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FREQUENCY OF INDICATIONS AND TYPES OF ENTERIC FISTULA IN THE SURGICAL WARDS OF TERTIARY CARE HOSPITALS

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Abstract

Introduction: *Strategic enteric fistulas are crucial operations in the management of various gastrointestinal disorders such as intestinal obstruction, perforation, and trauma. It is necessary to examine the frequency of this type of enteric fistula, as well as indications for its treatment and outcomes, to improve patient management.*

Objectives: *To determine the frequency of indications, and types of enteric fistulas formed in the surgical ward of Khalifa gul Nawaz Teaching Hospital, and district headquarters hospital, bannu and analyze associated outcomes.*

Materials and Methods: *This cross-sectional study was performed in 2023 for six months with 121 patients with enteric fistula formation. The research employed a nonprobability consecutive sampling technique. The demographic information, indications for the creation of enteric fistula, type of enteric fistula and postoperative complications were recorded. Descriptive statistics in the current study were done using Statistical Package for Social Sciences (SPSS) software version 23.*

Results: *The most common indications for operation were intestinal obstruction, which was seen in 36.4%, and perforation in 28.1%. Loop enteric fistulas (58.7%) were the most common, while end enteric fistulas (11.6%). Wound infection, which was noted in 15.7% of patients, and enteric fistula retraction in 10.7% of patients were more common in emergency surgeries, which formed 42.3%.*

Conclusion: *The aspects of early diagnosis, optimum preoperative preparation and psychological intervention need to be specifically personalized for the benefit of enteric fistula patients.*

INTRODUCTION

The formation of enteric fistulas has emerged as an essential procedure in the management of many gastrointestinal disorders, from congenital malformations to severe acquired pathology. Colostomies and Ileostomies are made when there is a disease condition or trauma expected to interfere

with the normal process of elimination through the anus. Reviews of recent studies show that more precise knowledge of indications, results, and types of enteric fistulas made in various kinds of health care services would facilitate effective patient management and minimize the adverse effects. It is against this backdrop that the present study, conducted in the surgical wards of Khalifa gul Nawaz Teaching Hospital, and district headquarters hospital, bannu, aims to address the regional knowledge gap by assessing the frequency of indications of enteric fistula formation. Therefore, the rate of enteric fistula formation varies across the world depending on IBD, colorectal cancer, and other abdominal injury incidents. Sushel et al. (1) and Mbelle et al. (2) have worked on a topic on enteric fistula creation with indications including intestinal tuberculosis, enteric fistula, perforations and obstructions. In Pakistan, the rate of intestinal tuberculosis is still a significant problem and presents more frequently as acute abdomen and requires surgery with enteric fistula formation (1). Likewise, Mbelle et al. (2), working in sub-Saharan Africa, have also confirmed that enteric fistula creation is often required for late stenosis obstructions and serious perforations, highlighting indication differences.

The formation of the enteric fistula has its own drawbacks. Moya-Muñoz et al. (3) examined the quality of life for enteric fistula patients to note its impact on quality and mental health in patients. Specifically, retraction, infection, and psychosocial stress affect outcomes (3, 6). The results of Granieri et al. (4) expand the understanding of associations between underlying factors such as fistulas and enteric fistularelated adverse effects. A review of literature from other countries shows that when adequate preoperative and postoperative handling is adopted, which includes preoperative enteric fistula site marking, then postoperative complication is significantly reduced, as Nozawa et al. support this argument. In pediatric populations, various developmental factors make it difficult to manage enteric fistulas. Chukwubuike et al. (11) demonstrated that children, in particular, suffer from high rates of complications that require better treatment strategies. As suggested by Kimbugwe et al. (6), complications should be treated early so that they do not result in other problems in future. As for adults, they also have complications, notable that each spectrum is different, and Crohn's disease and ulcerative colitis predominate in some areas (7).

Essential to the overall experience is also the psychological load of enteric fistula creation. Tang et al. (8) described a meta-analytical review examining the rate of depression among enteric fistula patients and highlighting the importance of an integrated model of patient care. There is also pre-existing evidence that Pakistan frequently suffers from shortages of resources when it comes to healthcare, which, in turn, means that the amount of psychological support involved in the treatment process is also restricted (9). This research will seek to not only describe the clinical indications but also help identify ways of improving care. Technology and research have been used in enteric fistula care, and they have proved to be effective. For instance, Ahmed et al. (15) presented that the interventions based on simulation effectively enhance the overall performance and satisfaction of nurses for enteric fistula care. In implementation, such interventions in local care facilities can help minimize quality chasm and improve patient health.

