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Acceptability of Endoscopic Monitoring in Patients with Inflammatory Bowel Disease: A Cross-Sectional Study from a Tertiary Referral Center

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Abstract

Background: Endoscopic monitoring plays a key role in the management of inflammatory bowel disease (IBD), particularly within treat-to-target strategies aimed at achieving mucosal healing and improving long-term outcomes. However, the invasive nature of colonoscopy and the need for repeated examinations may affect patient adherence to recommended surveillance.

Aim: To evaluate the acceptability of endoscopic procedures among patients with inflammatory bowel disease and to identify the main factors influencing patient tolerance.

Methods: A descriptive cross-sectional study was conducted in a tertiary referral center including adult patients with confirmed Crohn's disease or ulcerative colitis who had previously undergone at least one endoscopic examination. Acceptability was assessed using a 10-point numerical rating scale. Clinical characteristics, endoscopic history, and perceived barriers to the procedure were collected using a structured questionnaire.

Results: A total of 180 patients were included, with a mean age of 34.2 years and a female predominance (58%). Crohn's disease accounted for 66.6% of cases, while ulcerative colitis represented 33.4%. Colonoscopy was the most frequently performed procedure. Minor procedure-related complications occurred in 4% of cases, with no major adverse events reported.

Overall acceptability of endoscopic monitoring was good, with a mean acceptability score of 7.2 ± 1.8/10. The most frequently reported barriers affecting patient tolerance were bowel preparation (52%), procedural pain (38%), anxiety (33%), and insufficient pre-procedure information (29%).

Conclusion: Endoscopic monitoring demonstrated good overall acceptability and an excellent safety profile in this cohort of patients with inflammatory bowel disease. Addressing modifiable barriers such as bowel preparation, procedural discomfort, and patient education may further improve patient experience and adherence to long-term endoscopic surveillance.

Keywords Inflammatory bowel disease; Crohn's disease; Ulcerative colitis; Colonoscopy; Endoscopy; Patient acceptability

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1. Introduction

Inflammatory bowel diseases (IBD), including Crohn's disease and ulcerative colitis, are chronic inflammatory disorders characterized by a relapsing–remitting course. Contemporary management strategies aim not only at clinical remission but also at achieving mucosal healing, which has been associated with improved long-term outcomes [1,2].

Endoscopy remains the reference standard for evaluating inflammatory activity, monitoring therapeutic response, and performing colorectal cancer surveillance in long-standing disease [3,4]. Within treat-to-target frameworks, repeated endoscopic assessments are often required [2].

Despite its clinical value, colonoscopy is invasive and may be associated with discomfort related to bowel preparation, procedural pain, and psychological distress. These factors may negatively impact patient adherence to recommended monitoring intervals [5–7]. Understanding patient perception and identifying modifiable determinants of acceptability are therefore crucial for optimizing long-term disease management.

The present study aimed to evaluate the acceptability of endoscopic procedures among patients with inflammatory bowel disease in a tertiary referral center and to identify the main factors influencing patient experience and tolerance.

2. Materials and Methods

2.1. Study Design and Setting

This descriptive cross-sectional study was conducted in the Department of Hepato-Gastroenterology at Hassan II University Hospital in Fez, Morocco, a tertiary referral center for inflammatory bowel disease management.

2.2. Participants

Eligible participants were adults (≥18 years) with a confirmed diagnosis of Crohn's disease or ulcerative colitis who had previously undergone at least one endoscopic examination. Patients unable to complete the questionnaire or those who declined participation were excluded from the study.

Data Collection

Data were collected during outpatient consultations using a structured questionnaire administered by the investigators. The questionnaire included six sections:

2.3. Sociodemographic characteristics

- Clinical information related to inflammatory bowel disease
- Endoscopic history
- Perceived discomfort and anxiety during the procedure
- Evaluation of information received before and after the examination
- Overall acceptability and willingness to undergo future endoscopic procedures

Acceptability was assessed using a 10-point numerical rating scale, where 1 indicated very poor acceptability and 10 indicated excellent acceptability.

