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Indications and Findings of Colonoscopy in Patients Hospitalized in the Internal Medicine Department of Donka University Hospital (Conakry, Guinea): A Retrospective Study of 525 Colonoscopies

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Abstract

Background: Colonoscopy is the reference examination for the exploration of the colon and rectum. To our knowledge, no Guinean series has described its indications and findings. **Objective:** This paper aims to describe the indications, procedural characteristics and findings of colonoscopies performed in patients hospitalized in the internal medicine department of Donka National Hospital (Conakry). **Methods:** Retrospective descriptive study of colonoscopy reports from January 1, 2023 to December 31, 2025 (3 years). The unit of analysis was the procedure. Proportions were calculated on available data, with their 95% confidence interval (95% CI). **Results:** A total of 525 colonoscopies were analyzed, corresponding to 525 patients; no patient underwent a repeat colonoscopy during the study period. Mean age was 53.4 ± 17.3 years (range 7 - 90) and the male-to-female ratio was 1.40. The main indications were constipation (45.7%), rectal bleeding (36.4%) and abdominal pain (10.7%). Bowel preparation was adequate (Boston Bowel Preparation Scale score ≥ 6) in 97.1% of cases. Among the 493 sedated patients (diazepam in 99.6%), tolerance was rated good in 75.7%. No serious complication was recorded during the 3-hour post-procedure observation period. Colonoscopy was normal in 33.9% of cases (95% CI: 30.0 - 38.1). The most frequent lesion was hemorrhoidal disease (33.5%); colonic polyps accounted for 5.7% and malignant-appearing tumors

(colon and rectum) for 7.0% of examinations. **Conclusion:** In this internal medicine department, colonoscopy was mainly indicated for constipation. Hemorrhoidal disease was the most frequent lesion, and one examination in three was normal. These findings call for an assessment of the appropriateness of indications. Whether organized colorectal cancer screening should be implemented in Guinea is a public health decision that requires population-based data.

Keywords

Colonoscopy, Indications, Hemorrhoidal Disease, Constipation, Colorectal Cancer, Guinea

1. Introduction

Colonoscopy is an endoscopic examination allowing direct visualization of the colorectal mucosa using a flexible endoscope inserted through the anus [1]. It is the reference examination for the screening, diagnosis and endoscopic treatment of colorectal diseases, particularly colorectal cancer (CRC) [1] [2].

CRC is the third most common cancer worldwide and the second leading cause of cancer death [3]. Its incidence is rising in low- and middle-income countries, particularly in sub-Saharan Africa, whereas it is stabilizing or declining in several high-income countries with screening programs [4]-[6].

Indications for colonoscopy are numerous: digestive symptoms (rectal bleeding, abdominal pain, chronic diarrhea, constipation), anemia, CRC screening and surveillance, polyp resection and the investigation of inflammatory bowel disease [7] [8]. Findings vary according to the indication, patient age and setting. In sub-Saharan Africa, the most frequently reported lesions are hemorrhoidal disease, colorectal polyps, diverticular disease and colorectal tumors [9]-[11].

In French-speaking Africa, a few studies have described colonoscopy practice. In Cameroon, Ankouane Andoulo *et al.* analyzed 908 colonoscopies and reported a low diagnostic yield for some indications such as constipation [10]. In Tunisia, 62.3% of colonoscopy indications were considered appropriate according to the EPAGE II criteria [12]. To our knowledge, no study on the indications and findings of colonoscopy has been published in Guinea.

The aim of this study was to describe the indications, procedural characteristics and findings of colonoscopies performed in patients hospitalized in the internal medicine department of Donka National Hospital (DNH), Conakry University Hospital.

2. Patients and Methods

2.1. Study Design, Setting and Period

This was a 3-year retrospective descriptive study, from January 1, 2023 to December 31, 2025, conducted in the internal medicine department and its hepato-gas-

troenterology unit at DNH, Conakry University Hospital. Colonoscopies were performed using two OLYMPUS endoscopy systems with three colonoscopes (models CF-Q160AL, CF-Q180AL and CF-H260DL) and one PENTAX system with one colonoscope (model EC-3490FK). All colonoscopies were performed by three endoscopists.

