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Original Research Article

Sigmoid Surgery in an Urban African Setting: Indications, Operative Procedures and Outcomes in Douala (Cameroon)

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Abstract: ***Background:*** Sigmoid surgery is a major component of digestive surgery in sub-Saharan Africa, where emergency abdominal conditions remain frequent. Multicenter local evidence is limited. ***Objective:*** To describe indications, operative procedures, and postoperative outcomes of sigmoid surgery in four referral hospitals in Douala, Cameroon. ***Methods:*** Retrospective descriptive multicenter study over a 10-year period. Patients aged ≥15 years undergoing surgery involving the sigmoid colon were included. Sociodemographic variables, indications, procedures, morbidity and mortality were analyzed using IBM SPSS v25. ***Results:*** A total of 116 patients were included; 68.1% were male. Mean age was 47.6 ± 15.6 years. Main indications were sigmoid volvulus (19.8%), rectosigmoid junction cancer (19%), sigmoid cancer (12.9%) and rectal cancer (12%). Sigmoid colostomy was the most frequent procedure (56.9%). Laparotomy was the predominant approach. Overall morbidity was 11.2% and mortality 5.1%. ***Conclusion:*** Sigmoid surgery in Douala is dominated by emergency indications, particularly volvulus and complicated colorectal cancers. Strengthening early diagnosis and gradual implementation of minimally invasive surgery may improve postoperative outcomes.

Keywords: Sigmoid surgery; volvulus; colorectal cancer; colostomy; complications; Cameroon.

INTRODUCTION

The sigmoid colon is the mobile terminal segment of the left colon and is frequently involved in benign, traumatic and malignant conditions requiring surgical management [1,2]. Globally, indications vary: in high-income settings, colorectal cancer and diverticular disease predominate, whereas in resource-limited settings, emergencies such as sigmoid volvulus remain common [3–5].

In sub-Saharan Africa, sigmoid volvulus is a leading cause of acute intestinal obstruction, favored by anatomical redundancy, dietary habits and delayed access to care [6,7]. At the same time, colorectal cancer incidence is increasing, often diagnosed late and complicated by obstruction or perforation, which worsens surgical outcomes [8–10].

In Cameroon—particularly Douala—published data on sigmoid surgery remain limited. We hypothesized that sigmoid surgery in our setting is dominated by emergency indications and associated with non-negligible postoperative morbidity. This study aimed to describe indications, operative procedures and complications of sigmoid surgery in four referral hospitals in Douala.

METHODS

Study design and setting

Retrospective descriptive multicenter study conducted in four referral hospitals in Douala (Cameroon) over a 10-year period.

Participants

Inclusion criteria: patients aged ≥15 years who underwent a surgical procedure involving the sigmoid colon during the study period. Exclusion criteria: incomplete or unusable medical records.

Variables and definitions

Collected variables included age, sex, primary operative indication, surgical procedure, surgical approach (laparotomy/laparoscopy), postoperative

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morbidity (any complication during hospitalization), and in-hospital mortality.

Statistical analysis

Data were analyzed using IBM SPSS version 25. Quantitative variables are reported as mean ± standard deviation (SD) and range. Qualitative variables are reported as frequencies (n) and percentages (%).

Ethics

The study was conducted in accordance with institutional and national ethical standards. As this was a retrospective review of routinely collected data, patient identifiers were removed prior to analysis. (Add local IRB/ethics committee approval number if applicable).

RESULTS

Sociodemographic characteristics

A total of 116 patients were included. Men accounted for 68.1% (n=79) and women 31.9% (n=37), with a sex ratio of 2.1. Mean age was 47.6 ± 15.6 years (range 15–82) (Table 1).

Table 1: Sociodemographic characteristics of patients undergoing sigmoid surgery.

Variable	Category	n	% / value
Sex	Male	79	68.1
Sex	Female	37	31.9
Age	Mean ± SD (years)	—	47.6 ± 15.6
Age	Range (years)	—	15–82

Operative indications

Indications were dominated by sigmoid volvulus (19.8%, n=23), followed by rectosigmoid junction cancer (19.0%, n=22), sigmoid cancer (12.9%, n=15) and rectal cancer (12.0%, n=14). Emergency infectious and traumatic indications were also observed (Table 2).

Table 2: Distribution of operative indications for sigmoid surgery.

Indication	Context	n	%
Sigmoid volvulus	Emergency	23	19.8
Rectosigmoid junction cancer	Emergency/Elective	22	19.0
Sigmoid cancer	Emergency/Elective	15	12.9
Rectal cancer	Emergency/Elective	14	12.0
Fournier gangrene	Emergency	13	11.2
Occlusive colon cancer	Emergency	10	8.6
Sigmoid trauma	Emergency	6	5.1
Rectovaginal fistula	Elective	6	5.1
Restoration of bowel continuity	Elective	5	4.3
Diverticular disease	Elective	2	1.7

Figure 1 shows the distribution of main indications in the study population.

