

Endoscopic dilatation in Crohn's disease

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Abstract

Stenosis is one of the most frequent complications of Crohn's disease. Endoscopy plays an essential role in diagnosis, follow-up and treatment, particularly via endoscopic dilatation.

The aim of our work is to study the role of endoscopic dilatation in stenosing Crohn's disease, as a complement to medical treatment.

Keywords: Crohn's Disease; Strictures; Endoscopic Balloon Dilation; Minimally invasive therapy; Gastrointestinal strictures; Crohn's disease management

1. Introduction

Strictures are among the most common complications of Crohn's disease, significantly impacting patient quality of life. Endoscopic balloon dilation (EBD) has emerged as a minimally invasive therapeutic option to manage these strictures and potentially delay or avoid surgery. This study aims to evaluate the efficacy and safety of EBD in patients with stenosing Crohn's disease as an adjunct to medical therapy.

2. Methods

This is a retrospective descriptive monocentric study conducted in our department over a period of 6 years. It included all patients with stenosing Crohn's disease who underwent endoscopic dilatation. And we excluded those with stenoses too long or tight to allow safe endoscopic passage or dilation, active abscesses or fistulas adjacent to the stenosis, patients with suspicion of malignancy, contraindications to endoscopic dilation.

We collected data on demographics, disease location and phenotype, clinical presentation, endoscopic findings, and outcomes.

3. Results

From a total of 109 stenosing diseases, we included 18 (16.5%) patients, with a mean age of 41.3 +/- 13 years, and a male predominance (sex ratio M/F: 1.25). 5 patients (27.8%) had undergone ileocaecal resection and 2 (11.1%) patients total colectomy. The median time from diagnosis of Crohn's disease to symptomatic stenosis was 8.6 years (1-21 years). Details are presented in Table 1.

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Table 1 Demographic and Historical Characteristics

Characteristics	Values
Total number of patients with structuring Crohn's disease	109
Number of included patients	18 (16.5%)
Mean age (\pm SD)	41.3 \pm 13 years
Sex ratio (M/F)	1.25
Surgery	
-Ileocecal resection	5 (27.8%)
-Total colectomy	2 (11.1%)
Median time between diagnosis and symptomatic stricture (years)	8.6 (1-21)

Clinically, abdominal pain was present in 8 patients (44.4%), Koenig's syndrome in 6 patients (33.3%), diarrhea in 3 patients (16.7%), constipation with incomplete evacuation in 3 patients (16.7%) and 1 (5.5%) patient experienced dysphagia.

Regarding treatment, 11 patients (61.1%) were receiving immunosuppressants (IS), 6 patients (33.3%) were on anti-TNF (alone or in combination), and 1 patient (5.6%) was not on any treatment.

Stenoses were anastomotic in 6 (33%) patients (4 (22.2%) ileocolic, 2 (11.1%) ileorectal), of the terminal ileum in 5 patients (27.8%), 3 (16.7%) colonic, 1 (5.5%) pyloric, 1 (5.5%) duodenal, 1 (5.5%) rectal and 1 (5.5%) esophageal. See Table 2 for details.

Table 2 Clinical and Therapeutic Data

Parameters	Values
Symptoms	
Abdominal pain	8 (44.4%)
Koenig's syndrome	6 (33.3%)
Diarrhea	3 (16.7%)
constipation with incomplete evacuation	3 (16.7%)
Dysphagia	1 (5.5%)
Maintenance therapy	
Immunosuppressants (IS)	11 (61.1%)
Anti-TNF	6 (33.3%)
No treatment	1 (5.6%)
Stricture location	
Anastomotic	6 (33%)
*Ileo-colonic	4 (22.2%)
*Ileo-rectal	2 (11.1%)
Terminal ileum	5 (27.8%)
Colonic	3 (16.7%)
Pyloric	1 (5.5%)

Duodenal	1 (5.5%)
Rectal	1 (5.5%)
Oesophageal	1 (5.5%)

Mean stenosis length was 25mm (5-50mm). Dilatations were performed using hydrostatic balloons with diameters ranging from 11 to 16.5mm. 7 (36.8%) patients were dilated to 12mm, 6 (31.6%) to 15mm, 3 (15.8%) to 16.5mm and 2 (10.5%) to 11mm. 9 patients (50%) received a single dilatation, 8 (44.4%) 2 dilatations and 1 (5.5%) 3 dilatations.

Table 3 Endoscopic Dilation Characteristics

Parameters	Values
Mean stricture length (mm)	25 (5-50)
Balloon size (mm)	
- 12mm	7 (36.8%)
- 15mm	6 (31.6%)
- 16.5mm	3 (15.8%)
- 11mm	2 (10.5%)
Number of dilations per patient	
- 1 session	9 (50%)
- 2 sessions	8 (44.4%)
- 3 sessions	1 (5.5%)

Technical success, defined as successful endoscope passage, was possible in 15 patients (83.3%). Only one complication (5.6%), perforation, was noted and treated surgically. Mean follow-up was 48 +/- 19 months. The clinical recurrence rate was 38.9% at 1 year. 4 (22.2%) patients underwent additional surgery.

