

FROM EVIDENCE BASED MEDICINE TO PRACTICE: GUM CHEWING FOR POSTOPERATIVE RECOVERY OF GASTROINTESTINAL FUNCTION AFTER COLORECTAL SURGERY WITH INTERPROFESSIONAL TEAMWORK

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Background

Flatus was an important indicator for postoperative recovery of gastrointestinal function. Gum-chewing mimicked food intake to stimulate the vagus nerve and bowel movements.

Objective

We tried to confirm the efficacy of gum-chewing through the evidence approach and implement with interprofessional teamwork.

Material and Methods

1. Evidence Approach:

In the Pubmed, Cochrane and Embase databases, using MeSH term and Boolean logic combination (chewing gum AND (colorectal surgery OR colostomy) AND postoperative ileus) for literature search. Filters activated with randomized controlled trial (RCT), published from 2000 to 2018, humans. Finally 11 RCTs were selected to appraisal and showed the trend of improvement in the time to first flatus, start feeding, and discharge.

2. Implement:

The study involved 39 patients who underwent colorectal surgery between March and August 2018. In the gum-chewing group, 19 patients took three times a day on the first day after surgery until first flatus. 20 patients disagreed with gum-chewing were involved in the control group. Evaluation of the findings was done with analysis of covariance (ANCOVA).

Results

Compared with the control group, the time to first flatus and start feeding were shorter in the gum-chewing group (66.97 ± 24.78 h vs 54.82 ± 19.74 h, 91.53 ± 51.41 h vs 74.77 ± 21.54 h). However, the difference was not significant (p-value = 0.166, 0.283). The time to discharge was significantly shorter in the gum-chewing group (12.55 ± 5.96 d vs 9.16 ± 1.71 d, p-value = 0.047). Other influencing factor for the time to first flatus, start feeding and discharge was analyzed, for example, with or without promotility agents such as metoclopramide, not significant difference was found between two groups (p-value = 0.375, 0.162, 0.960).

Author/year	time to first flatus (hour, h)			time to start feeding (hour, h)			time to discharge (day, d)		
	Gum	Control	P-value	Gum	Control	P-value	Gum	Control	P-value
ASCO/2002	50.4	76.8	<0.01	74.4	139.2	<0.01	13.5	14.5	>0.05
Cranice/2009	80.2	72.5	0.16	90.9	92.7	0.58	57.3	87.2	0.85
Forrester/2014	71.6	82.1	0.744	125.1	79.9	0.198	6.31	6.26	0.933
Hirayama/2006	55.3	90	<0.001	84.5	136	0.011	NR	NR	NR
Lim/2013	42.75	50.97	0.134	89.64	98.61	0.333	10.0	12.0	>0.05
Matros/2006	60	67	0.384	80	88	0.913	5.0	4.9	0.787
Quah/2006	57.6	64.8	0.56	76.8	93.6	0.38	9.4	11.1	0.75
Schuster/2006	65.4	80.2	0.05	63.2	89.4	0.04	4.3	6.8	0.01
Van den Heijlant/2015	NR	NR	0.044	NR	NR	0.006	9.5	14.0	0.067
Zaghayan/2014	48.6	47.4	0.83	56.9	63.2	0.40	4.7	4.5	0.72
Sacide/2016	51.07	87.83	<0.001	73.33	137.2	<0.001	7.63	9.47	0.002

	Total (N=39)	Gum Chewing (N=19)	Control (N=20)	p-value
Age (Mean \pm SD)	64.54 \pm 10.42	63.32 \pm 8.70	65.70 \pm 11.94	0.880
Gender N(%)				
Male	25(64.10%)	12(63.16%)	13(65.00%)	0.905
Female	14(35.90%)	7(36.84%)	7(35.00%)	
Colon/Rectum Cancer N(%)				
Cancer	29(74.36%)	9(47.37%)	20(100%)	<0.001
Promotility Agent N(%)				
Agent	6(15.38%)	4(21.05%)	2(10.00%)	0.407

