East African Scholars Journal of Medicine and Surgery
Abbreviated Key Title: EAS J Med Surg
ISSN: 2663-1857 (Print) & ISSN: 2663-7332 (Online)
Published By East African Scholars Publisher, Kenya

OPEN ACCESS

Volume-8 | Issue-6 | Jun-2026 | DOI: https://doi.org/10.36349/easjms.2026.v08i06.006

Original Research Article

Digestive Continuity Restoration After Temporary Stoma in Sub-Saharan Africa: A Ten-Year Multicenter Cohort Study from Cameroon

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Article History
Received: 25.04.2026
Accepted: 12.06.2026
Published: 15.06.2026

Journal homepage:
https://www.easpublisher.com

Quick Response Code

Abstract: ***Background*:** Temporary digestive stomas are frequently used in colorectal and emergency digestive surgery. Although digestive continuity restoration (DCR) improves quality of life and intestinal function, it remains associated with substantial postoperative morbidity. Data from sub-Saharan Africa remain scarce, particularly regarding predictors of adverse postoperative outcomes. ***Objective*:** To evaluate surgical practices, postoperative outcomes, and determinants of morbidity following digestive continuity restoration in three tertiary referral hospitals in Cameroon. ***Methods*:** A retrospective multicenter cohort study was conducted between January 2014 and December 2023 in three referral hospitals in Douala, Cameroon. Patients undergoing digestive continuity restoration after temporary digestive stoma formation were included. Sociodemographic, clinical, operative, and postoperative variables were analyzed. Factors associated with postoperative morbidity were identified using multivariable logistic regression. ***Results*:** Among 311 eligible patients, 264 were included in the final analysis. The mean age was 38.5 ± 18.7 years, and 55.7% were male. Infectious diseases (36.3%) and neoplastic conditions (26.1%) were the leading indications for temporary stoma creation. Colostomies accounted for 83.0% of all stomas. Peristomal mini-laparotomy was the most commonly used approach (59.1%). Overall postoperative morbidity reached 30.7%. Thirty-day mortality was 2.3%, while overall mortality during follow-up reached 5.7%. Previous stoma-related medical complications independently increased the risk of postoperative morbidity (aOR 4.64; 95% CI 2.16–9.97; p<0.001). ASA III status (aOR 3.45; 95% CI 1.40–8.47; p=0.007) and delayed restoration beyond 180 days (aOR 2.29; 95% CI 1.06–4.96; p=0.035) were also associated with increased morbidity. Conversely, the peristomal mini-laparotomy approach was protective (aOR 0.28; 95% CI 0.11–0.71; p=0.007). ***Conclusion*:** Digestive continuity restoration remains associated with considerable postoperative morbidity in Cameroon. Optimization of patients during the stoma period and timely restoration may significantly improve outcomes. Development of structured stoma-care programs and minimally invasive surgical strategies should be prioritized in resource-limited settings.

Keywords: Digestive Continuity Restoration, Stoma Reversal, Postoperative Morbidity, Colorectal Surgery, Cameroon, Sub-Saharan Africa.

INTRODUCTION

Temporary digestive stomas constitute an essential component of modern colorectal and emergency digestive surgery. They are frequently created to protect distal anastomoses, control intra-abdominal sepsis, manage intestinal obstruction, or treat traumatic and inflammatory bowel conditions. Although often lifesaving, stomas substantially alter patients' quality of life and are associated with significant physical, psychological, social, and economic consequences. Consequently, digestive continuity restoration (DCR) represents a major therapeutic objective once the underlying condition has resolved.

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Globally, more than one million individuals are estimated to be living with a digestive stoma, and the number continues to increase because of the growing incidence of colorectal cancer, inflammatory bowel disease, and emergency abdominal surgery. Despite advances in perioperative care, digestive continuity restoration remains associated with considerable postoperative morbidity, with reported complication rates ranging from 15% to 45% depending on patient characteristics, stoma type, operative technique, and institutional expertise [1–3].

