≤ 0.05 was considered significant.

To confirm the previous diagnosis, assess the fistula's position and size in relation to the ureteral orifices, and exclude any associated ureteral damage, cystoscopy and vaginoscopy were performed. For further analysis, computer tomography urography (CTU) was done. The surgical reconstruction was performed by a consultant urologist with over five years' experience, using the suprapubic approach described by O'Connor et al. [9] The surgeries were performed four to six weeks after the onset of the fistula to allow time for the tissue to heal.

Patients remained in the ward for 3 days after surgery and were discharged on the 4th day if stable. A 16 Fr Foley urethral catheter was kept in place for continuous bladder drainage after surgery. On the 14th postoperative day, a retrograde cystogram was performed to confirm successful fistula closure and to exclude urinary leakage before catheter removal. The catheter was removed only after a satisfactory cystogram showed no contrast extravasation. Double-J ureteric stents were selectively placed in patients with fistulas near the ureteric orifices or when ureteric identification or protection was required during reconstruction. The DJ stents were removed via a flexible cystoscope after approximately four weeks. Patients were reassessed three months later to evaluate symptom resolution, stress incontinence, urgency, and complications such as urinary tract infections.

Outcome Measures: Success was defined as anatomical closure of the fistula or the absence of continuous urinary leakage, with symptom resolution. Psychological and social outcomes were assessed using validated tools: the Center for Epidemiologic Studies Depression Scale (CES-D; □ = 0.85) for depression. [17] the PTSD Checklist-Civilian Version (PCL-C; □ = .83) for PTSD, and the Bradford Somatic Inventory (BSI; □ = 0.94) for somatic symptoms. [18, 21] Avoidant coping was measured using three items from the Brief COPE, which has been validated in obstetric fistula patients. [19, 22] Patients' perceptions of cure and leakage severity were assessed using a 5-point scale adapted from Browning and Member. [13] All psychological assessment instruments were administered according to their published guidelines and standardized scoring procedures. These validated tools have been widely used in clinical research, including studies involving women with vesicovaginal fistula.

RESULTS

1. Demographic and Clinical Characteristics

The mean age of study participants was 40.6 years (SD ± 10.2), with a total of 70 subjects. Most participants were multiparous (78.9%), and the mean fistula size was 11.5 mm (SD ± 4.5).

Supratrigonal fistulas were more prevalent at 60.6%, surpassing trigonal fistulas at 38%. The most common cause of VVF was hysterectomy, including cesarean and simple hysterectomy, at 46.5%, followed by cesarean section at 29.6% and difficult labor at 16.9%. The mean operative time was 125.3 minutes (SD ± 10.7), and the mean length of stay was 3.8 days (SD ± 0.8).

2. Success Rate and Factors Influencing Repair

Overall, fistula closure operations were successful in 90.1% of cases. Of the patients studied, 64 were symptom-free. Success rates were higher for smaller fistulas (5-10 cm) than for larger ones (11-20 cm) ($p = 0.02$). The location of the appendix fistula, the stage of pregnancy, and the timing of surgery did not substantially affect repair success. Those with failed repairs remained in the hospital longer (5.1±0.7 days) than those with successful repairs (3.7±0.7 days), $p < 0.001$.

3. Postoperative Complications

Minor complications of patients monitored reached 14.2%. These included wound infection (2.9%), urinary tract infections requiring antibiotic therapy (7.1%), and hematuria requiring bladder irrigation (4.3%). There were no cases of life-threatening complications reported.

4. Patient-Reported Outcomes

After 3 months of follow-up, 90% of patients showed improvement in symptoms, with the Patient Global Impressions of Improvement (PGI-I) score below 3. In detail, 50% of the population reported being "very much better," and 40% were "much better," but 4.2% were unchanged and primarily returned to having strong urinary urges along with incontinence.

Table No 1: Demographic and Clinical Characteristics

Parameter	Value	95% CI
Mean Age (years)	40.6 ± 10.2	38.1 – 43.0
Parity	Primipara: 14 (19.7%)	-
	Multipara: 56 (78.9%)	-
Mean Fistula Size (mm)	11.5 ± 4.5	9.4 – 11.6
Fistula Location	Supratrigonal: 43 (60.6%)	-
	Trigonal: 27 (38%)	-
Etiology of VVF	Hysterectomy: 33 (46.5%)	-
	Cesarean Section: 21 (29.6%)	-
	Difficult Labor: 12 (16.9%)	-
Mean Operative Time (min)	125.3 ± 10.7	122.7 – 127.9
Mean Hospital Stay (days)	3.8 ± 0.8	3.6 – 4.0

Table No 2: Factors Associated with Successful Fistula Repair

Parameter	Successful Repair (n = 64)	Failed Repair (n = 6)	p-value
Fistula Size (mm)	5-10 mm: 32 (50%)	0 (0%)	0.02
	11-20 mm: 32 (50%)	6 (100%)	
Fistula Location	Supratrigonal: 38 (59.3%)	5 (83.3%)	0.3
	Trigonal: 26 (40.6%)	1 (16.7%)	
Parity	Primipara: 12 (18.7%)	2 (33.3%)	0.5
	Multipara: 52 (81.2%)	4 (66.7%)	
Operative Time (min)	124.9 ± 10.7	130 ± 11.4	0.2
Hospital Stay (days)	3.7 ± 0.7	5.1 ± 0.7	<0.001

Table No 3: Postoperative Complications

Complication	Number of Patients (%)
Wound Infection	2 (2.9%)
Urinary Tract Infection	5 (7.1%)
Hematuria	3 (4.3%)
Total	10 (14.2%)

Table No 4: Patient Global Impression of Improvement (PGI-I) Scores at 3 Months

PGI-I Score	Interpretation	Number of Patients (%)
1	Very Much Better	35 (50%)
2	Much Better	28 (40%)
3	A Little Better	4 (6%)
4	No Change	3 (4.2%)

DISCUSSION

The results of this research underscore the extreme hardships that patients with vesicovaginal fistula (VVF) face, whether physical, psychological, or social. The condition is caused by the continuous leakage of urine, which results in pain and discomfort, along with severe emotional and social repercussions, such as stigma, isolation, and marital conflict. [1, 6-9] These findings are consistent with prior studies, which confirm that VVF repair surgery enhances patients' everyday lives and ameliorates their mental health. [14-16] Nonetheless, the study highlights the persistent psychosocial problems that patients, especially those with chronic conditions such as incontinence or urgency, continue to endure.