TABLE 3 Outcomes of patients' time to first flatus, start feeding, and discharge

	Gum Chewing	Control	p-value
Total analysis			
Time to First Flatus (hour, h)	54.82 \pm 19.74	66.97 \pm 24.78	0.166
Time to Start Feeding (hour, h)	74.77 \pm 21.54	91.53 \pm 51.41	0.283
Time to discharge (day, d)	9.16 \pm 1.71	12.55 \pm 5.96	0.047

TABLE 4-1 Analysis of influencing factors for time to first flatus (hour, h)

	Crude coefficient	95% CI	p-value	Adjusted coefficient	95% CI	p-value
Gum Chewing						
Use	-12.14	(-26.73, 2.44)	0.100	-8.72	(-26.40, 8.96)	0.323
No Use	1.00	(-, -)		1.00	(-, -)	
Gender						
Male	-17.03	(-31.75, -2.31)	0.025	-15.77	(-30.58, -0.96)	0.038
Female	1.00	(-, -)		1.00	(-, -)	
Colon/Rectum Cancer						
Cancer	13.15	(-3.62, 29.92)	0.121	3.96	(-16.53, 24.44)	0.697
Non Cancer	1.00	(-, -)		1.00	(-, -)	
Promotility Agent						
Use	-16.76	(-36.97, 3.46)	0.102	-9.01	(-29.41, 11.39)	0.375
No Use	1.00	(-, -)		1.00	(-, -)	
Age	0.37	(-0.36, 1.10)	0.307	0.27	(-0.43, 0.96)	0.438

TABLE 4-2 Analysis of influencing factors for time to start feeding (hour, h)

	Crude coefficient	95% CI	p-value	Adjusted coefficient	95% CI	p-value
Gum Chewing						
Use	-16.76	(-42.59, 9.07)	0.197	-15.16	(-48.37, 18.05)	0.360
No Use	1.00	(-, -)		1.00	(-, -)	
Gender						
Male	-0.79	(-28.32, 26.75)	0.954	-4.18	(-32.01, 23.65)	0.762
Female	1.00	(-, -)		1.00	(-, -)	
Colon/Rectum Cancer						
Cancer	11.09	(-18.93, 41.12)	0.459	5.12	(-33.37, 43.60)	0.788
Non Cancer	1.00	(-, -)		1.00	(-, -)	
Promotility Agent						
Use	17.70	(-18.44, 53.83)	0.327	26.94	(-11.38, 65.26)	0.162
No Use	1.00	(-, -)		1.00	(-, -)	
Age	0.77	(-0.49, 2.03)	0.223	0.82	(-0.48, 2.12)	0.206

TABLE 4-3 Analysis of influencing factors for time to discharge (day, d)

	Crude coefficient	95% CI	p-value	Adjusted coefficient	95% CI	p-value
Gum Chewing						
Use	-3.39	(-6.27, -0.51)	0.022	-3.17	(-7.02, 0.67)	0.102
No Use	1.00	(-, -)		1.00	(-, -)	
Gender						
Male	1.18	(-2.02, 4.38)	0.460	1.12	(-2.10, 4.34)	0.484
Female	1.00	(-, -)		1.00	(-, -)	
Colon/Rectum Cancer						
Cancer	2.42	(-1.03, 5.86)	0.164	0.33	(-4.13, 4.79)	0.881
Non Cancer	1.00	(-, -)		1.00	(-, -)	
Promotility Agent						
Use	-0.47	(-4.75, 3.81)	0.825	0.11	(-4.33, 4.55)	0.960
No Use	1.00	(-, -)		1.00	(-, -)	
Age	0.03	(-0.12, 0.18)	0.663	0.02	(-0.14, 0.17)	0.840

Conclusion

Could evidence-based medicine lead to an equally satisfying practice? The implement was essential to find a major problem, for example, the core physician team had not participated in the beginning and missed many possible cases.