Historically regarded as a relatively straightforward procedure, stoma closure is now recognized as a technically demanding operation. Extensive intra-abdominal adhesions, chronic inflammation, malnutrition, previous septic complications, and distorted anatomy may significantly increase operative complexity and postoperative risk. Surgical site infection, postoperative ileus, anastomotic leakage, bowel obstruction, incisional hernia, and prolonged hospitalization remain the most frequently reported adverse outcomes [4–6]. Furthermore, several studies have suggested that the morbidity associated with stoma closure may approach that observed after primary colorectal resection [7].

Over the last two decades, major changes have occurred in the management of digestive continuity restoration. Enhanced Recovery after Surgery (ERAS) protocols, improvements in perioperative nutritional support, advances in stapling technology, and the increasing adoption of minimally invasive surgery have contributed to reducing postoperative morbidity in high-income countries [8, 9]. Laparoscopic restoration of continuity has demonstrated favorable outcomes in selected patients, including reduced postoperative pain, earlier return of bowel function, shorter hospital stay, and lower wound-related morbidity [10, 11]. Nevertheless, the widespread implementation of these approaches remains challenging in low- and middle-income countries.

The epidemiology of temporary stomas differs substantially between high-income and resource-limited settings. In Europe and North America, diverticular disease, colorectal cancer, and inflammatory bowel disease represent the principal indications for stoma formation [12, 13]. In contrast, studies from sub-Saharan Africa report a predominance of infectious diseases, generalized peritonitis, volvulus, traumatic injuries, and advanced malignant conditions requiring emergency surgical intervention [14–16]. These differences may profoundly influence both the timing and outcomes of digestive continuity restoration.

Evidence regarding digestive continuity restoration in Africa remains limited. Most available publications originate from single-center experiences with relatively small sample sizes and heterogeneous populations. Furthermore, few studies have evaluated predictors of postoperative morbidity, despite their potential importance for surgical decision-making and perioperative optimization [17–19]. The scarcity of multicenter African data limits the ability to develop context-specific recommendations adapted to resource-constrained environments.

In Cameroon, published surgical literature has primarily focused on the indications and complications of stoma creation rather than on digestive continuity restoration itself. Consequently, there is limited contemporary evidence describing operative practices, postoperative outcomes, and determinants of morbidity following stoma closure. Such information is essential to improve patient selection, optimize perioperative management, and strengthen surgical quality improvement initiatives.

The present multicenter study was therefore conducted to evaluate the epidemiological characteristics, operative procedures, postoperative outcomes, and predictors of morbidity following digestive continuity restoration in three major referral hospitals in Douala, Cameroon.

METHODS

Study Design and Setting

A retrospective multicenter cohort study was conducted between January 1, 2014 and December 31, 2023 in three tertiary referral hospitals located in Douala, Cameroon: Douala General Hospital, Laquintinie Hospital of Douala, and the Military Hospital of Region No. 2. These institutions constitute the major referral centers for digestive surgery in the Littoral Region and collectively serve an estimated population exceeding four million inhabitants. All centers provide emergency and elective digestive surgical care and receive referrals from secondary healthcare facilities throughout the country.

Study Reporting

This study was conducted and reported in accordance with the Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) guidelines for observational studies.

Study Population

The study included all patients who underwent digestive continuity restoration following a temporary digestive stoma during the study period.

Inclusion Criteria

- Patients of any age and sex.
- Previous temporary ileostomy or colostomy.
- Surgical digestive continuity restoration performed in one of the study centers.
- Complete operative and postoperative records available.

Exclusion Criteria

- Feeding gastrostomies and jejunostomies.
- Permanent stomas.
- Incomplete medical records.

Data Collection

Data were extracted from operating theatre registers, hospitalization records, anesthesia charts, and patient medical files.

