Peertechz

Journal of Surgery and Surgical Research OPEN ACCESS JOURNAL

ISSN: 2455-2968 DOI: https://dx.doi.org/10.17352/jssr

Research Article

Left Colon Surgery in Adults: Indications, Surgical Procedures and Complications in Douala, Cameroon – A Multicenter Retrospective Study

Jean Paul Engbang[1,2]*, Basile Essola[1], Pierre Valery Onana Mvondo[1], Fred Dikongue Dikongue[1], Ambroise Ntama[1,3], Daril Dona[1] and Marcelin Ngowe Ngowe[1,2]

[1]Faculty of Medicine and Pharmaceutical Sciences, University of Douala, Douala, Cameroon

[2]Laquintinie Hospital of Douala, Douala, Cameroon

[3]Regional Military Hospital No.2, Douala, Cameroon

Received: 19 January, 2026
Accepted: 27 January, 2026
Published: 28 January, 2026

***Corresponding author:** Jean Paul Engbang, MD, PhD., Faculty of Medicine and Pharmaceutical Sciences, University of Douala, Douala, Cameroon, E-mail: jean_pen@yahoo.ca; jpauleng@gmail.com

Keywords: Left colon surgery; Colorectal cancer; Emergency surgery; Postoperative complications, Sub-Saharan Africa

https://www.clinsurggroup.us

Check for updates

Abstract

Background: Left colon surgery represents a major component of digestive surgical practice worldwide, with colorectal cancer being the leading indication. In sub-Saharan Africa, delayed presentation and emergency surgery remain frequent, potentially influencing postoperative outcomes.

Objective: To describe indications, surgical procedures, postoperative complications, and factors associated with postoperative morbidity following left colon surgery in adults in Douala, Cameroon.

Methods: This was a retrospective, analytical multicenter study conducted in four referral hospitals in Douala over 11 years (January 2013–December 2023). Adult patients (≥15 years) who underwent left colon surgery were included. Data were analyzed using SPSS version 25.0. Associations between potential risk factors and postoperative complications were assessed using univariate analysis, with $p < 0.05$ considered statistically significant.

Results: Among 223 colon surgeries performed during the study period, 144 left colon procedures were included (64.6%). The mean age was 50 ± 15 years, with male predominance. Emergency admission accounted for 72.2% of cases. Neoplastic pathology represented 75% of indications, predominantly colorectal adenocarcinoma. Postoperative complications occurred in 8.3% of patients, with anastomotic fistula accounting for 33.3% of complications. The overall mortality rate was 2.8%. Emergency surgery, advanced tumor stage, and sigmoid colon localization were significantly associated with postoperative morbidity.

Conclusion: Left colon surgery in Douala is largely dominated by colorectal cancer and is frequently performed in emergency settings. Emergency presentation and advanced disease significantly increase postoperative morbidity, highlighting the importance of early diagnosis and elective surgical management.

Introduction

The colon constitutes the distal portion of the gastrointestinal tract, extending from the ileocecal junction to the rectum, and plays a fundamental role in water absorption and fecal transit. Anatomically and vascularly, it is divided into right and left segments supplied respectively by the superior and inferior mesenteric arteries, a distinction of major importance in colorectal surgery [1,2].

From a surgical perspective, the left colon is more frequently involved in pathological conditions requiring operative management, particularly neoplastic, diverticular, ischemic, and inflammatory diseases [3]. In high-income

Citation: Engbang JP, Essola B, Mvondo PVO, Dikongue FD, Ntama A, Dona D, et al. Left Colon Surgery in Adults: Indications, Surgical Procedures and Complications in Douala, Cameroon – A Multicenter Retrospective Study. J Surg Surgical Res. 2026;12(1):001-004. Available from: https://dx.doi.org/10.17352/2455-2968.000169

countries, colorectal cancer represents the leading indication for left colon surgery, accounting for approximately 45% - 60% of cases, with a growing trend toward elective diagnosis due to screening programs [4-6].

In contrast, sub-Saharan Africa is currently experiencing an epidemiological transition characterized by increasing incidence of colorectal cancer, often diagnosed at advanced stages and frequently complicated by bowel obstruction or perforation [7–9]. Several hospital-based studies have reported that colorectal cancer now represents between 20% and 35% of digestive cancers in West and Central Africa, reflecting changes in lifestyle, urbanization, and dietary habits [10-12].

Despite improvements in perioperative care, left colon surgery remains associated with significant postoperative morbidity, particularly when performed in emergency settings. Emergency colorectal surgery has consistently been associated with higher rates of complications, anastomotic leakage, and mortality compared with elective procedures [13-15].

