Safety and Efficacy of Endoscopic Dilation of Small Bowel Crohn's Disease Strictures via Ileostomy

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BACKGROUND

- Crohn's disease (CD) manifests as various phenotypes of which fibrostenotic strictures signify an increased risk of progression to obstructive complications.
- Medical management of stricturing CD is limited and often requires surgery.
- Endoscopic balloon dilation (EBD) has emerged as an alternative to surgery in CD strictures.
- Data on EBD in CD strictures of patients with ileostomy is limited.

METHODS

- All CD patients who had undergone EBD for strictures via ileoscopies through a small bowel stoma performed at a tertiary medical center from February 2010 to December 2021 were included.
- Strictures were defined as the inability to pass an upper endoscope.
- Patients were followed until the date of stricture-surgery or at least one month post EBD.
- Data on technical (ability to pass the scope after dilation) and clinical (symptom improvement) success, long-term efficacy, and complications were investigated.

CONCLUSIONS

- EBD of small bowel CD-associated strictures through an ileostomy has a high rate of technical and clinical success with robust long-term efficacy.
- Serial dilation of the same stricture is feasible and complication rate is low.
- EBD may allow clinicians to effectively postpone surgery for CD strictures in patients with an ileostomy.

RESULTS

Table 1: Summary of descriptive statistics by status of second EBD.

Variable	Level	All (n=34)	No (n=16)	Yes (n=18)	P-value	N
Age		45.0 [31.6;59.0]	51.8 [31.9;56.7]	41.3 [32.1;60.2]	0.918	34
Sex	Female	20 (58.8%)	12 (75.0%)	8 (44.4%)	0.145	34
	Male	14 (41.2%)	4 (25.0%)	10 (55.6%)		
BMI at time of EBD		22.5 [20.7;26.3]	23.0 [20.8;26.4]	22.2 [20.7;26.3]	0.986	34
Time since CD diagnosis (years)		20.1 [15.1;32.1]	20.3 [16.1;34.3]	19.4 [14.4;31.4]	0.666	34
Smoking History	Non-Smoker	25 (73.5%)	12 (75.0%)	13 (72.2%)	0.737	34
	Smoker	3 (8.82%)	2 (12.5%)	1 (5.56%)		
	Former Smoker	6 (17.6%)	2 (12.5%)	4 (22.2%)		
Disease Location	Stomach	2 (5.88%)	1 (6.25%)	1 (5.56%)	>0.999	34
	Duodenum	6 (17.6%)	5 (31.2%)	1 (5.56%)	0.078	34
	Jejunum/proximal ileum	15 (44.1%)	8 (50.0%)	7 (38.9%)	0.760	34
	Ileum	34 (100%)	16 (100%)	18 (100%)	N/A	34
	Ileocecal	34 (100%)	16 (100%)	18 (100%)	N/A	34
	Colon	29 (85.3%)	13 (81.2%)	16 (88.9%)	0.648	34
	Rectum	26 (76.5%)	11 (68.8%)	15 (83.3%)	0.429	34
	Perianal	13 (38.2%)	3 (18.8%)	10 (55.6%)	0.064	34
Extraintestinal Manifestations (EIM)	Yes	31 (93.9%)	13 (86.7%)	18 (100%)	0.199	34
Type of EIM	Eyes)	1 (2.94%)	0 (0.00%)	1 (5.56%)	>0.999	34
	Oral Ulcers)	5 (14.7%)	2 (12.5%)	3 (16.7%)	>0.999	34
	Joints	5 (14.7%)	3 (18.8%)	2 (11.1%)	0.648	34
	Skin	5 (14.7%)	1 (6.25%)	4 (22.2%)	0.340	34
	Anemia	20 (58.8%)	7 (43.8%)	13 (72.2%)	0.182	34
	PSC	1 (2.94%)	0 (0.00%)	1 (5.56%)	>0.999	34
	Malnutrition	25 (73.5%)	10 (62.5%)	15 (83.3%)	0.250	34
	Hypoalbuminemia	25 (73.5%)	10 (62.5%)	15 (83.3%)	0.250	34
	Other	1 (2.94%)	1 (6.25%)	0 (0.00%)	0.471	34
Montreal Classification	B2	4 (11.8%)	3 (18.8%)	1 (5.56%)	0.219	34
	B2p	7 (20.6%)	5 (31.2%)	2 (11.1%)		34
	B3	5 (14.7%)	1 (6.25%)	4 (22.2%)		
	B3p	18 (52.9%)	7 (43.8%)	11 (61.1%)		
Number of prior surgeries		6.00 [4.25;8.00]	5.50 [3.50;7.25]	7.00 [5.25;9.50]	0.150	
Ostomy type at time of EBD	End Loop Ileostomy	30 (88.2%)	15 (93.8%)	15 (83.3%)	0.604	34
	Diverting Loop Ileostomy	4 (11.8%)	1 (6.25%)	3 (16.7%)		
Time from date of ostomy creation to index EBD (years)		4.13 [2.07;7.02]	3.20 [1.91;7.80]	4.33 [2.95;6.90]	0.629	34
Stricture balloon size (cm)		1.80 [1.20;2.00]	1.80 [1.35;2.00]	1.50 [1.20;1.80]	0.315	19
Stricture maximum diameter of dilation during EBD (cm)		1.67 [1.31;1.83]	1.80 [1.35;2.00]	1.50 [1.20;1.80]	0.315	28
Total Number of strictures	1	25 (73.5%)	14 (87.5%)	11 (61.1%)	0.125	34
	2	9 (26.5%)	2 (12.5%)	7 (38.9%)		
Hemoglobin (g/dL)		12.5 (2.26)	12.4 (2.04)	12.6 (2.49)	0.828	23
Albumin (g/dL)		3.71 (0.65)	3.58 (0.38)	3.84 (0.82)	0.365	21
CTE or MRE within 6 months prior to Index EBD		12 (35.3%)	11 (68.8%)	11 (61.1%)	0.916	34