The following variables were collected:

Sociodemographic Variables

- Age
- Sex

Clinical Variables

- Indication for initial stoma formation
- Comorbidities
- ASA score
- Type of stoma
- Stoma-related complications

Operative Variables

- Time interval between stoma creation and closure
- Surgical approach
- Type of anastomosis
- Duration of surgery

Outcome Variables

Primary Outcome:

- Overall postoperative morbidity

Secondary Outcomes:

- Early complications (<30 days)
- Late complications (>30 days)
- Length of hospital stay
- Mortality

Postoperative morbidity was defined as any surgical or medical complication occurring after digestive continuity restoration. Complications related to the initial stoma creation were analyzed separately and were not included in the calculation of postoperative morbidity after restoration.

Complications included surgical-site infection, postoperative bowel obstruction, anastomotic stenosis, evisceration, wound dehiscence, dehydration, short bowel syndrome, chronic diarrhea, and incisional hernia.

Early complications were defined as adverse events occurring within 30 days after surgery. Late complications were defined as those occurring beyond postoperative day 30.

Missing Data

Patients with incomplete medical records preventing assessment of the primary outcome were excluded from the analysis. No imputation method was used for missing data.

Statistical Analysis

Data were entered and analyzed using IBM SPSS Statistics version 28.0 (IBM Corp., Armonk, NY, USA).

Continuous variables were expressed as means ± standard deviations or medians with interquartile ranges according to data distribution. Categorical variables were summarized as frequencies and percentages.

Associations between independent variables and postoperative morbidity were initially explored using univariate logistic regression analysis. Variables associated with postoperative morbidity at a significance threshold of $p < 0.20$ were subsequently entered into a multivariable logistic regression model.

Results were expressed as adjusted odds ratios (aORs) with corresponding 95% confidence intervals (95% CIs). Model discrimination and goodness-of-fit were assessed before final model validation.

Statistical significance was defined as a two-sided p-value < 0.05.

Ethical Considerations

Ethical approval was obtained from the Institutional Ethics Committee of the University of Douala. Administrative authorization was obtained from each participating hospital. Patient confidentiality was maintained throughout the study through anonymization of collected data.

RESULTS

Study Population

Between January 2014 and December 2023, 311 patients underwent digestive continuity restoration in the three participating institutions. After exclusion of 47 incomplete medical records, 264 patients were included in the final analysis.

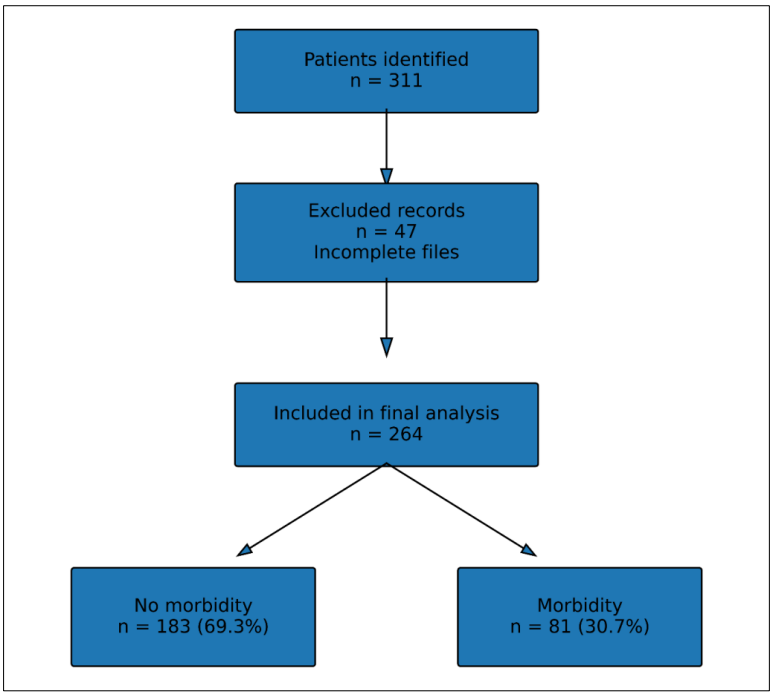

Figure 1: Flow diagram of patient selection and postoperative morbidity after digestive continuity restoration

The overall frequency of digestive continuity restoration represented approximately 1.2% of all digestive surgical procedures performed during the study period.