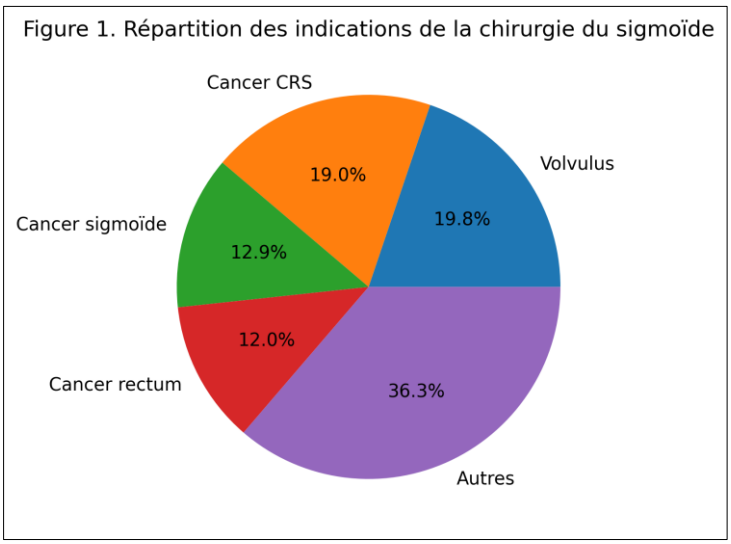

Figure 1: Distribution of sigmoid surgery indications in four hospitals of Douala

Operative procedures

Sigmoid colostomy was the most frequent procedure (56.9%, n=66), reflecting the predominance of emergency presentations. Sigmoid colectomy was performed in 34.5% (n=40). Laparotomy was the main surgical approach (Table 3).

Table 3: Distribution of operative procedures performed

Procedure	Approach	n	%
Sigmoid colostomy	Laparotomy	66	56.9
Sigmoid colectomy	Laparotomy	40	34.5
Low segmental left colectomy	Laparotomy	11	9.4

Postoperative outcomes

Overall postoperative morbidity was 11.2% (n=13), mainly infectious/abdominal wall complications. In-hospital mortality was 5.1% (n=6), occurring mostly in patients operated under emergency septic or occlusive conditions (Table 4).

Table 4. Postoperative morbidity and mortality.

Outcome	Type	n	%
Overall morbidity	Any complication	13	11.2
Infectious complications	Wound infection / sepsis	9	7.8
Other complications	Ileus, fistula, etc.	4	3.4
In-hospital mortality	Death	6	5.1

DISCUSSION

This multicenter study provides updated evidence on sigmoid surgery in an urban Central African setting. The relatively young mean age and male predominance are consistent with African series and likely reflect the epidemiology of sigmoid volvulus and late-presenting colorectal disease [6,12,13]. In contrast, Western cohorts typically report older populations where diverticular disease and elective colorectal cancer surgery are more common [3,4].

Sigmoid volvulus was the leading indication in our cohort (Table 2), confirming its major burden in sub-Saharan Africa [6,7]. Anatomical redundancy, high-fiber diet and delayed presentation are frequently cited contributing factors [13]. Conversely, volvulus is uncommon in high-income settings and tends to occur in frail elderly or institutionalized patients [5].

Tumor-related indications accounted for a substantial proportion of cases (Table 2). This aligns with reports of increasing colorectal cancer incidence in Africa and underscores persistent late diagnosis, with frequent obstruction and emergent presentations [8–10]. This clinical reality likely explains why sigmoid colostomy was the most frequent operation in our series (Table 3), often used to rapidly relieve obstruction and control sepsis in unstable patients [14,15].

Laparotomy was the predominant approach in our hospitals, reflecting equipment constraints, limited access to advanced anesthesia and laparoscopy training, and the high proportion of emergency cases. Although laparoscopic colectomy is associated with improved postoperative recovery in many settings [16,17], progressive and selective implementation for elective cases may be a pragmatic pathway in our context.

Postoperative morbidity (11.2%) was dominated by infectious complications (Table 4), comparable to other African reports where emergency surgery, contamination and delayed presentation increase risk [12,18]. Mortality (5.1%) mainly affected patients operated under emergency septic or occlusive conditions, emphasizing the need to strengthen early diagnosis, referral pathways and perioperative resuscitation.

From a health-system perspective, improving access to diagnostic pathways (endoscopy and imaging), developing colorectal cancer awareness and screening strategies adapted to local resources, and standardizing emergency management protocols may reduce the severity at presentation. Training programs and incremental investment in minimally invasive platforms could further improve outcomes over time.

Limitations

This study has limitations inherent to its retrospective design, including potential information bias due to incomplete records. The absence of long-term follow-up precludes assessment of late outcomes. In addition, the limited use of laparoscopy prevents meaningful comparison between surgical approaches.

CONCLUSION

Sigmoid surgery represents a significant surgical burden in Douala hospitals and is dominated by emergency indications, particularly sigmoid volvulus and complicated colorectal cancers. Sigmoid colostomy and sigmoid colectomy were the most frequent procedures, performed mainly by laparotomy. Strengthening early diagnosis, optimizing perioperative

care and gradually expanding minimally invasive surgery may improve outcomes in our setting.

Declarations

Ethics approval and consent to participate

Retrospective study using anonymized data. Add ethics committee/IRB approval reference if required by the journal.

Consent for publication

Not applicable (retrospective anonymized data).

Availability of data and materials

Data can be made available from the corresponding author upon reasonable request, subject to institutional policies.

Competing interests

The authors declare no competing interests.

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Authors' contributions

Jean Paul Engbang conceived the study, coordinated data collection, performed data analysis, and drafted the manuscript. Ambroise Ntama and Marcelin Ngowe Ngowe contributed to study design, surgical management of patients, and critical revision of the manuscript. Fred Dikongue and Thérèse-Vanessa Fossok participated in data collection, literature review, and manuscript drafting. All authors read and approved the final manuscript.

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