2.4. Ethical Considerations

All participants provided informed consent before inclusion in the study. Patient anonymity and confidentiality of collected data were ensured throughout the study.

2.5. Statistical Analysis

Categorical variables were expressed as frequencies and percentages, while continuous variables were presented as mean ± standard deviation (SD). Statistical analysis was performed using standard descriptive methods.

3. Results

3.1. Patient Characteristics

A total of 180 patients with inflammatory bowel disease (IBD) were included in the study. The baseline characteristics of the study population are summarized in Table 1. The mean age was 34.2 years, with a female predominance (58% women, n = 105) compared with 42% men (n = 75), corresponding to a female-to-male ratio of 1.2.

Crohn's disease was the most frequent diagnosis, accounting for 120 patients (66.6%), whereas 60 patients (33.4%) were diagnosed with ulcerative colitis.

Among patients with Crohn's disease, the distribution of disease location according to the Montreal classification showed ileal involvement (L1) in 38%, colonic involvement (L2) in 27%, and ileocolonic disease (L3) in 35% of cases. Regarding disease behavior, the inflammatory phenotype (B1) was the most common (54%), followed by stricturing disease (B2) in 28% and penetrating disease (B3) in 18%.

In patients with ulcerative colitis, left-sided colitis was the most frequent form (41%), followed by pancolitis (37%) and proctitis (22%).

A history of IBD-related surgery was reported in 21% of patients, mainly among individuals with Crohn's disease. Stoma formation was observed in 10% of the study population, reflecting the presence of complicated disease in a subset of patients.

Table 1 Baseline characteristics of the study population (n = 180)

Variable	**n (%)**
Age, mean (years)	34.2
Sex	
Female	105 (58%)
Male	75 (42%)
Type of IBD	
Crohn's disease	120 (66.6%)
Ulcerative colitis	60 (33.4%)
Crohn's disease location (Montreal classification)	
L1 – Ileal	46 (38%)
L2 – Colonic	32 (27%)
L3 – Ileocolonic	42 (35%)
Crohn's disease behavior	
B1 – Inflammatory	65 (54%)
B2 – Stricturing	34 (28%)
B3 – Penetrating	21 (18%)
Ulcerative colitis extent	
Proctitis	13 (22%)
Left-sided colitis	25 (41%)
Pancolitis	22 (37%)
History of IBD-related surgery	38 (21%)
Presence of stoma	18 (10%)

3.2. Endoscopic History and Procedure-Related Complications

Colonoscopy was the most frequently performed endoscopic procedure, reported in 92% of patients. Upper gastrointestinal endoscopy had been performed in 42% of cases, while rectosigmoidoscopy accounted for 20% of examinations.

More than half of the patients had undergone at least three endoscopic procedures during follow-up, reflecting the need for repeated endoscopic monitoring in patients with inflammatory bowel disease.

Overall, endoscopic procedures demonstrated a favorable safety profile. Minor complications occurred in 4% of patients.

Per-procedural complications included:

- vasovagal reactions (1.1%)
- transient abdominal discomfort related to insufflation (1.7%)
- Post-procedural complications included:
- mild post-biopsy bleeding (0.6%)
- transient abdominal pain after the examination (0.6%)

All complications were self-limited and managed conservatively, and no major complications such as perforation or severe bleeding were observed.

3.3. Bowel Preparation

Bowel preparation was identified as an important determinant of endoscopic acceptability. In our cohort, 39% of patients reported bowel preparation as difficult or very difficult, while 46% considered it tolerable, and 15% described it as easy.

Overall, bowel preparation was the most frequently reported barrier affecting the acceptability of endoscopic procedures, reported by 52% of patients.

3.4. Pain and Discomfort During Endoscopy

Regarding procedural discomfort, 26% of patients reported no discomfort, 37% reported mild discomfort, 25% reported moderate discomfort, and 12% reported severe discomfort during the examination.

Sedation was administered in the majority of procedures, contributing to improved patient tolerance.

3.5. Information Provided to Patients

Before undergoing endoscopy, 64% of patients reported receiving adequate information regarding the procedure, whereas 36% considered that the information provided was insufficient.

