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Contributions and outcomes of terminal ileum intubation in a surgical endoscopy unit: Retrospective cohort study

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ABSTRACT

Introduction: The necessity of routine terminal ileum intubation during colonoscopy is controversial, with literature suggesting it has a low impact on clinical outcomes. Our study aimed to evaluate the effect of terminal ileum intubation on the clinical approach in a surgical endoscopy unit.

Materials and Methods: This retrospective study included 137 patients over the age of 18 who underwent colonoscopy with successful terminal ileum intubation in 2023. The patients were evaluated based on their demographic, clinical, endoscopic, and pathological data.

Results: The median age was 55 years (range 18–86), and 77 (56.2%) of the 137 patients included in the study were female. A total of 5 (3.5%) patients had a pathological appearance in the terminal ileum mucosa, necessitating an ileal biopsy. Of these 5 patients, 3 (2.2%) were referred for colonoscopy due to diarrhea, 1 (0.7%) due to abdominal pain, and 1 (0.7%) due to radiological findings. All biopsies resulted in a diagnosis of non-specific ileitis.

Conclusion: In surgical endoscopy units, terminal ileum intubation has minimal impact on the clinical approach and can be applied selectively based on the indication.

Keywords: Colonoscopy, Diarrhea, Terminal Ileum Intubation

Introduction

Colonoscopy is an endoscopic method that allows for the examination of the colon and rectal mucosa under direct visualization. This method enables the visual inspection of the colon, as well as obtaining tissue diagnoses through biopsies from pathological areas. Colonoscopy, regarded as the gold standard for colorectal cancer screening, allows for the detection of premalignant lesions, such as adenomatous polyps, and facilitates their treatment through endoscopic methods, such as polypectomy.[1]

For a colonoscopy to be considered complete, it is necessary to reach the cecal base and examine the entire colon, including the cecum. However, the necessity of routine terminal ileum intubation remains controversial in the literature.[2-5] Although terminal ileum intubation is considered evidence of reaching the cecum when the landmarks of the cecal floor cannot be clearly evaluated, some publications state that its diagnostic contribution is low.[2,6] However, it is also noted that evaluating and biopsying the terminal ileum can aid in diagnosing inflammatory

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bowel diseases (IBD) in patients with chronic diarrhea, radiologic findings of terminal ileum pathology, or right lower quadrant pain.[2,5]

Our study aimed to assess the outcomes of patients who underwent terminal ileum intubation during colonoscopy in the surgical endoscopy unit.

Materials and Methods

In our study, we examined 236 patients over the age of 18 who underwent colonoscopy in 2023 and included 137 patients who underwent terminal ileum intubation. The study was conducted in accordance with the Declaration of Helsinki and approved by the Institutional Review Board (Approval Date: 30.04.2024, Protocol Number: 2627).

We retrospectively examined colonoscopies performed by a single endoscopist on patients over the age of 18 for any indication in 2023. Out of 236 colonoscopies, 137 patients who underwent terminal ileum intubation were included in the study. Patients who did not undergo terminal ileum intubation or had missing data were excluded. The patients were then evaluated based on their demographic, clinical, endoscopic, and pathological data.

Colonoscopy Technique

In our center, colonoscopy procedures are conducted under deep sedation with the supervision of an anesthesiologist as per standard protocol. Patients are initially positioned in the left lateral decubitus position following monitoring and intravenous line establishment, and sedation is administered using propofol. In selected cases, colonoscopy without sedation may be offered to high-risk patients with comorbidities or those who prefer it.

We utilize Fujifilm® EC-760R colonoscopes in our endoscopy unit, with routine examinations performed under white light or Linked Color Imaging (LCI)®. Additionally, for enhanced mucosal pathology and polyp detection, virtual chromoendoscopy is available using Blue Light Imaging (BLI)®.

Statistical Analysis

Statistical analyses were performed using SPSS (Statistical Package for the Social Sciences) version 25.0 (IBM Corp., Armonk, NY, USA). Categorical data were expressed as numbers and percentages, while continuous data were expressed as mean±standard deviation or median and range, depending on the normality of their distribution. The normality of continuous data was tested using the Shapiro-Wilk test. Chi-square tests (Pearson chi-square, Fisher's exact test, etc.) were used to compare categorical data. All p-values were two-sided, and results were evaluated at a significance level of $p<0.05$ with a 95% confidence interval.

Results

A total of 137 patients, out of 236 colonoscopies performed, were included in the study, yielding a terminal ileum intubation rate of 58%. The median age of all patients was 55 years (range 18–86), with 77 (56.2%) being female. Among them, 76 (55.4%) were aged between 50 and 69 years. Regarding indications for colonoscopy, 59 (43.1%) patients underwent screening, 37 (27%) presented with abdominal pain and constipation, 30 (21.9%) had diarrhea, 6 (4.4%) reported a history of gastrointestinal bleeding, and 5 (3.6%) had colonoscopy due to radiological findings (Table 1).