The study population consisted of 147 men (55.7%) and 117 women (44.3%), yielding a male-to-female ratio of 1.26. The mean age was 38.5 ± 18.7 years (range: 1–69 years), with a median age of 40 years.

Most procedures were performed at Douala General Hospital (62.5%), followed by Laquintinie Hospital of Douala (35.2%) and the Military Hospital of Region No. 2 (2.3%).

Table 1: Baseline characteristics of patients undergoing digestive continuity restoration

Variable	n (%)
Total patients	264 (100)
Male sex	147 (55.7)
Female sex	117 (44.3)
Mean age (years)	38.5 ± 18.7
Douala General Hospital	165 (62.5)
Laquintinie Hospital	93 (35.2)
Military Hospital	6 (2.3)

Characteristics of Temporary Stomas

Colostomies represented the vast majority of temporary stomas (83.0%), whereas ileostomies accounted for 14.8% of cases.

Infectious diseases were the most frequent indications for temporary stoma creation (36.3%), followed by neoplastic diseases (26.1%). Other indications included bowel obstruction, trauma, inflammatory digestive diseases, and congenital conditions.

Table 2: Characteristics of temporary stomas

Variable	n (%)
Colostomy	219 (83.0)
Ileostomy	39 (14.8)
Caecostomy	3 (1.1)
Ileocolostomy	3 (1.1)
Infectious indication	96 (36.3)
Neoplastic indication	69 (26.1)
Other indications	99 (37.6)

Main indications for temporary stoma formation

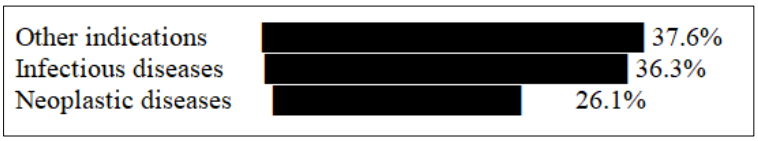

Figure 2: Main indications for temporary stoma formation among patients undergoing digestive continuity restoration

Operative Characteristics

Most patients were classified as ASA II (69.3%). General anesthesia with endotracheal intubation was used in 85.2% of procedures.

Mini-laparotomy through the stoma site was the preferred approach and was performed in 59.1% of cases. Midline laparotomy was used in 35.2%, while 4.5% of procedures required conversion.

A laparoscopic approach was attempted in 12 patients (4.5%); however, all procedures required conversion to open surgery, resulting in the absence of completed laparoscopic restorations.

The median interval between stoma creation and restoration was 120 days.

Table 3: Operative characteristics of digestive continuity restoration

Variable	n (%)
ASA I	39 (14.8)
ASA II	183 (69.3)
ASA III	39 (14.8)
Missing anesthesia data	3 (1.1)
General anesthesia	225 (85.2)
Regional anesthesia	36 (13.6)
Mini-laparotomy	156 (59.1)
Midline laparotomy	93 (35.2)
Conversion	12 (4.5)
Terminoterminal anastomosis	246 (93.2)
Terminolateral anastomosis	15 (5.7)
Continuous suture	225 (85.2)

Postoperative Outcomes

The median postoperative hospital stay was 6 days.

Overall morbidity reached 30.7% (81 patients). Early complications occurred in 12.5% of patients, while late complications occurred in 10.2%.

Fifteen deaths were recorded during follow-up, corresponding to an overall mortality rate of 5.7%. Six deaths (2.3%) occurred within 30 days after digestive continuity restoration, whereas nine deaths occurred later during follow-up and were mainly related to progression of the underlying neoplastic disease.

Table 4: Postoperative outcomes

Outcome	n (%)
Overall postoperative morbidity	81 (30.7)
Early complications	33 (12.5)
Late complications	27 (10.2)
Simple postoperative course	177 (67.0)
Favorable outcome	231 (87.5)
30-day mortality	6 (2.3)
Overall mortality during follow-up	15 (5.7)
Median hospital stay, days	6

Outcome data during long-term follow-up were unavailable for 18 patients.