After the examination, explanations regarding the endoscopic findings were provided in 79% of cases, which contributed to improving patients' understanding of their disease and its monitoring.

3.6. Acceptability of Endoscopic Procedures

Overall acceptability of endoscopic monitoring was good, with a mean acceptability score of 7.2 ± 1.8 out of 10.

When asked about their willingness to undergo repeat endoscopy if medically indicated:

- 67% of patients stated they would repeat the procedure without hesitation
- 28% reported they would repeat it with apprehension
- 5% indicated they would refuse another endoscopic examination

Endoscopic evaluation also increased patient confidence in disease monitoring in 58% of participants.

Furthermore, 94% of patients expressed interest in reliable non-invasive monitoring strategies that could potentially reduce the need for repeated endoscopic examinations.

4. Discussion

In this cross-sectional study conducted in a tertiary referral center, we investigated patient-reported acceptability of endoscopic monitoring in inflammatory bowel disease (IBD). Our findings indicate that endoscopic procedures are generally well accepted, with a mean acceptability score of 7.2 ± 1.8/10, highlighting that most patients recognize the importance of endoscopy in disease monitoring despite the procedural burden associated with repeated examinations. This level of acceptability is comparable to that reported in previous studies evaluating patient perception of colonoscopy in IBD populations, where satisfaction scores typically range between 6 and 8 out of 10 [5,6].

4.1. Clinical relevance of endoscopic monitoring

Modern IBD management has progressively shifted toward objective therapeutic targets beyond symptomatic control. The STRIDE-II recommendations emphasize mucosal healing as a key therapeutic objective due to its association with reduced hospitalization rates, lower need for surgery, and improved long-term outcomes [1,2]. Endoscopy remains the gold standard for assessing inflammatory activity, evaluating treatment response, and performing dysplasia surveillance in patients with long-standing disease [3,4]. Consequently, repeated endoscopic procedures are frequently required during long-term disease follow-up.

Despite its central role in disease monitoring, invasive procedures may represent a burden for patients and may potentially influence adherence to recommended surveillance strategies. Our findings are consistent with previous studies showing that patients generally accept colonoscopy when they clearly understand its clinical relevance in guiding therapeutic decisions and monitoring disease progression [5,6].

4.2. Bowel preparation as the primary barrier

Bowel preparation emerged as the most significant determinant of dissatisfaction in our cohort, reported by more than half of the patients. This observation is consistent with international literature identifying bowel preparation as the most unpleasant component of colonoscopy [7–9].

The burden of bowel preparation is multifactorial and includes large volumes of preparation solution, unpleasant taste, gastrointestinal discomfort, sleep disturbance, and disruption of daily activities. Evidence suggests that split-dose preparation regimens significantly improve both bowel cleansing quality and patient tolerance [10]. Furthermore, the use of low-volume polyethylene glycol solutions and personalized preparation protocols may further enhance patient acceptability [11].

From a clinical perspective, optimizing bowel preparation is essential not only to improve patient experience but also to ensure adequate visualization of the colonic mucosa and avoid repeat procedures due to inadequate preparation. Therefore, improving preparation protocols represents both a quality-of-care priority and a key determinant of patient satisfaction [12].

4.3. Procedural discomfort and the role of sedation

Although the majority of patients in our cohort reported no or only mild discomfort during endoscopy, 37% experienced moderate-to-severe pain. Procedural discomfort remains a well-recognized determinant of patient dissatisfaction and may negatively influence willingness to undergo repeat procedures [13].

Sedation was administered in the majority of endoscopic procedures in our study, which likely contributed to improved procedural tolerance. Previous studies have demonstrated that adequate sedation is associated with greater patient satisfaction, improved completion rates, and increased willingness to repeat colonoscopy when clinically indicated [14,15].

However, sedation practices vary considerably across healthcare systems depending on institutional resources and local policies. Ensuring an optimal balance between safety, cost-effectiveness, and patient comfort remains an important challenge in endoscopic practice.

