

# Early Oral Feeding after Appendectomy: A Prospective Study - Region I Medical Center

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## **Background:**

Feeding after surgery is an important process in support of patients' nutritional requirements. Traditionally after abdominal surgery, the passage of flatus or bowel movement is considered the clinical evidence for starting an oral diet. Post-operative dysmotility predominantly affects the stomach and colon, with the small bowel recovering normal function 4-8 hours after laparotomy.

## **Objective:**

To compare the effects of early versus delayed (traditional) initiation of oral intake of food and fluids after appendectomy and to demonstrate the feasibility and the economical gain of the early oral feeding after appendectomy.

## **Materials and Methods:**

Randomized controlled trial comparing the effect of early versus delayed initiation of oral intake of food and fluids after appendectomy on clinically meaningful postoperative outcomes was considered. The study participants are patients of Region I Medical Center, who have had their appendectomy from May 1, 2012 to October 31, 2012. Eighty-eight patients who underwent appendectomy were randomly assigned into two groups in a consecutive manner as either the Early Oral Feeding (EOF) group or Classical Oral Feeding (COF) group.

## **Results:**

There were 88 patients included in the study, 67 (76.1%) are males, 21(23.8%) are female with a ratio of 3.1:1. Forty-nine patients were (55.6%) adults and 39 (44.3%) patients were children. The data collected compared the Early Oral Feeding (EOF) group vs. Classical Oral Feeding (COF) group with regards to complications and average hospital stay using chi square test and t-test. Results showed that Early/ Classical Feeding is dependent with hospital stay and is independent with complications.

## **Conclusion:**

In conclusion, the results of this study indicate that early oral feeding leads to better patients' satisfaction, shorter hospital stay, and acceptable complications rates in appendectomy. Early feeding is safe and well tolerated well by many patients who underwent appendectomy.

**Key Words:** early feeding, appendectomy, patient satisfaction

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## **Introduction**

Feeding after surgery is an important process in support of patients' nutritional requirements. Traditionally after abdominal surgery, the passage of flatus or bowel movement is considered the clinical evidence for starting an oral diet. The resolution of post-operative ileus defined by the passage of flatus usually occurs within five days.<sup>12,13</sup> Post-operative dysmotility predominantly affects the stomach and colon, with the small bowel recovering normal function 4-8 hours after laparotomy.<sup>1</sup>

The rationale of nil by mouth is to prevent post-operative nausea and vomiting and to protect the bowels, giving it time to heal before being stressed by food. However, it is unclear for how long the deferral of enteral feeding is beneficial. Contrary to the widespread belief, evidence from clinical studies and animal experiments suggests that initiating early feeding is advantageous.<sup>1</sup> In animals, starvation reduces the collagen content in anastomosis scar tissue and diminishes the quality of healing, whereas feeding reverses the mucosal atrophy induced by starvation and increases anastomosis collagen deposition and strength.<sup>21,22</sup> Recovery was shown within one week in the enteral nutrition group in some studies, and experimental data in both animals and humans suggest that enteral nutrition is associated with improvement in wound healing.<sup>17,18</sup>

Early feeding improves the outcome in patients with trauma and burns, although few studies

have examined its use. Early enteral nutrition or oral feeding appears to be a useful and safe therapeutic tool for the post-operative management of patients undergoing appendectomy. This study aimed to compare the outcome of Early Oral Feeding (EOF) and Classical Oral Feeding (COF) in patients who underwent appendectomy.

### **OBJECTIVES:**

- To compare the effects of early versus delayed (traditional) initiation of oral food intake of food and fluids after appendectomy
- To demonstrate the feasibility and the economical gain of early oral feeding after appendectomy

### **Methods**

A randomized controlled trial comparing the effect of early versus delayed initiation of oral intake of food and fluids after appendectomy on clinically meaningful postoperative outcomes was considered. The study participants were patients of Region I Medical Center, who had their appendectomies from May1, 2012 to October 31, 2012. Eighty-eight patients who underwent appendectomy qualified. They were randomly assigned into two groups in an alternate manner as either the Early Oral Feeding (EOF) group or Classical Oral Feeding (COF) group after ethical review. Inclusion criteria were: all patients who underwent appendectomy for uncomplicated appendicitis (refers to appendicitis graded as congestive, suppurative and gangrenous) regardless of gender and age were enrolled in the

study. Early postoperative oral intake was defined as having oral intake of fluids or food within the first 24 hours after surgery regardless of the presence or absence of the signs that indicate the return of bowel function. Delayed postoperative oral intake (Classical Oral feeding) is defined as an introduction of oral fluids or food after the first 24 hours following surgery and only after clinical signs of resolution of postoperative ileus - most commonly a presence of bowel sound, a passing of flatus/stool, and a feeling of hunger, were evident. The following outcomes were recorded if the information was available: Development of symptoms and signs of postoperative ileus (rate of nausea, vomiting, cramping abdominal pain, bloating, abdominal distention) and time to the start of regular diet, length of postoperative hospital stay. Patients with ruptured appendicitis, and those with concomitant medical illness, and those with incidental appendectomies were excluded in the study.