Pattern of Postoperative Complications

Among the 81 patients who developed postoperative morbidity, chronic diarrhea was the most frequent complication, affecting 21 patients (25.9% of all complications), followed by postoperative bowel obstruction in 12 patients (14.8%). Surgical-site infections and anastomotic stenosis each accounted for 7.4% of postoperative complications. Less frequent adverse events included evisceration, wound dehiscence, dehydration, short bowel syndrome, and incisional hernia, each occurring in three patients.

Infectious complications remained frequent, including surgical-site infections (2.3%).

Table 5: Distribution of postoperative complications

Complication	n	% of total cohort	% among patients with morbidity
Chronic diarrhea	21	8.0	25.9
Postoperative bowel obstruction	12	4.5	14.8
Surgical-site infection	6	2.3	7.4
Anastomotic stenosis	6	2.3	7.4
Evisceration	3	1.1	3.7
Suture dehiscence	3	1.1	3.7
Incisional hernia	3	1.1	3.7
Dehydration	3	1.1	3.7
Short bowel syndrome	3	1.1	3.7

Predictors of Postoperative Morbidity

Multivariate analysis demonstrated that previous stoma-related medical complications significantly increased the risk of postoperative morbidity after digestive continuity restoration.

Patients presenting ASA III status also exhibited a significantly higher risk of postoperative complications.

Conversely, use of the mini-laparotomy approach was associated with a lower risk of postoperative morbidity.

Table 6: Independent predictors of postoperative morbidity

Variable	Adjusted OR	95% CI	p-value
Previous stoma-related medical complications	4.64	2.16–9.97	<0.001
ASA III	3.45	1.40–8.47	0.007
Delay >180 days	2.29	1.06–4.96	0.035
Mini-laparotomy	0.28	0.11–0.71	0.007

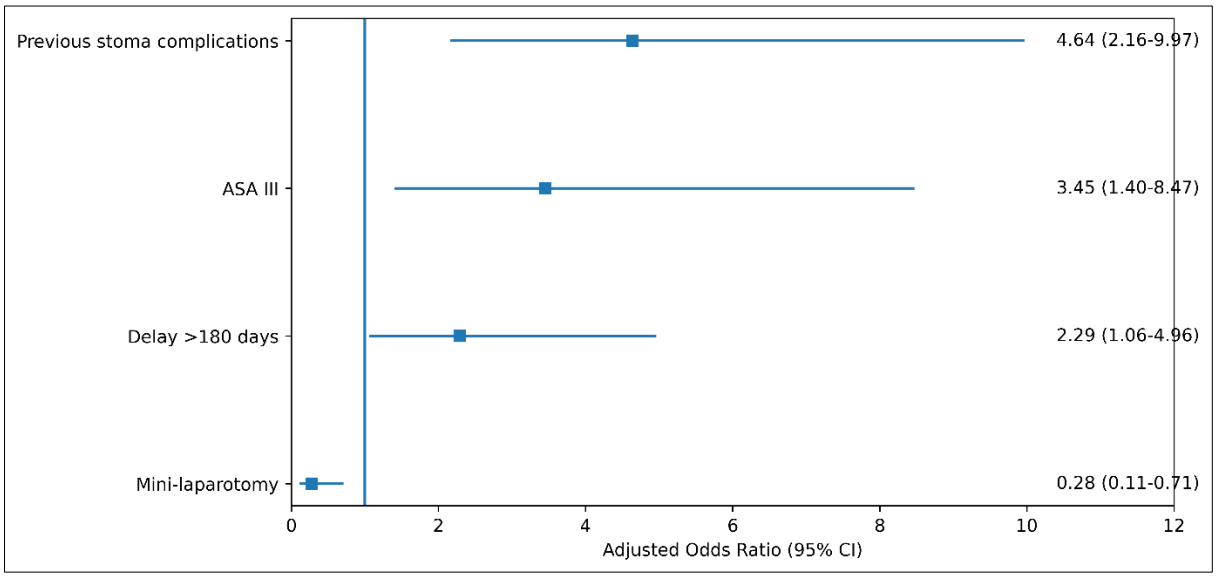

Figure 3: Multivariable logistic regression analysis of independent predictors of postoperative morbidity.

