



## ORIGINAL ARTICLE

# EARLY VERSUS DELAYED ORAL FEEDING AFTER GASTRIC SURGERY, PROSPECTIVE RANDOMIZED TRIAL

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### Abstract

**Aim:** The aim of the work is to evaluate the outcome of one of the main elements of fast track which is the early resumption of oral feeding after gastric operations versus conventional delayed oral feeding.

**Methods:** This is a prospective randomized trial. It included forty consecutive patients who underwent gastric surgery at Alexandria Main University Hospital. Patients were randomly allocated into 2 groups by the closed envelop method: Group (A) was allowed early oral feeding as follows: Post-operative day one, patients were allowed free fluids. Solid food was allowed the next day. Patients were discharged when they could tolerate a standard hospital meal. Group (B): (control group) followed the conventional regimen (nil per mouth for five days).

**Results:** There was no difference in early postoperative complications ( $P = 0.749$ ), the early oral feeding group had shorter hospital stay ( $6.20 \pm 1.79$  days vs.  $9.60 \pm 2.64$  days;  $P = 0.001$ ). They regained their bowel sound earlier and passed flatus sooner than the control group.

**Conclusions:** Early oral feeding following gastric surgery is safe. It allows faster recovery and a shorter hospital stay.

**Keywords:** Fast track, gastrectomy, convalescence.

### INTRODUCTION

Fast track rehabilitation or enhanced recovery after surgery is a multimodal program aiming at enhancing post-operative recovery and outcome.<sup>(1-4)</sup> Its application in the management of patients undergoing gastric surgery is very beneficial. Such surgery induces a major catabolic stress, it is vital to provide adequate postoperative nutrition as soon as possible to counteract catabolism and to reduce complications.<sup>(5)</sup>

We are now investigating the concept of early feeding

which is gaining widespread acceptance worldwide as more and more studies are proving it to be more physiological; to limit the damage to the gut mucosa and to modulate body response to trauma.<sup>(6-8)</sup> It is also less costly.<sup>(8)</sup> This study has been conducted to evaluate the concept of early oral feeding compared to conventional late oral feeding as regards hospital stay and surgical complications in patients undergoing surgery for the stomach.

## PATIENTS AND METHODS

The study included 40 consecutive patients who underwent gastric surgery at Alexandria Main University Hospital. The study was approved by the ethical committee of the Faculty of Medicine, University of Alexandria. All patients signed an informed consent.

Patients were randomly allocated by the closed envelop technique. The enveloped where opened by a staff member who was NOT involved in the patient's care immediately after surgery. The patients were subsequently divided into two groups 20 patients each: group A (The study group) were managed as follows: NGT was removed in recovery room. Patients permitted to walk in the evening of surgery. Patients were allowed free fluids eight hours post-operatively. Plain water was used followed by light warm anise tea in order to standardize the test. Solid food was allowed the next day if liquids were well tolerated. The solid food consisted of strawberry jelly as a start followed by plain yogurt followed by vegetable soup. This was the most tolerable regimen. Patients were discharged when they could tolerate a standard hospital meal.

Group B (The control group) followed the conventional post-operative regimen (nil per mouth for five days).

Patients were monitored for vomiting, abdominal pain, distension as well as other complications. They were also screened by serum sodium, potassium and albumin and liver enzymes. Times of regaining audible bowel sounds and of passing flatus were recorded. Hospital stay was calculated.

## RESULTS

The two study groups were comparable as shown in Table 1. The indications for surgery are summarized in Table 2. For patients with gastric cancer (n=15) there were four patients in group A and three in group B with preoperative anemia and starting cachexia. Patients with

pancreatic cancer (n=6) were all in good nutritional status. The patient with foreign body in the stomach needed laparotomy and gastrotomy for it to be extracted. Suture anastomosis was performed for all patients.

The two groups were also comparable as regards the type of operations performed in each as shown in Table 3.

Early feeding was associated with significantly earlier return of bowel sounds compared to conventional five days fasting (p=0.024) Table 4. It was also associated with earlier passage of flatus (p=0.004) Table 5.

Table 6 summarizes the post-operative complications in both groups. There was no significant difference between the two groups in any of the complications. Abdominal distention occurred in three patients (15%) in group (A) and six patients (30%) group (B). All were attributed to gaseous distension. They resolved spontaneously. Four patients in group A (20%) vomited when they started oral fluids. This was associated with mild nausea. It was treated by antiemetic drugs. Nasogastric tube was not required. Those patients had a hospital stay two days longer than those who did not suffer from nausea. Clinically evident anastomotic leakage occurred in 3 patients: one in group (A) (5 %) and two in group B. The former developed at the 5th post-operative day and managed conservatively (leakage stopped at the 10th post-operative day). The latter two were in group (B) leakage started on postoperative day 6 and 7. It stopped in both patients on the 12th day. Those patients had the longest hospital stay in our series (up to 12 days).

Post-operative hospital stay ranged between 4-12 days in group A with a mean of 6.2 days. It was 7-16 days in group B with a mean of 9.60 days. There was statistically significant difference between the two groups P< 0.001.

**Table 1. Comparing the demographic data of the two groups.**

	Group A		Group B		Total		Test of sig.
	Study group		Control group				
	No.	%	No.	%	No.	%	
<b>Sex</b>							
Male	6	30.0	5	25.0	11	27.5	$\chi^2 = 0.125$ p = 0.723
Female	14	70.0	15	75.0	29	72.5	
<b>Age</b>							
Range	18.00 – 60.00		16.00 – 60.00		16.00 – 60.00		t = 0.369 p = 0.714
Mean ± SD	38.90 ± 14.28		40.60 ± 14.87		39.75 ± 14.42		

$\chi^2$ : Chi square test.