When evaluating colonoscopy-related parameters, the median Boston Bowel Preparation Score was 8 (IQR 7–9). The adenoma detection rate was 29.2% among the 137 colonoscopies reviewed. Malignancy was identified in a total of 2 (1.4%) patients. Terminal ileum mucosa was as-

Table 1. Demographic and clinical features of the participants

Variables	All patients (n=137)
Age (Years, Median, Range)	55 (18-86)
Age Groups (n, %)	
18-49	44 (32.1)
50-69	76 (55.4)
≥70	17 (12.5)
Sex (n, %)	
Female	77 (56.2)
Male	60 (43.8)
Colonoscopy Indication (n, %)	
Screening	59 (43.1)
Abdominal Pain/Constipation	37 (27)
Diarrhea	30 (21.9)
GI Bleeding History	6 (4.4)
Radiologic Findings	5 (3.6)

FOBT: Fecal occult blood test; GI: Gastrointestinal.

Table 2. Colonoscopy-related parameters

Variables	All patients (n=137)
BBPS (Median, IQR)	8 (7-9)
Appearance of Terminal Ileum (n, %)	
Normal	132 (96.5)
Mucosal Nodularity	1 (0.7)
Erosions	2 (1.4)
Ulcerations	2 (1.4)
Polyp	0 (0)
Biopsy from Terminal Ileum (n, %)	
No	132 (96.5)
Yes	5 (3.5)
Adenoma Detection (n, %)	
No	97 (70.8)
Yes	40 (29.2)
Malignancy Detection (n, %)	
No	135 (98.6)
Yes	2 (1.4)

BBPS: Boston bowel preparation score; IQR: Interquartile range.

sessed as normal in 132 (96.5%) patients, while mucosal pathology necessitating biopsy was observed in 5 (3.5%) patients. Among these, mucosal erosion was noted in 2 (1.4%) patients, ulceration in 2 (1.4%) patients, and nodularity in 1 (0.7%) patient (Table 2).

The detection rates of abnormal terminal ileum findings according to colonoscopy indications were found to be statistically significant (p=0.028). Among the patients with abnormal terminal ileum findings, 3 (2.2%) were referred for colonoscopy due to diarrhea, 1 (0.7%) due to radiological findings, and 1 (0.7%) due to abdominal pain (Table 3). In our study, none of the patients who underwent endoscopy were diagnosed with inflammatory bowel disease (IBD), and the pathology results were consistent with non-specific ileitis.

Discussion

The role and necessity of terminal ileum intubation in routine colonoscopy remain controversial, yet it is believed to offer advantages such as confirming the completion of colonoscopy and identifying potential ileal pathologies.[2-5] However, across various series in the literature, the clinical contribution of terminal ileum intubation is reported to be relatively low.[2-4] In our study, among the patients undergoing terminal ileum intubation in the surgical endoscopy unit, macroscopic abnormalities in the ileum were identified in only 5 (3.5%) out of 137 patients. This observation may be attributed to the tendency of patients seeking care at the surgical endoscopy unit to present more with surgical pathologies, whereas internal pathologies such as inflammatory bowel disease (IBD) and terminal ileitis are less prevalent among this cohort.

The literature suggests that terminal ileum intubation may offer benefits in cases of diarrhea, iron deficiency anemia, and right lower quadrant pain, with higher rates of detecting pathology in the terminal ileum among these patients.[4,7] In another study where terminal ileum intubation was conducted and biopsies were taken upon detecting pathological appearance, it was noted that biopsies, apart from those taken under suspicion of IBD, typically yielded nonspecific results. Therefore, the decision to perform a biopsy should be individualized for each patient.[8]

Table 3. Abnormal macroscopic ileal finding rates according to indications

Variables	All patients (n=137)	Normal Terminal Ileum	Abnormal Terminal Ileum	p
Colonoscopy Indication (n, %)				
Screening	59 (43.1)	59 (43.1)	0 (0)	0.028[a]
Abdominal Pain/Constipation	37 (27)	36 (26.2)	1 (0.7)	
Diarrhea	30 (21.9)	27 (19.7)	3 (2.2)	
GI Bleeding History	6 (4.4)	6 (4.4)	0 (0)	
Radiologic Findings	5 (3.6)	4 (2.9)	1 (0.7)	

[a]Fisher's exact test; GI: Gastrointestinal.

In our study, among the 5 patients who underwent biopsies due to abnormal mucosal appearance in the terminal ileum, referrals to colonoscopy were made due to symptoms such as diarrhea, abdominal pain, and radiological findings. The biopsies resulted in non-specific ileitis.

The limitations of our study include its retrospective nature, the focus on cases conducted by a single surgeon, and the relatively small sample size. However, given the scarcity of studies on terminal ileum intubation in surgical endoscopy units, we believe that our findings will provide valuable contributions to the existing literature in this area.

Conclusion

Routine terminal ileum intubation and biopsy in surgical endoscopy units are unlikely to significantly alter the clinical approach and may be selectively applied in patients presenting with symptoms such as diarrhea, radiological evidence of terminal ileum pathologies, or right lower quadrant pain. However, in situations where cecal landmarks are not clearly visualized, terminal ileum intubation may be performed to confirm completion of the colonoscopy.

Disclosures

Ethics Committee Approval: The study was conducted in accordance with the Declaration of Helsinki and approved by the Institutional Review Board (Approval Date: 30.04.2024, Protocol Number: 2627).

Peer-review: Externally peer-reviewed.

Conflict of Interest: None declared.

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