The occurrence of stoma-related complications emerged as the strongest predictor of adverse postoperative outcomes, increasing the risk of morbidity by more than fourfold.

DISCUSSION

To the best of our knowledge, this study represents one of the largest multicenter series dedicated to digestive continuity restoration (DCR) in Central Africa. Conducted over a ten-year period in three major referral hospitals, it provides valuable insights into the epidemiology, operative practices, postoperative outcomes, and predictors of morbidity associated with stoma closure in a resource-constrained environment. Four principal findings emerge from this study: (i) digestive continuity restoration remains a frequent surgical procedure in Douala; (ii) infectious and neoplastic diseases constitute the main indications for temporary stoma formation; (iii) open surgical

approaches overwhelmingly predominate, with no digestive continuity restoration successfully completed by laparoscopy during the study period; and (iv) postoperative morbidity remains substantial, affecting nearly one-third of patients.

Epidemiological Profile of Patients Undergoing Digestive Continuity Restoration

The relatively young age observed in our cohort may partly reflect the predominance of infectious diseases, trauma, and emergency digestive conditions requiring temporary stoma formation in our setting. This epidemiological profile differs substantially from that reported in most European and North American series, where colorectal cancer and diverticular disease constitute the principal indications for temporary stoma creation [1, 2]. This discrepancy likely reflects major epidemiological differences between high-income and low-income settings. In Western countries, temporary stomas are predominantly created for colorectal cancer and diverticular disease, pathologies that primarily affect elderly populations. In contrast, African studies consistently report younger patient populations because of the higher prevalence of infectious diseases, intestinal volvulus, abdominal trauma, and emergency digestive conditions [3, 4].

Male predominance observed in our series is consistent with previous reports from sub-Saharan Africa [5, 6]. This finding may be partly explained by the greater incidence of traumatic injuries and volvulus among men, as well as sex-related disparities in healthcare access and healthcare-seeking behavior [3-5].

Indications for Temporary Stoma Formation

Infectious diseases accounted for more than one-third of all indications for temporary stoma formation in our cohort. This pattern contrasts markedly with data from Europe, where colorectal cancer and diverticular disease remain the leading indications [7, 8]. Similar findings have been reported in resource-limited surgical settings where infectious abdominal emergencies remain common, including generalized peritonitis, typhoid perforation, gangrenous volvulus, and advanced abdominal sepsis [9–11]. The predominance of infectious indications may also explain the relatively high postoperative morbidity observed in our cohort. Patients initially treated for generalized peritonitis, bowel perforation, or severe abdominal sepsis frequently present dense adhesions and altered tissue planes at the time of restoration, increasing operative complexity and postoperative risk.

The substantial proportion of neoplastic diseases observed in our study probably reflects the increasing burden of digestive cancers in Cameroon. Recent epidemiological studies suggest that colorectal cancer incidence is steadily increasing throughout sub-Saharan Africa, largely because of urbanization, dietary transitions, aging populations, and improved diagnostic capabilities [12, 13]. Consequently, surgeons in the region are increasingly confronted with the need for temporary fecal diversion during the management of advanced digestive malignancies.

Operative Approaches and Technical Considerations

Although laparoscopic restoration was attempted in 12 patients, all procedures required conversion to open surgery. The conversion rate of 100% likely reflects the technical challenges encountered in this population, including extensive adhesions, previous septic conditions, and advanced malignant disease. This finding underscores the need for careful patient selection and progressive implementation of minimally invasive digestive surgery in low-resource settings [14–17]. This observation differs substantially from contemporary practice in high-income countries, where laparoscopic stoma reversal has progressively become standard in selected patients [14, 15].