2.2. Study Population and Selection Criteria

All reports of complete or partial (left-sided) colonoscopies performed during the study period in patients hospitalized in the department or followed as outpatients were included. The unit of analysis was the procedure: each colonoscopy corresponded to one observation.

Records with an unusable endoscopy report (missing data on the indication or findings) were excluded. In total, three records were unusable. The selection process is shown in **Figure 1**.

2.3. Data Collection and Study Variables

Data were extracted from medical records and endoscopy reports using a standardized form on KoboCollect. The variables studied were: age, sex, occupation, indications, bowel preparation agent, quality of preparation, sedation and drugs administered, tolerance, complications, completeness of the examination, endoscopic lesions, biopsy and, when available, histopathological results. A single examination could have several indications and several lesions; totals per category may therefore exceed 100%.

2.4. Operational Definitions

Complete colonoscopy: cecal intubation documented by identification of the appendiceal orifice and the ileocecal valve, in accordance with ESGE recommendations [13].

Partial colonoscopy: examination in which the cecum could not be reached because of poor bowel preparation (Boston score ≤ 5) or interruption of the procedure due to poor tolerance.

Bowel preparation quality: assessed using the Boston Bowel Preparation Scale (BBPS), scored from 0 to 3 for each of the three colonic segments (total 0 - 9) [14]. Preparation was considered adequate for a total score ≥ 6 (with each segment ≥ 2), excellent for a score of 8 - 9, satisfactory for 6 - 7 and inadequate for ≤ 5. For partial examinations, the score was calculated on the explored segments only.

Tolerance: assessed by the endoscopist at the end of the procedure and recorded in the report, it was rated as **good** when the examination was completed without notable discomfort; **fair** in case of discomfort or agitation requiring pauses, position changes or an additional dose of sedative, without interruption; and **poor** in case of pain or agitation leading to interruption of the examination.

Complications: any adverse event occurring during or after the procedure, including perforation, bleeding requiring hemostasis or transfusion, cardiorespira-

tory event requiring intervention, and drug reaction. Severity was graded according to the ASGE lexicon [15]. The observation period lasted three hours, until discharge from the recovery room, and the source of information was the colonoscopy report.

Malignant-appearing tumor: fungating, ulcerated and/or stenosing lesion with irregular margins, considered suspicious for malignancy by the endoscopist. This corresponds to an endoscopic suspicion, as distinct from histologically confirmed cancer.

2.5. Statistical Analysis

Data were analyzed using R software version 4.3.0. Categorical variables are presented as counts and percentages calculated on available data, with Wilson 95% confidence intervals (95% CI) for the main proportions. Continuous variables are presented as mean ± standard deviation. For the discussion, our proportions were compared with those of published series using Pearson's χ^2 test, based on counts reconstructed from the published percentages. Statistical significance was set at $p < 0.05$.

2.6. Ethical Considerations

The study was approved by the Institutional Ethics Committee of Kofi Annan University of Guinea (approval No. 110/P13/FSMP/UKAG/2025). Authorization to access the records was obtained from the General Management of DNH. Data were anonymized at extraction. Given the retrospective and anonymized nature of the study, the committee waived the requirement for specific informed consent for the use of the data.

3. Results

3.1. Study Population

Overall, 525 reports were analyzed out of 528 colonoscopies performed during the study period. Three records were excluded as unusable (Figure 1). These 525 colonoscopies corresponded to 525 patients. Colonoscopy was complete in 510/525 (97.1%) cases and partial in 15/525 (2.9%) cases. Missing data concerned only biopsy performance (n = 7).