The demographic profile of participants in our study, with an average age of 40.6 years and a high proportion of multiparous women (78.9%), is consistent with findings from other research conducted in comparable contexts. [6, 7] The high incidence of supratrigonal fistula and the increased proportion of hysterectomy as a contributing factor (60.6% and 46.5%, respectively) are indicative of the surgical and obstetric pathology that exists in poor regions. [2, 4] These results underscore the necessity for more advanced obstetric care and more intensive surgical skills to avert accidental damage to the organs during gynecological surgeries.

The overall success rate of 90.1% in our study contrasts with the literature, where success rates are reported at about 75%-95% [10]. The considerable success rate observed with smaller fistula repair (5-10 mm) compared with larger fistula repair (11-20 mm) ($p=0.02$) does not support the concept that fistula size is an important determinant of surgical outcomes [8]. Nonetheless, some factors, such as fistula site, parity, and operative time, did not significantly affect repair success, suggesting that surgical method and timing are more important to the outcome. The longer hospital stays among patients with failed repairs (5.1 ± 0.7 days vs 3.7 ± 0.7 days, $p < 0.001$) underscore the additional physical and financial burden these patients must shoulder.

Some complications were noted in 14.2% of patients at follow-up, including surgical site infection (2.9%), urinary tract infection (7.1%), and hematuria (4.3%). These figures align with those reported in other studies, underscoring the need for careful postoperative attention to reduce morbidity. [11, 12] The absence of severe complications in our cohort confirms the effectiveness of the operative strategy and the operating team's skills. Nonetheless, even the slightest problems demonstrate the necessity for ongoing attention, education, and motivation from the nursing staff to support favorable recuperation.

The self-reported outcomes indicate substantial symptom improvement, with 90% of patients scoring below 3 on the PGI-I. This supports the claim that early surgical intervention is beneficial. Nevertheless, the 4.2% of patients who reported no change, most of whom had ongoing urinary urgency and incontinence, demonstrate the extent to which surgical repair fails to address certain aspects of VVF morbidity. This aligns with qualitative investigations that describe the residual psychological and social difficulties faced by fistula patients following successful repair. [14, 15] The self-reported severity of leakage, together with psychological distress (depression and even PTSD), indicates a stark need for holistic interventions in VVF.

The timing of VVF repair remains a subject of debate. Some researchers recommend postponing surgery for three months to allow inflammation to subside. However, we believe that when infection or radiotherapy is absent, early repair within 4-6 weeks is practical and useful. [8, 12] In addition to minimizing the duration of physical suffering, early intervention helps reduce the emotional and social impacts of prolonged urinary leakage. Nonetheless, the success of early repair depends on fundamental surgical principles, such as adequate exposure, tension-free closure, and bladder drainage. [13]

The psychosocial aspect of VVF is very much present. Patients and their families often face severe stigma, social withdrawal, and marital problems that can persist even after successful repair [6-9]. The combination of high baseline psychological distress noted in the study and the marked change following surgery underscores the need to integrate the fistula care program into mental healthcare services. Such findings are reported from a fistula repair program in Tanzania, which demonstrated the effect of psychological support and serves as a model for addressing VVF patients' mental health. [22]

This study has some limitations. First, the findings may not be generalizable because of the single-center design and small sample size. Second, the three-month follow-up may not capture long-term outcomes, particular-

ly for sexual function and quality of life. Third, gaps in patients' education, knowledge of emergency obstetric care, and access to healthcare limit our ability to fully interpret the results. These limitations may be addressed in future research through multi-center studies, longer follow-up periods, and consideration of additional sociodemographic factors.

CONCLUSION

This study demonstrates that early surgical repair of vesicovaginal fistula (VVF) is feasible and effective, achieving a high closure rate (90.1%) and resulting in significant improvement in the psychological well-being and social functioning of affected women. Smaller fistulas (5–10 mm) were associated with higher repair success, whereas failed repairs were associated with longer hospital stays, highlighting the additional physical and financial burden on patients.

Although most women experienced substantial recovery following surgery, persistent urinary symptoms in a small proportion of patients continued to affect their psychosocial well-being. These findings emphasize the importance of timely surgical intervention combined with comprehensive multidisciplinary care, including psychological support, to optimize both physical and psychosocial outcomes in women with VVF.

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Authors Contribution:

Following authors have made substantial contributions to the manuscript as under

Authors	Conceived & designed the analysis	Collected the data	Contributed data or analysis tools	Performed the analysis	Wrote the paper	Other contribution
Masood I	✓	✓	×	×	✓	×
Ullah H	✓	×	✓	✓	✓	×
Ali M	✓	✓	×	×	×	✓
Anees M	✓	×	✓	✓	✓	×
Sabir M	✓	✓	×	×	×	✓
Ali A	✓	×	✓	✓	✓	×

Authors agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

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