Several meta-analyses have demonstrated that laparoscopic reversal is associated with reduced postoperative pain, earlier recovery of bowel function, shorter hospital stay, lower surgical site infection rates, and improved patient satisfaction [16, 17]. However, implementation of minimally invasive surgery in many African settings remains hindered by limited access to equipment, insufficient training opportunities, maintenance challenges, and financial constraints.

The absence of laparoscopic procedures in our series should not necessarily be interpreted as a deficiency in surgical quality but rather as a reflection of broader structural challenges affecting surgical systems in low-resource environments. Expansion of minimally invasive digestive surgery training programs may represent an important avenue for improving postoperative outcomes in the future.

Postoperative Morbidity Following Digestive Continuity Restoration

The overall morbidity rate of 30.7% observed in our study falls within the upper range reported in international literature. The morbidity rate observed in the present study is comparable to rates reported in previous international series of stoma closure, which generally range between 20% and 40% [18-20]. However, direct comparison should be interpreted cautiously because definitions of postoperative morbidity vary substantially across studies.

This finding confirms that stoma closure should not be regarded as a minor procedure. Although frequently perceived as a technically simple intervention, digestive continuity restoration often involves extensive adhesiolysis, bowel mobilization, and intestinal anastomosis, all of which may contribute to postoperative complications. In several contemporary studies, morbidity after stoma closure has been reported

to be comparable to that observed after primary colorectal resections [18–20].

The predominance of infectious and mechanical complications in our cohort is consistent with previous reports. Surgical site infection remains one of the most common complications after stoma reversal because of bacterial contamination, prolonged operative times, and difficulties associated with closure of previously contaminated abdominal wall defects [18-20]. Likewise, postoperative bowel obstruction frequently results from adhesions formed after the initial procedure and subsequent inflammatory processes [18-20].

Contrary to our initial expectations, mortality was not negligible. Six patients died within 30 days after surgery, corresponding to a 30-day mortality rate of 2.3%, while overall mortality during follow-up reached 5.7%. Most late deaths were related to progression of underlying malignant disease. These findings highlight the importance of considering long-term outcomes in addition to immediate postoperative results when evaluating digestive continuity restoration.

Predictors of Postoperative Morbidity

Perhaps the most clinically relevant finding of this study concerns the identification of factors associated with postoperative morbidity. Patients who experienced medical complications after stoma creation were significantly more likely to develop complications after digestive continuity restoration. Conversely, an uncomplicated postoperative course following stoma formation appeared protective.

Previous stoma-related medical complications increased the risk of postoperative morbidity by more than fourfold. This association suggests that the biological and clinical events occurring during the stoma period may be more important determinants of outcome than the technical aspects of restoration itself. Patients who develop dehydration, electrolyte disturbances, recurrent infections, or nutritional deficiencies while carrying a stoma may remain physiologically vulnerable even after apparently successful reversal.

Several mechanisms may explain this association. Patients who develop stoma-related complications often present with persistent inflammation, nutritional deficiencies, recurrent infections, electrolyte disturbances, or repeated hospitalizations. These conditions may impair tissue healing, increase surgical complexity, and reduce physiological reserve at the time of reversal [27, 28].

Our findings support the growing concept that outcomes after stoma closure are strongly influenced by events occurring during the interval between stoma creation and reversal. Consequently, optimization of stoma care should not be viewed as a separate component of management but rather as an integral part of the overall therapeutic pathway.

Delayed restoration beyond 180 days was independently associated with increased postoperative morbidity. Prolonged stoma duration may contribute to progressive adhesion formation, nutritional deterioration, chronic inflammation, and psychological burden, all of which may adversely affect postoperative recovery. In addition, delayed restoration may reflect more complex underlying diseases or persistent clinical conditions that postpone surgical reconstruction. Similar observations have been reported in colorectal surgery literature, where prolonged stoma duration has been associated with higher postoperative complication rates and more technically demanding procedures [6-16].