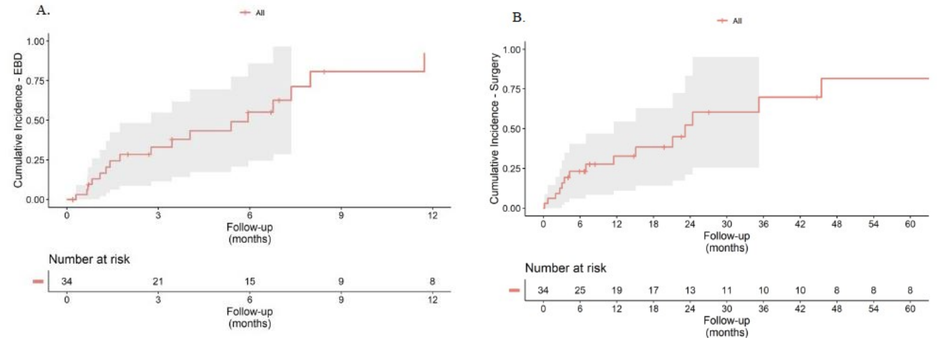

Figure 1: (A) Kaplan-Meier cumulative incidence hazard curves for time to repeat EBD. (B) Kaplan-Meier cumulative incidence hazard curves for time to stricture related surgery.

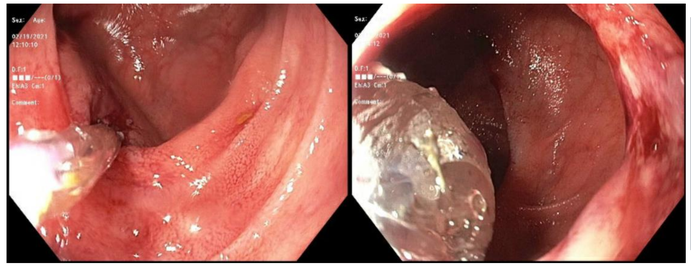

Figure 2: (A) Endoscopic view of a controlled radial expansion (CRE) balloon passed through small bowel CD stricture with guide wire. (B) Endoscopic view of inflated CRE balloon for dilation of CD stricture in small bowel.

- 34 CD patients (59% female); end ileostomies (88.2%) or diverting loop ileostomies (11.8%)
- Median follow-up of 18.3 months [Interquartile Range (IQR) 6.8, 45.3].
- Median age at index EBD was 45 years [IQR 31.6, 56.7]
- Median maximal CRE balloon dilation diameter at index EBD was 16.7 mm [IQR13.1, 18.3].
- Technical success 100% of the EBDs. 91% had improvement in obstructive symptoms. 32% recurrence.
- Repeat EBD was performed in 52.9%; a median time to dilation of 7.4 months [95% CI: 4, 17.8].
- 41.2% of patients underwent one additional EBD; 14.7% had two or more additional EBDs.
- 47.1% had stricture-related surgery; a median time to resection of 35.2 mos. [95% C1: 21.1, 116.6].
- No short-term complications. Long-term complications: an abscess in one patient and a fistula in another.