**Table 2. Summarizes the indications for surgery in both groups.**

Indication	Group A		Group B	
	No	%	No	%
Gastric cancer	9§	45	6*	30
Pancreatic cancer	2	10	4	20
Gastric fistula	8	40	7	35
Augmentation gastroplasty	1	5		
Cicatrized duodenal ulcer			1	5
Penetrating gastric trauma			1	5
Intra-gastric foreign body			1	5
<b>Total</b>	<b>20</b>	<b>100</b>	<b>20</b>	<b>100</b>

\* Five of which were gastric adenocarcinoma and one of GIST tumor.

§ Seven of which were adenocarcinoma and two were GIST tumor.

**Table 3. Summarizes the procedures performed for the patients of each group.**

The operations	Group A		Group B	
	No.	%	No.	%
Exploration laparotomy and repair of gastric tear	8	40	8	40
Gastrojejunostomy	5	25	4	20
Gastrectomy + gastrojejunostomy	4	20	6	30
Wedge resection	2	10	1	5
Resection of the gastro-colic fistula	0	0	1	5
Augmentation gastro-cystoplasty	1	5	0	0
<b>Total</b>	<b>20</b>	<b>100</b>	<b>20</b>	<b>100</b>

**Table 4. Comparison between the two studied groups according to time of regaining bowel sound.**

Regaining of bowel sound	(A) Early oral feeding group		(B) delayed oral feeding group		Total		$\chi^2$ (p)
	No.	%	No.	%	No.	%	
1st day	10	50	3	15	13	32.5	
2nd day	10	50	14	70	24	60	7.436* (0.024)
3rd day	0	0	3	15	3	7.5	

$\chi^2$ : Chi square test.

\*: Statistically significant at  $p \leq 0.05$ .

**Table 5. Comparison between the two studied groups according to time of passage of flatus.**

	(A) Early oral feeding group		(B) delayed oral feeding group		Total		$\chi^2$ (p)
	No.	%	No.	%	No.	%	
<b>Passage of flatus</b>							
1st day	3	15	0	0	3	7.5	
2nd day	14	70	6	30	20	50	
3rd day	3	15	6	30	9	22.5	15.200* (0.004)
4th day	0	0	7	35	7	17.5	
5th day	0	0	1	5	1	2.5	

\* Statistically significant at  $p \leq 0.05$ .

**Table 6. Post-operative complications in the study groups.**

	Group (A)		Group(B)		Total		$\chi^2$ (p)
	No.	%	No.	%	No.	%	
<b>Abdominal distension</b>							
No	17	85.0	14	70.0	31	77.5	1.290
Yes	3	15.0	6	30.0	9	22.5	(0.256)
<b>Vomiting</b>							
No	16	80.0	18	90.0	34	85	0.784
Yes	4	20.0	2	10.0	6	15	(0.376)
<b>Wound infection</b>							
No	19	95.0	15	75.0	34	85.0	3.137
Yes	1	5.0	5	25.0	6	15.0	(0.077)
<b>Anastomotic leakage</b>							
No	19	95.0	18	90.0	37	92.5	0.360
Yes	1	5.0	2	10.0	3	7.5	(0.548)
<b>Chest infection</b>							
No	19	95.0	18	90.0	37	92.5	0.360
Yes	1	5.0	2	10.0	3	7.5	(0.548)
<b>Electrolyte disturbance</b>							
No	14	70.0	11	55.0	25	62.5	0.960
Yes	6	30.0	9	45.0	15	37.5	(0.327)

$\chi^2$  Chi square test.

\* Statistically significant at  $p \leq 0.05$ .

## DISCUSSION

The main tool of fast track is aggressive post-operative rehabilitation including early per oral nutrition. In general it aims at shorter hospital stay, faster recovery with reduced overall morbidity.<sup>(9,10)</sup>

After abdominal surgery, the small intestine regains its motility within four to eight hours. Food can thus be ingested and absorbed within 24 hours.<sup>(11,12)</sup> This is supported by the clinical data derived from the meta-analysis of many studies.<sup>(10)</sup> It is important to stress on the fact that small bowel activity resumes well before passage of flatus. This was also confirmed in our study as well as others.<sup>(13,14)</sup>

We found no significant relation between age or sex and the tolerability to early post-operative feeding. Delany et al,<sup>(15)</sup> however found patients older than 70 years were less tolerant. Difronzo et al<sup>(16)</sup> and Petrelli et al<sup>(17)</sup> found no significant differences for age but the former found that males are less tolerant to early post-operative feeding.

We found that the type of operation performed did not affect patient's tolerance to early feeding either. The same is was reported by similar studies.<sup>(18,19)</sup>

Enteral feeding when combined with restriction of parenteral fluids perioperatively was found to enhances the return of the peristalsis to our patients. Brandstrup B and Tonnesen have shown similar results.<sup>(20)</sup>

Meta-analysis data suggested that earlier feeding may reduce the risk of postoperative complications. This was noticed in our series: as an example, we had one fistula in group A compared to two fistulae in group B patients. All were managed conservatively. Many independent reports confirm that early feeding does not increase postoperative morbidity.<sup>(10,18,21-24)</sup>

As expected, hospital stay was significantly shorter among group a patients ( $6.20 \pm 1.79$  versus  $9.60 \pm 2.64$  days,  $P < 0.001$ ). This confirmed the beneficial effect of early oral feeding in this respect with its physical, psychological and economic benefits. This was a consistent finding in published series.<sup>(21,18,25,26)</sup>

From this study we conclude that early post-operative oral feeding is safe and tolerable after gastric surgery. It causes no increase in post-operative morbidity and mortality. The main achievement of early post-operative feeding is the considerable reduction in hospital stay with its physical, psychological and economic benefits.

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