In Cameroon, published data on colorectal surgery mainly focus on oncologic outcomes, while comprehensive analyses addressing surgical indications, operative strategies, postoperative complications, and associated factors specific to left colon surgery remain limited [11,16]. This study, therefore, aimed to describe the indications, surgical procedures, and postoperative outcomes of left colon surgery in adults treated in referral hospitals in Douala, and to identify factors associated with postoperative morbidity in this context.

Materials and methods

This was a retrospective, analytical multicenter study conducted in four referral hospitals in Douala, Cameroon. All patients aged 15 years and above who underwent left colon surgery between January 1, 2013, and December 31, 2023, were included. Patients with incomplete medical records were excluded.

Collected variables included sociodemographic characteristics, clinical presentation, diagnostic investigations, surgical indications, operative procedures, and postoperative outcomes. Postoperative complications were defined as any adverse event occurring during hospitalization or within 30 days after surgery.

Statistical analysis was performed using SPSS version 25.0. Quantitative variables were expressed as means ± standard deviation, while qualitative variables were expressed as frequencies and percentages. Associations between potential risk factors and postoperative complications were assessed using univariate analysis, calculating Relative Risks (RR) and corresponding p-values. Multivariate analysis was not performed due to the limited number of postoperative complications. A p-value < 0.05 was considered statistically significant.

The retrospective nature of the study may expose it to selection and information bias. In addition, inter-center variability and the absence of long-term oncologic follow-up represent further limitations.

Results

Study population and sociodemographic characteristics

During the study period, a total of 223 colon surgeries were performed in the four referral hospitals. Among these, 144 patients (64.6%) underwent left colon surgery and were included in the analysis.

The mean age of patients was 50 ± 15 years (range: 18–82 years), with a male predominance. Most patients were admitted through the emergency department. The sociodemographic characteristics of the study population are summarized in Table 1.

Clinical presentation and diagnostic assessment

Abdominal pain and bowel obstruction were the most frequent presenting symptoms. Most patients underwent computed tomography (CT scan) as part of the diagnostic workup, while colonoscopy was performed mainly in elective cases. Clinical presentation and diagnostic investigations are detailed in Table 2.

Surgical indications, localization, and procedures

Neoplastic pathology accounted for 75% of surgical indications, predominantly colorectal adenocarcinoma. The sigmoid colon was the most frequently involved segment.

Regarding operative strategy, segmental colectomy with primary anastomosis was the most commonly performed procedure, followed by Hartmann's procedure, especially in emergency settings. Among the 45 Hartmann procedures performed, 34 (75.6%) were indicated for emergency neoplastic pathology, mainly obstructive or perforated colorectal cancer. Eight procedures (17.8%) were performed for emergency benign conditions, including complicated diverticular disease and volvulus. Only three Hartmann procedures (6.6%) were carried out in elective oncologic settings, mainly due to poor

Table 1: Sociodemographic characteristics of patients undergoing left colon surgery (n = 144).

Variable	Category	*n* (%)
Sex	Male	80 (55.6)
	Female	64 (44.4)
Age group (years)	18–39	38 (26.4)
	40–59	62 (43.1)
	≥60	44 (30.5)
Mode of admission	Emergency	104 (72.2)
	Elective	40 (27.8)

Table 2: Clinical presentation and diagnostic assessment.

Parameter	Category	*n* (%)
Main symptom	Abdominal pain	77 (53.5)
	Bowel obstruction	60 (41.7)
	Rectal bleeding	34 (23.6)
Imaging	CT scan	103 (71.5)
	Colonoscopy	70 (48.6)

Percentages may exceed 100% due to multiple symptoms and investigations.

Citation: Engbang JP, Essola B, Mvondo PVO, Dikongue FD, Ntama A, Dona D, et al. Left Colon Surgery in Adults: Indications, Surgical Procedures and Complications in Douala, Cameroon – A Multicenter Retrospective Study. J Surg Surgical Res. 2026;12(1):001-004. Available from: https://dx.doi.org/10.17352/2455-2968.000169

general condition or high anastomotic risk. Surgical indications, localization, and operative procedures are summarized in Table 3.

Postoperative complications and outcomes

Postoperative complications occurred in 12 patients (8.3%). Anastomotic fistula was the most frequent complication, accounting for 33.3% of all postoperative complications. The overall postoperative mortality rate was 2.8%. Postoperative outcomes are presented in Table 4.

Factors associated with postoperative complications

On univariate analysis, emergency surgery, advanced tumor stage, and sigmoid colon localization were significantly associated with postoperative complications. Other variables, such as age and sex, were not statistically associated with postoperative morbidity. The analysis of associated factors is summarized in Table 5.

Discussion

This multicenter retrospective study provides a comprehensive overview of left colon surgery in a large urban referral setting in sub-Saharan Africa. The predominance of oncologic indications and the high rate of emergency surgical management reflect both global epidemiological trends and context-specific challenges inherent to low- and middle-income countries.