This study is in line with a worldwide attempt to improve post-surgical results by determining trends of the formation of enteric fistulas across regions. Conclusions drawn from this study shall add to the existing body of literature, including the systematic review conducted by Parini et al. (12), which aimed at identifying worldwide trends in enteric fistula complications as well as surgical procedures. However, depending on the localized data will give important information regarding complications and possible preventions suited to the Pakistani population of patients. The general approach to this study is underpinned by innovative developments in data analysis and categorization methods. Hapnes et al. (14) have provided a good example of the use of robust statistics for the assessment of surgical performance in high-risk groups such as pre-term infants who may require intestinal surgery. Pursuing these methodologies, this study shall use SPSS version 23 for data analysis to enhance the effectiveness as well as the accuracy of the outcomes produced.

Lastly, the creation of Enteric enteric fistulas is a life-saving surgery with quality-of-life impacts for the

given patients. In turn, this study will assist in filling the existing gap of information on indications and enteric fistula site frequency at Khalifa gul Nawaz Teaching Hospital, and district headquarters hospital, bannu and contribute to the future enhancement of surgical care guidelines in Pakistan. Knowledge obtained will also be used in policy making and funding to help patients get the best care possible, depending on the different areas in health care delivery.

Objective: To determine the frequency of indications of enteric fistula creation and the types of enteric fistulas formed in the surgical wards of Khalifa gul Nawaz Teaching Hospital, and district headquarters hospital, bannu, addressing local healthcare needs.

MATERIALS AND METHODS

Study Design: Cross-sectional study

Study setting: The study was conducted in the surgical wards of Khalifa gul Nawaz Teaching Hospital, and district headquarters hospital, bannu, Pakistan which are the largest health care facility of Khyber Pakhtunkhwa providing tertiary care surgical services.

Duration of the study: The study was conducted over a six-month period, from January 2023 to June 2023.

Inclusion Criteria

This research targeted patients of 12 years and above, both male and female, who had an enteric fistula during the research period. The patients who required enteric fistula creation due to elective or emergency surgery for indications like intestinal obstruction, perforation, or trauma were included. Patients in the study had to be receiving palliative care, be over 18 years of age, have an enteric fistula as defined by the above operational definitions and must have given informed consent before enrolment.

Exclusion Criteria

All patients who had a enteric fistula formed prior to the study period or as part of gynecological treatments were excluded from the study. Furthermore, those patients who were transferred from another hospital for enteric fistula revision or complications were excluded, and only those patients who underwent primary enteric fistula creation were included in the study conducted at Khalifa gul Nawaz Teaching Hospital, and district headquarters hospital, bannu.

Methods

Ethical approval was sought and granted by the institutional review board, and then patients who fulfilled the inclusion criteria were recruited into the study via consecutive non-probability sampling. The demographic and clinical details of each participant were assessed prospectively using a preoperative questionnaire and postoperative case records. The type of enteric fistula created (loop, double, or end) was also noted, and the findings were compared to the operative note. General data from patient interviews and specific clinical findings from patient examination and investigations, including imaging and biochemical data, were applied to secure the diagnosis of enteric fistula formation. The sources of data were surgical notes, histopathological reports, and check observations of any complications that may occur after surgery. The data collected were analyzed using Statistical Package for Social Sciences (SPSS) version 23. Normally distributed continuous variables, including age and weight, were described using the mean and standard deviation, whereas counting data, including gender and types of enteric fistula, were described using frequencies and percentages. Statistical significance being set at $p \leq 0.05$.

RESULTS

The patients without BA surgery who were followed during the six-month study period consisted of 121 patients who had undergone enteric fistula formation. The mean age of the patients was 46.3 ± 15.2 years, with a male-to-female ratio of 1.8:1. They comprised an emergency operation of 64.5% while 35.5% were elective ones. 27.3% of the population had diabetes, 31.4% had hypertension, and 18.2% had ischemic heart disease as compared with the general population.