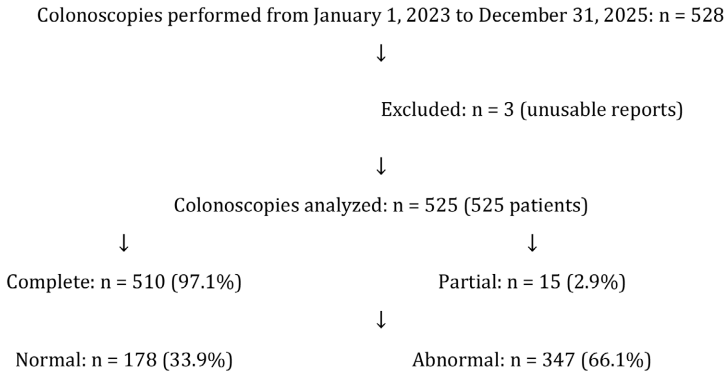


Figure 1. Study flow chart.

Mean age was 53.4 ± 17.3 years (range: 7 - 90 years). The 40 - 79 year age group was the most represented (76.4%). There were 307 men (58.5%) and 218 women (41.5%), giving a male-to-female ratio of 1.40. Housewives were the most represented occupational category (24.8%) (Table 1).

Table 1. Sociodemographic characteristics of the patients.

Variables	n	%
Age group (years) (n = 525)		
<40	103	19.6
40 - 79	401	76.4
≥80	21	4.0
Mean age ± SD (range)	53.4 ± 17.3	(7 - 90)
Sex (n = 525)		
Male	307	58.5
Female	218	41.5
Occupation (n = 525)		
Housewife	130	24.8
Trader	81	15.4
Civil servant	72	13.7
Teacher	34	6.5
Student/pupil	33	6.3
Retired	27	5.1
Farmer/livestock breeder	24	4.6
Other occupations	124	23.6

3.2. Indications

The 525 colonoscopies accounted for 662 indications, as a single examination could have several. Constipation was the leading indication (45.7%; 95% CI: 41.5 - 50.0), followed by rectal bleeding (36.4%; 95% CI: 32.4 - 40.6) and abdominal pain (10.7%) (Table 2).

3.3. Bowel Preparation, Sedation, Tolerance and Complications

Bowel preparation was based on polyethylene glycol (Fortrans®) in 94.9% of cases. It was adequate (Boston score ≥ 6) in 97.1% of examinations (95% CI: 95.3 - 98.3). Conscious sedation was performed in 493 patients (93.9%), with diazepam in 99.6% of cases; an antispasmodic (phloroglucinol, Trabar®) was combined in 48.7% of them. Among sedated patients, tolerance was good in 75.7% of cases

(95% CI: 71.7 - 79.2), fair in 21.1% and poor in 3.2% (Table 3). No serious complication (perforation, bleeding requiring intervention, cardiorespiratory event) was recorded in the files during the observation period.

Table 2. Indications for colonoscopy (n = 525 examinations; several indications possible per examination).

Indications	n	%
Constipation	240	45.7
Rectal bleeding	191	36.4
Abdominal pain	56	10.7
Chronic diarrhea	45	8.6
Weight loss	27	5.1
Melena	20	3.8
Anemia	10	1.9
Other indications	73	13.9

Total indications: 662; percentages therefore exceed 100%.

Table 3. Bowel preparation, sedation and tolerance.

Variables	n	%
Preparation agent (n = 525)		
Fortrans® (PEG)	498	94.9
Movicol®	22	4.2
Fortrans® + Normacol®	5	0.9
Quality-Boston score (n = 525)		
8 - 9 (excellent)	344	65.5
6 - 7 (satisfactory)	166	31.6
≤5 (inadequate)	15	2.9
Sedation (n = 525)		
Sedation performed	493	93.9
No sedation	32	6.1
Drugs administered (n = 493 sedated)		
Diazepam	491	99.6
Phloroglucinol (Trabar®)	240	48.7
Others	18	3.7

Continued

Tolerance (n = 493 sedated)		
Good	373	75.7
Fair	104	21.1
Poor	16	3.2

3.4. Endoscopic Findings and Biopsies

Colonoscopy was normal in 178 cases (33.9%; 95% CI: 30.0 - 38.1) and abnormal in 347 cases (66.1%). Hemorrhoidal disease was the most frequent lesion (33.5%; 95% CI: 29.6 - 37.7). In the colon, findings included polyps (5.7%), diverticular disease (4.4%), malignant-appearing tumors (4.2%) and inflammatory colitis (1.5%). Overall, a malignant-appearing colonic or anorectal tumor was suspected in 37 examinations (7.0%; 95% CI: 5.2 - 9.6) (Table 4).