The association between ASA III status and postoperative morbidity confirms the importance of preoperative physiological reserve in determining outcomes after digestive continuity restoration. Patients classified as ASA III often present significant systemic comorbidities and reduced functional reserve, making them more vulnerable to postoperative complications. Similar observations have been reported in several colorectal surgery series, where comorbidity burden consistently emerged as a major predictor of adverse postoperative events [18-20]. These findings emphasize the importance of meticulous preoperative optimization and careful perioperative management in high-risk patients undergoing digestive continuity restoration.

Specialized stoma care programs have demonstrated significant reductions in postoperative complications, hospital readmissions, and healthcare costs in several studies conducted in high-income countries [29, 30]. Expanding access to trained stoma therapists and standardized follow-up protocols may therefore represent a cost-effective strategy for improving outcomes in resource-limited settings.

Implications for Surgical Practice in Sub-Saharan Africa

The findings of this study have important implications for digestive surgery in sub-Saharan Africa. First, they highlight the growing need for structured perioperative pathways dedicated to patients with temporary stomas. Second, they underscore the importance of improving access to nutritional assessment, stoma care, and postoperative surveillance. Third, they support the progressive development of minimally invasive surgery programs capable of reducing the morbidity associated with digestive continuity restoration.

Beyond individual patient management, these results contribute to addressing a significant gap in African surgical literature. Reliable multicenter data remain scarce despite the increasing burden of digestive diseases requiring temporary stoma formation. Future

prospective multicenter studies incorporating quality-of-life measures, cost-effectiveness analyses, and long-term functional outcomes are needed to guide evidence-based surgical policies across the region.

Strengths and Limitations

The principal strengths of this study include its multicenter design, large sample size, and ten-year observation period. These characteristics improve the generalizability of the findings and provide a comprehensive overview of contemporary surgical practice in major referral hospitals in Cameroon.

Nevertheless, several limitations should be acknowledged. The retrospective design exposes the study to missing data and information bias. Variations in surgical techniques and postoperative management between institutions may also have influenced outcomes. Furthermore, the absence of quality-of-life assessment and long-term functional evaluation limits interpretation of patient-centered outcomes. Finally, because laparoscopic reversal was not performed in our cohort, direct comparison between minimally invasive and open approaches was not possible.

The interpretation of mortality outcomes should be approached with caution because some deaths occurred long after restoration and may have been more strongly related to progression of the underlying disease than to the surgical procedure itself.

CONCLUSION

Digestive continuity restoration is a frequently performed procedure in tertiary referral hospitals in Cameroon. Despite being considered the final stage of treatment for temporary stomas, it remains associated with substantial postoperative morbidity, affecting nearly one-third of patients.

The epidemiological profile observed in this study differs from that reported in high-income countries, with infectious diseases remaining the leading indication for temporary stoma formation. Open surgical approaches continue to dominate practice, while laparoscopic reversal remains unavailable in routine care.

Previous stoma-related medical complications emerged as the principal predictor of postoperative morbidity, emphasizing the importance of comprehensive stoma care before closure.

Strengthening perioperative optimization, improving access to specialized stoma care, and expanding minimally invasive surgical techniques may contribute to reducing postoperative complications and improving patient outcomes in resource-limited settings.

Further prospective multicenter studies incorporating quality-of-life assessment and long-term functional outcomes are required to better define optimal strategies for digestive continuity restoration in sub-Saharan Africa.

Particular attention should be paid to patients presenting stoma-related complications, prolonged stoma duration, and poor preoperative physiological status, as these individuals represent the subgroup at highest risk for adverse postoperative outcomes.

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Cite This Article: Jean Paul Engbang, Valery Onana Mvondo, Fred Dikongue, John-Jokine Akono Akomo, Achille Many Essomba, Basile Essola (2026). Digestive Continuity Restoration After Temporary Stoma in Sub-Saharan Africa: A Ten-Year Multicenter Cohort Study from Cameroon. *East African Scholars J Med Surg, 8*(6), 259-268.