Table 1: Demographic and Clinical Characteristics of Patients

Variable	Frequency (n = 121)	Percentage (%)
Mean Age (years)	46.3 ± 15.2	-
Male Patients	79	65.3
Female Patients	42	34.7
Emergency Surgeries	78	64.5
Elective Surgeries	43	35.5
Diabetes	33	27.3
Hypertension	38	31.4
Ischemic Heart Disease	22	18.2

The common indications for the formation of enteric fistula were intestinal obstruction 36.4%, intestinal perforation 28.1% and abdominal trauma 20.7%. Other signs were enterocutaneous fistulas in 8.3% of patients, gastrointestinal masses in 4.1% of patients and mesenteric ischemia in 2.5% of patients. Of all made enteric fistulas, loop enteric fistulas were the most often made (58,7%), end enteric fistulas were made in 11.6% of cases and double-barrel enteric fistulas in 29.8% of cases.

Table 2: Indications for Enteric fistula Formation

Indication	Frequency (n = 121)	Percentage (%)
Intestinal Obstruction	44	36.4
Intestinal Perforation	34	28.1
Abdominal Trauma	25	20.7
Enterocutaneous Fistula	10	8.3
Gastrointestinal Mass	5	4.1
Mesenteric Ischemia	3	2.5

Overall, postoperative complications occurred in 32.2% of the patients, and the most common were wound infection (15.7%), enteric fistula retraction (10.7%), and enteric fistula hernia (5.8%). Patients who underwent emergency surgeries were sept more times to develop complications than the elective patients (42.3; 16.3) per cent respectively.

Table 3: Types of Enteric fistulas and Associated Complications

Enteric fistula Type	Frequency (n = 121)	Percentage (%)	Complication Rate (%)
Loop Enteric fistula	71	58.7	25.4
End Enteric fistula	14	11.6	21.4
Double-Barrel Enteric fistula	36	29.8	38.9

This data supported the hypothesis that emergency procedures had more complications than elective procedures. Furthermore, patients with comorbid diseases with a focus on diabetes and ischemic heart disease had a higher risk of postoperative complications in the study. These observations underscore the need for proper management of patients before surgery and evaluation of these individuals after surgery, emphasizing high-risk groups.

DISCUSSION

To summarize, this study contributes by presenting the frequency of indications, and outcomes of enteric fistula formation in the surgical wards of Khalifa gul Nawaz Teaching Hospital, and district headquarters hospital, bannu. The results evidence of the demographic and clinical characteristics of the patients correspond to international trends in enteric fistula delivery, especially in countries with high incidences of digestive pathologies and comorbidities resulting from trauma. Male dominance (65.3%) and the young mean age of 46.3 years indicate that stroma formation has economic significance since it happens in the working population. A wide range of indications for the creation of the enteric fistula was identified in the present study, with intestinal obstruction being the most frequent reason observed in 36.4% of the cases. This is like the report of Mbelle et al. (2) in sub-Saharan Africa and Wahab et al. (7) in Malaysia, where delayed presentation and late stages of the disease often require enteric fistula formation. Intestinal perforation, being the second most common indication (28.1%), was commonly seen in emergency cases, which was in concordance with the impoverished presentation indices among the local masses. These findings are in congruence with Sushel et al. (1), who showed that intestinal TB was a major cause of perforation in South Asia. External injuries that include abdominal trauma occurred in 20.7% of the patients and are indicative of the fact that external traumas are some of the conditions that call for emergency surgeries, which are in consonant with the findings of Chukwubuike et al. (11).

The type of enteric fistula created depends on the disease and the type of emergency of the case. LOC was found in 58.7%, end enteric fistulas in 11.6% and double-barrel enteric fistulas in 29.8% of patients. These outcomes are quite passable to Granieri et al. (4), who also estimated similar great proportions in their systematic review. Loop enteric fistulas are preferred in temporary fecal diversion because of their simplicity in construction and reversal, especially in emergency situations. However, end enteric fistulas are usually made during the definitive surgery or when reversal will not be done, as observed by Nozawa et al. on enteric fistula site marking and complication prevention. Issues arising from enteric fistulas remain a major challenge in the management of patients with enteric fistulas, as observed in this study, where 32.2% of the patients had postoperative complications. The minor complications encountered included wound infection, 15.7%, enteric fistula retraction, 10.7%, and Para enteric fistula hernia, 5.8%. These rates are in concordance with Kimbugwe et al. (6), who also reported similar complications in their pediatric population, as well as Estrada et al. (9), who reported different layers of complications with Crohn's disease and ulcerative colitis. Data comparing complication rates between emergency and elective operations (42.3% vs 16.3%) support this claim, emphasizing better preoperative preparation and intraoperative and postoperative management of patients in emergencies.