The reports mentioned a biopsy in 146 of the 518 examinations with available data (28.2%).

Table 4. Endoscopic lesions and biopsies (n = 525 examinations; several lesions possible per examination).

Variables	n	%
Overall result		
Normal colonoscopy	178	33.9
Abnormal colonoscopy	347	66.1
Colonic lesions		
Colonic polyps	30	5.7
Diverticular disease	23	4.4
Malignant-appearing colonic tumor	22	4.2
Inflammatory colitis	8	1.5
Other colonic lesions	62	11.8
Anorectal lesions		
Hemorrhoidal disease	176	33.5
Anorectal polyp	25	4.8
Malignant-appearing anorectal tumor	15	2.9
Proctitis	4	0.8
Other anorectal lesions	94	17.9
Biopsy (n = 518)		
Performed	146	28.2
Not performed	372	71.8

4. Discussion

To our knowledge, this is the first study to describe the indications and findings of colonoscopy in Guinea. It shows a predominance of constipation among indications and of hemorrhoidal disease among lesions, with one third of examinations being normal.

4.1. Patient Characteristics

The mean age of our patients (53.4 years) is close to that reported by Bomba di Masuangi *et al.* in Kinshasa (median age 54.5 years; 206 colonoscopies) [16], and lower than in the series of Ndjitoyap Ndam *et al.* in Yaoundé, which was restricted to patients aged 60 years and over (66.5 ± 5.8 years) [9]. The male predominance (sex ratio 1.40) was also observed in Kinshasa (sex ratio 1.6) [16] and, more markedly, in the Cameroonian series of Ankouane *et al.* (68.5% men) [10]. It may reflect sex differences in healthcare-seeking behavior rather than differences in morbidity, as our study did not explore risk factors.

4.2. Indications

Constipation was the leading indication (45.7%), whereas rectal bleeding predominates in most African series, notably in Yaoundé (45.3%, with constipation ranking only third at 15.8%) [9]. Our profile is, however, close to that of Kinshasa, where constipation accounted for 50.5% of indications ($p = 0.24$) [16]. The high proportion of constipation, an indication with a low diagnostic yield when isolated [10] [17], suggests that some examinations may not meet appropriateness criteria. In Tunisia, only 62.3% of colonoscopy indications were appropriate according to the EPAGE II criteria [12]. Our study did not assess the appropriateness of indications, which represents a direction for future research.

4.3. Bowel Preparation, Sedation, Tolerance and Complications

Preparation was adequate in 97.1% of cases, a higher proportion than the 93.1% reported in Yaoundé ($\chi^2 = 6.3$; $p = 0.012$) [9]. This result should be interpreted with caution: the score was collected retrospectively from the reports and, for partial examinations, calculated on the examined colonic segments only, which may overestimate preparation quality.

Tolerance was rated good in 75.7% of sedated patients, lower than the 96.6% reported in Yaoundé with midazolam ($\chi^2 = 42.1$; $p < 0.001$) [9]. As tolerance scales were not standardized between the two series, this comparison remains indicative. The choice of sedative may contribute to this difference: diazepam has a long half-life (20 - 100 hours) and a less predictable onset of action than midazolam, whose short half-life (1.5 - 2.5 hours) makes it the reference agent for conscious sedation in endoscopy [18]. No serious complication was recorded; however, this finding is limited to the observation period and relies on retrospective data, which may miss delayed complications occurring after discharge.