It is also important to note that perceived procedural discomfort may be influenced by psychological factors such as pre-procedural anxiety and previous negative experiences. Therefore, pain management strategies should integrate both pharmacological sedation and psychological reassurance.

4.4. Psychological determinants: anxiety and information delivery

In our study, anxiety was reported by approximately one-third of patients, and more than one-third felt insufficiently informed before undergoing endoscopy. Psychological distress prior to colonoscopy has been consistently associated with increased perception of pain and lower overall patient satisfaction [16].

Several studies have demonstrated that structured patient education programs, written informational materials, and detailed pre-procedure counseling can significantly reduce anxiety and improve the overall patient experience [17,18]. Clear communication regarding the purpose of the examination, expected sensations during the procedure, and potential benefits of endoscopic monitoring can enhance patient confidence and engagement in their care.

Interestingly, endoscopic evaluation increased patient confidence in disease monitoring in 58% of our cohort, suggesting that visualizing disease activity may strengthen the patient–physician relationship and improve adherence to treatment strategies.

4.5. Preference for non-invasive monitoring

One of the most notable findings of this study is the strong preference (94%) expressed by patients for reliable non-invasive monitoring alternatives. This observation reflects the evolving paradigm in IBD management, where non-invasive tools increasingly complement endoscopic evaluation.

Among these tools, fecal calprotectin has demonstrated strong correlation with mucosal inflammation and is widely used as a surrogate marker in disease monitoring [19]. Imaging techniques such as intestinal ultrasound and magnetic resonance enterography have also gained increasing recognition in international guidelines as complementary methods for assessing disease activity [20].

Although endoscopy remains indispensable for direct mucosal evaluation and dysplasia surveillance, integrating non-invasive monitoring tools into follow-up strategies may reduce the frequency of invasive procedures without compromising disease control. Such hybrid monitoring approaches may improve long-term adherence and enhance patient-centered care.

4.6. Strengths and limitations

This study has several strengths. First, it provides real-world data from a tertiary referral center managing a large cohort of patients with inflammatory bowel disease. Second, the study evaluated both physical and psychological determinants influencing endoscopic acceptability.

However, several limitations should be acknowledged. The single-center design may limit the generalizability of our findings. In addition, the descriptive nature of the analysis does not allow identification of independent predictors of acceptability. Finally, the use of patient-reported outcomes may introduce recall bias, particularly regarding pain perception.

Future multicenter studies incorporating multivariate analyses and validated patient-reported outcome measures would provide more robust evidence regarding determinants of endoscopic acceptability.

4.7. Clinical implications

Improving the acceptability of endoscopic monitoring in inflammatory bowel disease requires a multidimensional patient-centered approach that includes:

- Optimization of bowel preparation regimens
- Standardization of sedation practices
- Structured patient education programs
- Integration of non-invasive monitoring tools

Overall, enhancing patient-centered endoscopic care may improve adherence to surveillance strategies and ultimately contribute to better long-term outcomes in patients with inflammatory bowel disease.

5. Conclusion

In this cross-sectional study including 180 patients with inflammatory bowel disease, endoscopic monitoring demonstrated good overall acceptability, with a mean acceptability score of 7.2 ± 1.8 out of 10. Despite the invasive nature of the procedure and the need for repeated examinations during long-term follow-up, most patients recognized the clinical importance of endoscopy in disease monitoring.

However, several barriers influencing patient tolerance were identified. The most frequently reported were bowel preparation (52%), procedural pain (38%), anxiety (33%), and insufficient pre-procedure information (29%). Endoscopic procedures also showed a favorable safety profile, with only minor complications observed in 4% of cases and no major adverse events reported.

These findings highlight the importance of optimizing bowel preparation protocols, improving patient education, and ensuring adequate sedation in order to enhance patient experience and adherence to recommended endoscopic surveillance strategies. The integration of non-invasive monitoring tools alongside endoscopy may also contribute to more patient-centered follow-up in inflammatory bowel disease.

Compliance with ethical standards

Disclosure of conflict of interest

No conflict of interest to be disclosed.

Statement of informed consent

Informed consent was obtained from all individual participants included in the study.

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