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BACKGROUND & AIM

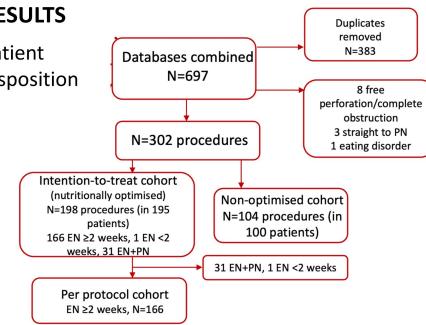
Pre-operative exclusive enteral nutritional (E/EN) has been associated with improved post-operative outcomes in patients with Crohn's disease (CD) but it is not standard practice in most centres. We aimed to test the hypothesis that pre-operative EEN in patients undergoing ileal/ileocolonic surgery for CD is associated with improved post-operative outcome.

METHODS

- Single-centre retrospective observational study
- Comparing surgical outcomes in patients receiving ≥ 2 weeks pre-operative EN with those who received no nutritional optimisation.
- Consecutive adult patients undergoing ileal/ileocolonic resection from 2008-2020 were included.
- Identified from IBD-dietetic and surgical databases and digital records using a custom-built package (EndoMineR®) in R 3.6.1 [R Foundation for Statistical Computing, Vienna, Austria].
- Primary end-point:** post-operative complications within 30-days.
- Secondary end-points:** specific surgical complications, unplanned stoma formation, length of stay, length of bowel resected and biochemical/anthropometric changes.
- Exclusion criteria:** free gastrointestinal perforation, complete bowel obstruction, concomitant eating disorder, parenteral nutrition (PN) from the outset.
- Cohorts:** Intention-to-treat cohort - Patients who were initiated on EN of any duration +/- required PN; per protocol (PP) cohort - patients who achieved minimum 2 weeks EN and who did not require PN; non-optimized cohort - patients prescribed no EN or less than <600kcal/day.

RESULTS

Patient disposition



Outcome variable	ITT cohort (n=198)	PP cohort (n=166)	Non-optimised cohort (n=104)	Univariate and multivariate analyses			
				Univariate analysis		Multivariate analysis	
				OR (95%CI)	p-value	OR (95%CI)	P value
All complications	42 (21.2)			0.33 (0.20-0.55)	<0.001	0.35 (0.17-0.72)	0.004
	32 (19.3)	47 (45.2)		0.29 (0.17-0.50)	<0.001	0.28 (0.13-0.62)	0.002
Surgical complications	36 (18.2)			0.40 (0.24-0.69)	0.001	0.39 (0.18-0.85)	0.02
	28 (16.9)	37 (35.6)		0.36 (0.21-0.65)	<0.001	0.37 (0.16-0.85)	0.02
Non-surgical complications	12 (6.1)			0.25 (0.11-0.54)	<0.001	0.29 (0.11-0.77)	0.01
	7 (4.2)	20 (19.2)		0.19 (0.08-0.46)	<0.001	0.20 (0.07-0.61)	0.004
Infective complications	25 (12.6)			0.30 (0.17-0.54)	<0.001	0.30 (0.13-0.69)	0.005
	17 (10.2)	34 (32.7)		0.24 (0.12-0.45)	<0.001	0.22 (0.09-0.55)	0.001

Delivery of EN

Initiation of oral EN: inpatient 72/198 (36.3%); outpatient 126/198 (63.6%). Four cases required feeding tube insertion (all subsequently escalated to PN). Target EN achieved was documented in 183/198 patients: 150 (75.8%) achieved the prescribed EEN target (EEN accounting for $\geq 75\%$ of their daily requirement). 25 (12.6%) patients achieved partial EN (>600 kcal and $<75\%$ of their nutritional requirement). 8 patients tolerated <600 kcal/day constituting $\leq 25\%$ of their daily energy requirements.

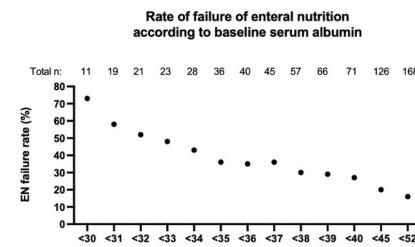
Baseline characteristic	ITT cohort (n=198)	Non-optimised cohort (n=104)	p-value
Median age at operation in years (IQR)	34.9 (27.8-43.8)	41.3 (30.2-54.4)	0.01
Sex- female (n, %)	91 (46.0)	64 (61.5)	0.01
Median disease duration years (IQR)	8.6 (2.8-17.3)	10.7 (3.1-19.5)	0.48
Penetrating phenotype (n, %)	110 (55.6)	45 (43.3)	0.04
L1-ileal (n, %)	61 (30.8)	31 (29.0)	0.86
+L4 – UGI (n, %)	6 (3.0)	7 (6.7)	0.13
+p- perianal (n, %)	53 (26.8)	21 (20.2)	0.21
Prior CD resection (n, %)	89 (44.9)	51 (49.0)	0.50
Immunomodulator (n, %)	108 (54.5)	60 (57.7)	0.60
Biologic (n, %)	109 (55.1)	26 (25.0)	<0.001
Steroids ≤ 4 weeks pre-operatively (n, %)	26 (13.1)	17 (16.3)	0.45
Antibiotics (n, %)	79 (39.9)	26 (25.0)	0.01
Abscess (n, %)	41 (20.7)	11 (11.1)	0.03
PSD ≥ 3.0 cm	96/189 (50.8)	41/99 (41.4)	0.13
Laparoscopy (n, %)	67 (33.8)	23 (22.1)	0.03
Ileocaecal (n, %)	83 (41.9)	45 (43.3)	0.82
Right hemicolectomy (n, %)	54 (27.3)	36 (34.6)	0.19
Ileocolic and SB/SP (n, %)	19 (9.6)	9 (8.7)	0.79
SB resection or SP only (n, %)	42 (21.2)	14 (13.5)	0.10

No difference in baseline BMI, MUST score, albumin, haemoglobin or CRP

Secondary outcome multivariate analysis (ITT vs non-optimised)

- Wound infection: 9 (4.4%) vs 15 (14.4%); 0.18 (0.05-0.61), p=0.006
- Prolonged ileus: 12 (6.1%) vs 17 (16.3); 0.31 (0.10-0.89), p=0.03
- Intra-abdominal septic or anastomotic complication: 16 (8.1%) vs 16 (15.3); 0.38 (0.14-1.01), p=0.052
- Unplanned stoma formation, length of stay, length of bowel resected: all non-significant.
- Grade 1 Clavien-Dindo complication: 6 (3.0%) vs 13 (12.5%), p=0.001
- Grade 2 Clavien-Dindo complication: 27 (13.6%) vs 25 (24.0%), p=0.02
- \geq Grade 3 Clavien-Dindo complication: 9 (4.5%) vs 9 (8.7%), p=0.15
- Increased albumin (<0.001) and reduced CRP (p<0.001) after optimisation. Lower pre-operative CRP in ITT group: 4.0 (1.0-13.0)mg/L vs 8.0 (4.0-35.0)mg/L, p<0.001

On multivariate analysis, baseline serum albumin was the only predictor of the need for escalation to PN



CONCLUSIONS

- Oral EN is well tolerated and insertion of nasogastric or nasojejunal tube is not required to achieve nutritional goals.
- Nutritional optimisation is associated with reduced post-operative complications within 30 days; predominantly Clavien-Dindo grade 1-2 complications

LIMITATIONS

- Retrospective data, groups not propensity matched, no data on smoking status, comorbidities or operating times. Multivariate analysis therefore performed to adjust for confounding.