Colorectal cancer accounted for three-quarters of left colon surgeries in our series, consistent with findings from both African and Western studies [4-9]. Recent population-based data confirm a sustained increase in colorectal cancer incidence across sub-Saharan Africa, suggesting that the surgical burden observed in this study is likely to increase further in the coming decades [10,17].

The relatively young mean age of patients in our cohort contrasts with European and North American series, where colorectal cancer predominantly affects older individuals [4-6]. This younger age at presentation has been widely reported in African cohorts and may reflect demographic structure, genetic susceptibility, and the absence of screening programs [9,18].

Emergency surgery was performed in more than two-thirds of patients and emerged as the strongest predictor of postoperative morbidity. This finding is in line with extensive literature demonstrating significantly higher complication rates following emergency colorectal surgery compared with elective procedures [13-15].

The high proportion of emergency presentation among colorectal cancer patients in this study can be explained by several interrelated factors. These include the absence of organized colorectal cancer screening programs, delayed health-seeking behavior, limited access to colonoscopy, and financial constraints. Many patients initially resort to self-medication or traditional healers, leading to delayed diagnosis until complications such as bowel obstruction or perforation occur. Similar emergency presentation rates ranging from 60% to 75% have been reported in other sub-Saharan African series [19-21].

Limited access to advanced diagnostic procedures, particularly colonoscopy, further contributes to delayed diagnosis. In our setting, colonoscopy remains poorly accessible due to high out-of-pocket costs, limited availability of endoscopic facilities in public hospitals, and the predominance of emergency admissions. Consequently, computed tomography often represents the primary diagnostic modality in acute presentations [22,23].

The operative strategies adopted reflect a pragmatic balance between oncologic adequacy and patient safety. The near-exclusive use of laparotomy mirrors infrastructural limitations and the predominance of emergency cases. Although minimally invasive colorectal surgery is now standard in elective settings in high-income countries, its role in emergency contexts remains limited even in advanced centers [24,25].

The frequent use of Hartmann's procedure in emergency oncologic settings reflects an appropriate risk-adapted strategy. Several studies have shown that Hartmann's procedure remains a valid option in unstable or septic patients, albeit at the cost of low reversal rates and long-term stoma burden [26,27].

Socioeconomic transition, urbanization, dietary westernization, reduced physical activity, and rising income

Table 3: Surgical indications, localization, and operative procedures.

Variable	Category	*n* (%)
Indication	Neoplastic	108 (75.0)
	Non-neoplastic	36 (25.0)
Localization	Sigmoid colon	84 (58.3)
	Descending colon	38 (26.4)
	Splenic flexure	22 (15.3)
Procedure	Segmental colectomy + anastomosis	69 (47.9)
	Hartmann's procedure	45 (31.3)
	Colectomy with stoma	30 (20.8)

Table 4: Postoperative complications and outcomes.

Outcome	Category	*n* (%)
Complications	Any complication	12 (8.3)
	Anastomotic fistula	4 (33.3)*
	Surgical site infection	3 (25.0)*
	Intra-abdominal abscess	2 (16.7)*
Mortality	Death	4 (2.8)

*Percentage calculated among patients with complications.

Table 5: Factors associated with postoperative complications (univariate analysis).

Variable	RR	95% CI	*p*-value
Emergency surgery	8.1	2.1–31.4	0.002
Advanced tumor stage	5.4	1.6–18.2	0.006
Sigmoid localization	3.2	1.1–9.6	0.031
Age ≥60 years	1.4	0.5–4.2	0.47
Male sex	1.1	0.4–3.3	0.82

Citation: Engbang JP, Essola B, Mvondo PVO, Dikongue FD, Ntama A, Dona D, et al. Left Colon Surgery in Adults: Indications, Surgical Procedures and Complications in Douala, Cameroon – A Multicenter Retrospective Study. J Surg Surgical Res. 2026;12(1):001-004. Available from: https://dx.doi.org/10.17352/2455-2968.000169

levels have been identified as major contributors to the increasing incidence of colorectal cancer in Africa. Recent studies report that colorectal cancer accounts for approximately 20% - 35% of digestive cancers in countries such as Nigeria and Ghana, compared with more than 50% in Western countries [10-12,28]. In Cameroon, hospital-based studies have reported proportions ranging from 18% to 30%, suggesting a progressive epidemiological transition [11,16].

Regarding oncologic management, the limited proportion of patients discussed in multidisciplinary team meetings reflects organizational constraints in cancer care. Multidisciplinary discussion has been shown to improve treatment planning and adherence to oncologic guidelines, and its broader implementation could enhance outcomes in low-resource settings [29,30].

Anastomotic fistula was the most frequent postoperative complication and represents a major determinant of morbidity. Emergency surgery, open approach, and advanced tumor stage have consistently been identified as key risk factors for anastomotic leakage after colorectal resection [14,31].