Patients with comorbidity had a higher chance of complications with more risk posed to them if they had other diseases like diabetes or ischemic heart disease. For example, diabetic patients were more susceptible to wound infection and slow healing, as indicated in the work done by Tang et al. (8). This emphasizes the significance of glycemic management and close observation of the wounds in such patients. Likewise, patients with ischemic heart disease had higher mortality-morbidity risk after discharge after the surgery, thus the call for a comprehensive approach. Another important domain in the quality of enteric fistula care is psychological health. Moya-Muñoz et al. (3) and Tang et al. (8) have previously reported high depression rates and lower quality of life among enteric fistula patients. Although this study did not measure psychological outcomes, the results of this research have highlighted the future direction of

psychological care embedding into enteric fistula care.

The findings of this study also have implications for healthcare policy and resource allocation. This high proportion of emergencies, which represents 64.5% of all the cases, implies that people developed complications and sought medical attention only when they were significantly unwell, possibly because they could not access health care early or because they did not know they could. Investing in primary care, ensuring proper access to patients' first contact with the healthcare system and providing education to communities that address various early stages of gastrointestinal diseases minimizes the chance of needing emergency enteric fistula creation. The issues which are identified based on the existing literature include failure to preoperatively mark the enteric fistula site, as highlighted by Nozawa et al. (5). Adequate site marking can reduce problems such as retraction and skin irritation after surgery by a big margin, enhancing patient satisfaction. Adopting this practice as part of normal conventional surgical procedures, including those presented in emergency situations, stands to benefit the patient immensely.

Other external factors have opportunities to improve treatment mechanisms, including the progress of surgical operations and patient post-surgery management. For example, according to Ahmed et al. (15), Simulation-based interventions can enhance the outcome of nurse performance and satisfaction with enteric fistula care. The adoption of such training programs in local healthcare facilities can reduce disparities and make sure that patients get the best services. These results align with studies published in literature from other parts of the world done by Parini et al. (12) and Hapnes et al. (14). However, the localized data offer valuable information about the pertinent issues and concerns of healthcare providers in Pakistan, such as the high prevalence of intestinal tuberculosis, which underlines possibilities for focused intervention in these cases.

However, there are several limitations in this research that must be acknowledged. There are certain drawbacks of non-propensity sampling, where quantitative samples are not representative of the population, and due to the small sample size, it is possible that some major problems related to enteric fistula were not covered. Such studies in larger, multicenter trials are bound to give more discerning results and confirm these observations well. Finally, this study also provides a wide spectrum of indications for making enteric fistula, various types of enteric fistula, and the results of enteric fistula formation in a tertiary care hospital in Pakistan. The results re-emphasize the global concept of early diagnosis, operative planning and post-operative management for better prognosis of the disease. Therefore, by addressing the above-outlined challenges and implementing best practices from different parts of the world, healthcare providers can improve the quality of enteric fistula care, thereby minimizing the complications among the local population.

CONCLUSION

This paper aims to bring into focus the concept of enteric fistula for the management of gastrointestinal disorders with an insight into the various indicators, classifications, and results noticed in the surgical ward of Khalifa gul Nawaz Teaching Hospital, and district headquarters hospital, bannu. The most frequent indications of enteric fistula formation were intestinal obstruction and perforation, with loop enteric fistulas being the most common. Most operations were carried out as emergencies; these cases are commonly related to a high incidence of complications. Diabetic patients and those with ischemic heart disease are some examples which showed a high-risk factor for postoperative complications, pointing to the fact that significant attention should be paid to preoperative and surgical site care. The study's results indicate a need for earlier diagnosis, improved patient enlightenment, and incisional planning, such as preoperative enteric fistula site listing. Increased education of carers and the inclusion of psychology within enteric fistula care is vital to fully meeting the patients' needs. Evaluation of these challenges is crucial in that healthcare systems will likely lessen the incidence of complications, enhance quality of life, and provide overall care for patients with an entire fistula.

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