

TITLE: THE EFFECT OF DUODENOJEJUNAL FEEDING ON GASTRIC PH IN POSTOPERATIVE ICU PATIENTS

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Introduction. Stress ulceration is a common problem in critically ill patients. Lesions of this disorder may develop in 85-100% of stressed patients, and up to 5% will have severe gastrointestinal hemorrhage (GIH) (1). A retrospective review of mechanically ventilated patients found that enteral feeding was superior to antacid or cimetidine prophylaxis in preventing GIH (2). In this study, 12/14 patients were fed into the stomach and 2/14 into the jejunum. Other data (3,4) suggest that duodenal feeding increases serum gastric inhibitory polypeptide and decreases serum gastrin and gastric acid secretion. We evaluated 13 ICU patients to determine if duodenojejunal (DJ) feeding was an effective measure to protect gastric pH.

Methods. Thirteen patients were enrolled and treatment was randomized to DJ saline (control) or Osmolite HN (protocol). Patients with clotting abnormalities were not enrolled. H₂ blockers and PO intake was not allowed. At entry, randomization was performed. A nasogastric (NG) tube was placed and NG aspirate pH was checked every 30 min for 2 h. A dohoff feeding tube was then placed under fluoroscopy; all patients received 75 cc of 0.45 NS over 1 h during this period; NG pH was checked after infusion. Protocol patients were then begun on DJ feeding and controls on 0.45 NS, both at 75 cc/h. NG pH was checked every 1 h for 96 h; 15 cc aliquots of Maalox TC were given for an NG pH < 4.0. At the end of 96 h, the infusions were stopped and NG pH was checked for an additional 4 h. The patients were then discharged from the study and enteral feeding was given to all of them. Data were analyzed using ANOVA (RMD) via SASS and the unpaired t-test.

Results. Demographic data are shown in Table 1. Because of the frequency of data collection and the acuity of our SICU, occasional data points were not obtained in selected patients, however, these patients are included. The data are divided into seven time periods: T1: baseline, T2: saline infusion, T3: day 1, T4: day 2, T5: day 3, T6: day 4 and T7: termination period. The mean number of pH decreases to or below 4 are shown (Table 2). There were significantly more pH decreases in the control than in the protocol group. All patients but NP were discharged from the SICU (this patient died in the ICU).

Discussion. DJ feeding protects gastric pH in a cohort of patients, such as ours. It seems likely that this would hold true for other critically ill patients. Statistical significance was achieved only on the first full day of feeding. It is unclear why this was so, but T3 (Day 1) may have been more

stressful than the other time periods and, thus, allowed us to see a difference. Trends at T2 and T7 suggest that just having the dohoff in place might be partially responsible for the differences noted. This is being evaluated.

References.

1. Pingleton SK: Med Clin North Am 67:1215-31, 1983
2. Pingleton SK, Hadzima SK: Crit Care Med 11:13-16, 1983
3. Thomas FB, et al: Gastroenterology 70:523-527, 1976
4. Rayford PL, et al: Gastroenterology 75:773-77, 1978

Table 1. Demographics

Pt. Vent.	APACHE II		Age	Sex	Injury	Race	Steroids
	T3	T6					
Protocols							
AP Y	13	11	18	F	MVA,CHI	W	Y
CB Y	14	13	74	F	SAH	W	Y
JR Y	14	13	69	F	ICAA	W	Y
BS Y	18	12	48	M	SAH	W	Y
JP Y	24	28	67	F	CNS tumor	W	Y
DJ Y	6	3	38	F	Pit. tumor	W	Y
LB Y	8	8	33	F	MVA,CHI	B	Y
Controls							
WS N	10	3	43	F	SAH	B	Y
AD N	7	5	44	F	SAH	W	Y
GM Y	13	14	79	M	PVD,CBE	W	Y
PW Y	11	16	67	M	SAH	W	Y
RA Y	13	13	28	F	MVA,CHI	W	Y
LF &	12	12	73	M	SAH	W	Y
(N)	(%)	Mean	Mean	Mean	(%)	--	(%)
		+ SD	+ SD	+ SD			
Protocols							
7	100	13.86/6	12.6/7.7	43/27	86F	86W	100
Controls							
6	67	11/2.3	10.5/5.2	56/20	50F	83W	100
		NS	NS	NS			

Table 2. Results: Mean Number of pH Decreases ≤ 4.

	T1	T2	T3	T4	T5	T6	T7
Protocol	1.86	.29	2.14	3.57	4.0	3.57	2.0
Control	1.5	.83	11.33	6.17	7.83	5.67	.50
P <	.52	.052	.0001	.18	.06	.33	.056