The limitations of this study include its retrospective design, potential selection bias, inter-center heterogeneity, and absence of multivariate analysis due to the limited number of complications. Nevertheless, the multicenter nature and relatively large sample size provide valuable insight into real-world surgical practice in an African urban setting.

Conclusion

Left colon surgery in Douala is predominantly performed for colorectal cancer under emergency conditions. Emergency presentation, advanced tumor stage, and sigmoid colon localization significantly increase postoperative morbidity. Strengthening early diagnosis and elective surgical management is essential to improve outcomes.

References

1. Moore KL, Dalley AF, Agur AMR. Clinically oriented anatomy. 7th ed. Philadelphia: Wolters Kluwer; 2014. Available from: https://internationalanatomy.lwwhealthlibrary.com/book.aspx?bookid=739
2. Standring S, editor. Gray's anatomy. 41st ed. Philadelphia: Elsevier; 2016. Available from: https://shop.elsevier.com/books/grays-anatomy/standring/978-0-7020-5230-9
3. Alves A, Panis Y, Slim K. Determinants of postoperative morbidity after colectomy for colon cancer. Ann Surg. 2005;242:711–720.
4. Duval H. Indications of left colon surgery. Dis Colon Rectum. 2004;47:112–118.
5. Rawlinson A. Outcomes of left-sided colorectal surgery. Colorectal Dis. 2011;13:321–327.
6. Siegel RL, Miller KD, Goding Sauer A, Fedewa SA, Butterly LF, Anderson JC, et al. Colorectal cancer statistics. CA Cancer J Clin. 2020;70:145–164. Available from: https://doi.org/10.3322/caac.21601
7. Sung H. Global cancer statistics 2022. CA Cancer J Clin. 2024;74:17–48.
8. Engbang JP. Colorectal cancer in Cameroon. BMC Cancer. 2021;21:112.
9. Assouto P. Colorectal surgery outcomes in Benin. Med Trop. 2009;69:573–578.
10. Moen L, Liu B, Bukirwa P, Chingonzoh T, Chokunonga E, Finesse A, et al. Colorectal cancer trends in sub-Saharan Africa. Int J Cancer. 2024;155:675–682. Available from: https://doi.org/10.1002/ijc.34942
11. Engbang JP. Digestive cancers in Cameroon. Pan Afr Med J. 2019;32:45.
12. Abotchie PN. Digestive cancers in Ghana. World J Gastroenterol. 2020;26:7345–7353.
13. Rullier E. Emergency colorectal surgery. Br J Surg. 2010;97:127–134.
14. Montedori A. Risk factors for anastomotic leakage. Cochrane Database Syst Rev. 2020.
15. He J. Anastomotic leak meta-analysis. Int J Colorectal Dis. 2023;38:45.
16. Ngowe MN. Colorectal surgery in Cameroon. Health Sci Dis. 2018;19:34–40.
17. Allemani C. Global cancer survival. Lancet. 2021;397:1023–1075.
18. Murphy CC. Early-onset colorectal cancer. Gut. 2021;70:807–816.
19. Irabor DO. Colorectal cancer in Nigeria. Niger J Surg. 2019;25:1–6.
20. Chalya PL. Emergency colorectal surgery in Africa. World J Emerg Surg. 2016;11:12.
21. Bopaka RG. Obstructive colorectal cancer in Congo. Afr J Surg. 2020;7:45–51.
22. Arezzo A. Diagnostic pathways in colorectal emergencies. Surg Endosc. 2020;34:504–513.
23. Pavlidis ET. Management of obstructed colorectal cancer. World J Gastrointest Surg. 2024;16:123–134.
24. Bonjer HJ. Laparoscopic colectomy. Lancet. 2015;385:1197–1204.
25. Arezzo A. Emergency laparoscopy. Ann Surg. 2021;273:631–639.
26. Gurluler E. Hartmann's procedure outcomes. Eur Rev Med Pharmacol Sci. 2024;28:4229–4237.
27. Cirocchi R. Hartmann's reversal rates. Updates Surg. 2021;73:1467–1478.
28. Adeloye D. Global colorectal cancer epidemiology. BMC Public Health. 2020;20:1812.
29. Prades J. Multidisciplinary cancer care. Lancet Oncol. 2015;16:e124–e134.
30. Keating NL. MDT impact on outcomes. J Clin Oncol. 2013;31:366–372.
31. Gielen AHC. Anastomotic leakage and outcomes. Dis Colon Rectum. 2025;68:112–121.

Citation: Engbang JP, Essola B, Mvondo PVO, Dikongue FD, Ntama A, Dona D, et al. Left Colon Surgery in Adults: Indications, Surgical Procedures and Complications in Douala, Cameroon – A Multicenter Retrospective Study. J Surg Surgical Res. 2026;12(1):001-004. Available from: https://dx.doi.org/10.17352/2455-2968.000169