4.4. Endoscopic Findings

Colonoscopy was normal in 33.9% of cases, a significantly lower rate than the 49.7% reported by Ankouane *et al.* in Cameroon ($\chi^2 = 33.6$; $p < 0.001$) [10]. This difference may be partly explained by the fact that hemorrhoidal disease, present in one third of our patients, was counted as an abnormality, as well as by differences in study period and in the definition of a "normal" examination. Nevertheless, one third of normal examinations remains a substantial proportion, which warrants an assessment of the appropriateness of indications in our center [12].

Colonic polyps were found in 5.7% of examinations, a lower proportion than the 12.1% reported in Kinshasa ($\chi^2 = 8.8$; $p = 0.003$) [16]. Age cannot explain this difference, since both series had a comparable age (mean 53.4 years vs. median 54.5 years) and similar indications (predominance of constipation). The difference more likely relates to lesion classification: our series distinguished colonic polyps (5.7%) from anorectal polyps (4.8%). When combined, the proportion of colorectal polyps reaches at most 10.5%, with no difference from the Kinshasa series ($p = 0.52$). Detection quality (withdrawal time, equipment, cecal intubation rate) could not be assessed and may also play a role.

Hemorrhoidal disease was the most frequent anorectal lesion (33.5%), as in other African series, but with a lower frequency than those reported in Kinshasa (62.6%; $\chi^2 = 51.5$; $p < 0.001$) [16] and Yaoundé (60.1% of anorectal disease) [9]; it was 37.3% in Mali [19]. Since the Kinshasa series, like ours, showed a predominance of constipation, differences in indications do not explain this gap. Underreporting of low-grade hemorrhoids in our reports, in the absence of systematic rectal retroflexion or a standardized classification (Goligher), is a plausible explanation.

4.5. Biopsies and Histological Confirmation

Biopsies were performed in 28.2% of examinations, in the presence of suspicious lesions (tumors, polyps, colitis). The 37 malignant-appearing tumors represent an endoscopic suspicion only. Systematic biopsy of suspicious lesions and traceability of histological results would improve the diagnostic yield of colonoscopy in our center.

4.6. Study Limitations

This study has some limitations. Its retrospective design exposes it to missing data and to heterogeneous completion of reports. It is a single-center series of selected patients, whose results cannot be extrapolated to the general population or used to estimate screening needs. Partial examinations may have underestimated the frequency of right-sided colonic lesions. Tolerance was assessed subjectively by the endoscopist. Histological results were not available, as the study was based only on endoscopy reports, which limits diagnostic confirmation of suspicious lesions. Finally, comparisons with the literature rely on counts reconstructed from published percentages and on definitions that may differ between series.

5. Conclusion

In the internal medicine department of Donka National Hospital, colonoscopy was mainly indicated for constipation, followed by rectal bleeding. Hemorrhoidal disease was the most frequent lesion, and one examination in three was normal. Bowel preparation was mostly adequate, but tolerance under diazepam could be improved. These findings support an assessment of the appropriateness of indications (EPAGE II criteria), the use of more suitable sedation and better traceability of histological results. Whether organized colorectal cancer screening should be implemented in Guinea is a public health decision that requires population-based data (cancer registry, community-based studies), which this hospital-based series cannot provide.

Data Availability

Anonymized data are available from the corresponding author upon reasonable request.

Author Contributions

Study conception: Ahmed Tidiane DIALLO; Methodology: Ahmed Tidiane DIALLO, Kadiatou DIALLO and Djenabou DIALLO; Data collection: Abdoul-koudous BASSONGUI; Mamadou Yero BARRY; Statistical analysis: Ahmed Tidiane DIALLO and Thierno Mamadou BARRY; Writing of the original draft: Ahmed Tidiane DIALLO, Thierno Mamadou BARRY; Critical revision: Mamadou DIAKHABY; Aissatou DIALLO; Mamadou Sarifou DIALLO; Supervision: Djibril SYLLA; Amadou KAKE.

All authors read and approved the final version of the manuscript.

Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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