### Results:

There were 127 appendectomies done in Region I Medical Center from May 1, 2012 to October 31, 2012. 93(73.2%) patients were uncomplicated, 25(19.6%) patients were complicated and 9 (7.08%) had incidental appendectomy. 5(5.3%) patients had concurrent medical problem, and 88 (94.6%) patients had no medical problem. There were 88 patients included in the study, 67 (76.1%) are males, 21(23.8%) are females. There were 49 adult patients (55.6%) and 39 (44.3%) were chil-

dren. The age range is from 3 years – 67 years old with median age of 22 years. The data collected compared the EOF Early Oral Feeding(EOF) group vs. Classical Oral Feeding(COF) group with regards to complications and average hospital stay using the chi square test and t-test. On the Hospital stay we used 2 cells (25.0%) have expected count less than 5.

**Table 1. Time of Feeding Initiation and Average Hospital Stay**

Feeding Initiation	Average Hospital Stay
Early Oral Feeding	1.61 days
Classic Oral Feeding	2.16 days

Table 1 showed that the earlier the feeding initiation, the lesser is the average number in days of hospital stay.

**Table 2. Time of Feeding Initiation on Hospital Stay**

Feeding	Number of days in Hospital*				total
	Hospital day 1	Hospital day 2	Hospital day 3	Hospital day 4	
Early	24 (54.5%)	14 (31.8%)	5 (11.3%)	1 (2.2%)	44
Classical	10 (22.7%)	19 (43.1%)	13 (29.5%)	2 (4.5%)	44
Total	34 (38.6%)	33 (37.5%)	18 (20.4%)	3 (3.4%)	88

\*Chi- square: Significant  
Actual computed  $p = 0.015^*$

Table 2 shows that Early/Classical Feeding is statistically significantly related to hospital stay - the earlier the feeding the shorter the hospital stay. There were more patients who were discharged earlier when given earlier feeding compared to the classical feeding schedule.

**Table 3. Time on Feeding Initiation with development of complications**

Feeding	Complications				total
	None	Abdominal pain	Abdominal distention	fever	
Early	41 (93.1%)	2 (4.5%)	0	1 (2.2%)	44
Classical	42 (95.4%)	1 (2.2%)	1 (2.2%)	0	44
Total	83 (94.3%)	3 (3.4%)	1 (2.2%)	1 (2.2%)	88

Chi square:  $p = 0.50$ (Not significant)

Table 3 showed that Early/Classical Feeding is independent with complications. There is no difference on the development of complications on the time of feeding initiation post-appendectomy. On the Early feeding group 2 patients had abdominal pain, the other one is re-admitted and was diagnosed having a Typhoid fever, the other one had only felt a slight abdominal pain and was discharged later. The patient who had fever was noted with urinary tract infection. On the Classical Feeding group, 1 patient had on and off abdominal pain at the epigastric area, and the other one had bloatedness, due to ileus but was also discharged upon improvement.

#### Discussion:

Postoperative ileus is an important factor determining and contributing negatively to postoperative convalescence. The mechanisms of this involve the stimulation of pain fibers, excessive sympathetic tone, and the release of inhibitory neuro-

transmitters from the gut wall. Gastrointestinal physiologic studies that examined the contractile activity of the intestine showed that the small bowel recovered normal function 4–8 hours after laparotomy and that gastric emptying resumed on the first postoperative day.<sup>9</sup> It was suggested that the early resumption of an oral diet diminishes the duration of ileus.<sup>14,15</sup> In the present study, the early enteral feeding group patients had an oral diet on the day after the operation without evidence of bowel motility, and most of these patients tolerated the early feeding schedule. This result showed that oral feeding can be started on the first postoperative day without waiting for the resolution of postoperative ileus. Thus, the patients can be protected from starvation and the related side effects, such as metabolic imbalance. This situation might diminish the complications and accelerate recovery. In the present study, early feeding resulted in early intestinal movements and defecation. These findings show that an early oral diet improved the gastrointestinal recovery parameters and shortened the duration of postoperative ileus.

Several randomized studies on enteral tube feeding have found that enteral nutrition reduces the risk of development of complications including less muscle deficits and post-op fatigue. These findings support previous studies in demonstrating that postoperative impairment of nutrition status is significantly correlated with development of postoperative subjective feelings of fatigue.<sup>6,8</sup>

However, other randomized studies showed no relation. A recent meta-analysis including any type of enteral feeding started within 24 h after abdominal surgery associated early feeding with fewer postoperative infectious complications independent of preoperative nutrition status. There was a small but significant reduction in the mean length of hospital stay by 0.84 days in the early feeding group. A lower risk for developing anastomotic dehiscence, wound infection, pneumonia, intra-abdominal abscess, and mortality was also found, although these failed to reach significance. It was shown that feeding reverses the mucosal atrophy induced by starvation and increases anastomotic collagen deposition and strength. Experimental data in both animals and humans suggest that enteral nutrition is associated with an improvement in wound healing.<sup>16</sup>

The patients were interviewed during their hospital stay on the psychological impact of oral fluids and food following surgery and improved sense of well-being was observed in the patients who ate sooner. The psychological aspect also has a significant role throughout the postoperative recovery process. A shorter hospital stay is a potential advantage of early postoperative feeding, and this feature was demonstrated in the present study. Because early feeding significantly shortens the length of ileus, and significantly shortens the length of hospitalization.

### **Conclusion:**

The study showed that early oral feeding lead to shorter hospital stay, acceptable complications rates in appendectomy. Through interview, greater satisfaction was also noted. Early feeding was noted to be safe and can be tolerated well by many patients undergoing appendectomy.

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