4. Discussion

Crohn's disease (CD) is a chronic inflammatory pathology of the gastrointestinal tract, often associated with intestinal strictures that affect more than half of all patients, 20% at diagnosis [1]. These complications frequently lead to hospitalization and surgical intervention, particularly at the level of the ileocolic anastomosis [2]. Despite therapeutic advances, the progression to stenosis remains unchanged in the absence of anti-fibrotic therapies. Stenoses of the small intestine are the most frequent, while those of the colon present an increased risk of dysplasia and colorectal cancer. Post-surgical recurrences are frequent, underlining the need for more effective management strategies [3].

Endoscopic management, including balloon dilation (EBD) and stricturotomy, offers less invasive treatments for strictures, delaying surgery and improving quality of life. Although many patients with Crohn's disease show no apparent symptoms, many suffer from abdominal pain, distension, nausea and vomiting [4]. In our study, 8 patients (44.4%) reported abdominal pain, 6 (33.3%) Koenig syndrome, 3 (16.7%) diarrhea and 1 (5.5%) dysphagia. These symptoms reflect the complexity of the disease and the importance of rigorous management, in line with other studies reporting similar results [5].

The mean age of patients was 41.3 ± 13 years, with a male predominance, similar to the findings of Morar et al [6]. A significant proportion had a history of surgery, with 5 patients (27.8%) having undergone ileocecal resection and 2 (11.1%) total colectomies, in agreement with Bei Gu et al. [7] who highlighted the frequency of surgical interventions in patients with stenosing Crohn's disease. The median time from diagnosis to onset of stenosis was 8.6 years (1 to 21 years), reflecting the chronic nature of the disease, as reported in other studies [8].

Endoscopic balloon dilation was performed in all patients, using hydrostatic balloons ranging from 11 to 16.5 mm in diameter. In line with Bettenworth et al [9], who reported a technical success rate of 89.1%, we successfully passed the endoscope in 15 patients (83.3%).

Most stenoses in our cohort were anastomotic (6 patients, 33%), with 4 patients (22.2%) located at the ileocolic junction and 5 patients (27.8%) occurring in the terminal ileum. These results are consistent with those of Bei Gu et al [7], who identified the terminal ileum and surgical anastomosis sites as the most frequent locations of stenosis. Furthermore, the median length of strictures in our study was 25 mm (5-50 mm), which is shorter than the median of 70 mm reported in the 21 studies analyzed by Morar et al [6].

In terms of symptom relief, our study showed that 14 patients (78%) improved after dilatation, slightly less than the 80.8% reported by Bettenworth et al [9]. However, 7 patients (38.9%) experienced clinical recurrence within a year, resulting in surgery for 4 (22.2%). Morar et al [6] indicate that stenoses of less than 5 cm respond better to endoscopic balloon dilatation, which may explain why 8 patients (44.4%) in our study required multiple dilatations (2 for 8 patients and 3 for 1 patient, 5.5%). This result is in agreement with Kanamori et al [10], who report that 31.6% of 160 patients required further dilation within the first year, underlining the long-term challenge of recurrent stenoses, with 80.6% (241 patients) requiring further dilatations over five years, according to Morar et al [6].

In our study, complications were minimal, with only one case (5.6%) of perforation requiring surgical intervention, which is comparable to the 4% complication rate reported by Udayakumar [11] and Bei Gu [7]. Sleiman et al [12] also reported low complication rates (3-4%), underlining the safety profile of endoscopic dilation as a therapeutic option.

Although the technical success rates of endoscopic dilation are high, long-term management remains complex. Length of stenosis has a major impact on outcome, with longer stenoses more likely to require surgery. As noted by Bettenworth et al [9], each additional centimetre increases the risk of surgical intervention by 8%.

Limitations

This study has several limitations. First, the relatively small number of patients included (18 patients) limits the statistical power and generalizability of the results. Second, the monocentric and tertiary care center setting may introduce a selection bias, as patients referred to our hospital may have more severe or complicated disease compared to the general Crohn's population. Third, the retrospective and descriptive nature of the study limits the ability to draw causal inferences and control for potential confounding factors.

5. Conclusion

Endoscopic balloon dilation is an effective, minimally invasive treatment for stenoses, especially short stenoses. Despite symptomatic relief in many patients, recurrences often require multiple dilatations or surgery. Our findings indicate that although the need for multiple dilations was relatively low, surgical intervention remained necessary in a substantial proportion of patients. Advances in endoscopy and anti-fibrotic therapies are crucial to improving long-term outcomes.

Compliance with ethical standards

Disclosure of conflict of interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Statement of informed consent

Written informed consent was obtained from the patient for their anonymized information to be published in this article.

Author contributions

All authors have contributed to the conduct of this work. All authors also declare that they have read and approved the final version of the manuscript.

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