

Experience with feeding jejunostomy

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Summary:

Background: Enteral nutrition is a widely used, standard-of-care technique for nutrition support in critically ill and trauma patients.

Objective: to determine the role of feeding jejunostomy as a safe way for enteral nutrition in patients who meet the criteria for its use.

Method: prospective, comparative study done in the 3rd. surgical unit at Baghdad Teaching Hospital from 1st. of January 2003 till 1st. of April 2009, of 230 patients who fit the criteria for feeding jejunostomy insertion. The patients were divided into 2 groups (those with feeding jejunostomy 122 patients (53%) and without feeding jejunostomy 108 patients (47%)). We follow up these patients using the particular parameters.

Results: feeding jejunostomy was performed in 122 patients (53%), 68% of feeding jejunostomy was performed in urgent procedures, pancreaticoduodenal injuries was the most common indication. The BMI was noticed to be either increased in 48 patients (39.34%) or stabilized in 70 patients (57.37%) with feeding jejunostomy, while the lymphocytes count was either increased in 64 patients (52.45%) or remain within normal range in 56 patients (45.9%) with feeding jejunostomy, while serum protein level showed no decrease in any patients with feeding jejunostomy. Diarrhea was the most common complication observed in 14 patients (11.5%) with feeding jejunostomy.

Conclusion: Feeding jejunostomy is an effective and safe way of delivering nutrition postoperatively. It leads to increase or stabilize BMI, lymphocytes count and serum protein level, although it produced GI complications which are generally mild and resolve quickly with non-invasive treatment.

Keywords: Feeding jejunostomy, enteral nutrition, feeding jejunostomy complications, BMI.

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Introduction:

Patients undergoing major surgery are at high risk of malnutrition due to the combination of perioperative starvation and activation of both the immune system and the neuroendocrine stress response (1). Enteral feeding is an important strategy for maintaining gut integrity and function. Controversies remain on the use of feeding jejunostomy after major abdominal surgery and its use had not gained widespread acceptance (2). In recent years the use of jejunal feeding has become increasingly popular. This can be achieved using nasojejunal tubes or by placement of feeding jejunostomy at the time of laparotomy (3). Feeding Jejunostomy is one of the methods of enteral feeding which involve creating an opening in the jejunum, which is part of small bowel, to a hole (stoma) in the abdomen through which the feeding can be delivered (4). In 1858, Busch first described the use of feeding jejunostomy to administer nutritional support to patients (5). However, its usefulness was not fully established until almost a century later when there has been increasing interest in the administration of enteral nutrition because of its proven benefits in preventing septic complications in critically ill patients and its cost effectiveness compared with parenteral nutrition(6). Enteral feeding has several advantages over parenteral feeding. A feeding jejunostomy tube placement is

required for enteral feeding in a variety of clinical scenarios. It offers an advantage over gastrostomies by eliminating the risk of aspiration (7). The main Indications for feeding jejunostomy are trauma; especially those with upper GI and head injuries, tumors particularly upper GI malignancies, esophageal perforation, swallowing obstruction and swallowing disorders as in thyrolaryngeal tumors and motor neuron disease(8). The only absolute contraindication to feeding jejunostomy is distal intestinal obstruction (9).

Method:

This is a prospective comparative study conducted in the 3rd.surgical unit at Baghdad Teaching Hospital; during the period from 1st.of January 2003 till the 1st. of April 2009, the study carried out on 230 patients who were fit the indications for feeding jejunostomy insertion. Those 230 patients were divided into 2 groups, 1st. group managed by feeding jejunostomy (122 patients), and the other (108 patients) without feeding jejunostomy. Those 2 groups were matching each other regarding age and sex. History; clinical examination and laboratory investigations were done to the 230 patients including measurement of body weight, height, lymphocytes count and serum protein level, both before and after we started management, those who can't move or we can't do these measures for them were excluded from our study. 122 patients were submitted to feeding jejunostomy done according to

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Stamm – figure 1 - (for urgent patients) and Witzel’s – figure 2 - (for elective patients) maneuvers using Blenderized formula for feeding, and the feeding through jejunostomy started when the bowel sounds became positive by bolus way, we started at 30ml/hr and gradually increase the rate up to 100 – 150 ml/hr. when complications developed, the feeds were either reduced or stopped temporarily. When it comes to the other group (108 without feeding jejunostomy) they were referred to us from

other surgeons. The tube was irrigated with 30 ml of plain water both before and after each feed to prevent obstruction. The postoperative nutritional results (in terms of change in the BMI, lymphocytes count, and serum protein level) for the 2 groups (with and without jejunostomy) were arranged in tables and evaluated statistically by chi square test to calculate the P value regarding the above mentioned parameters.

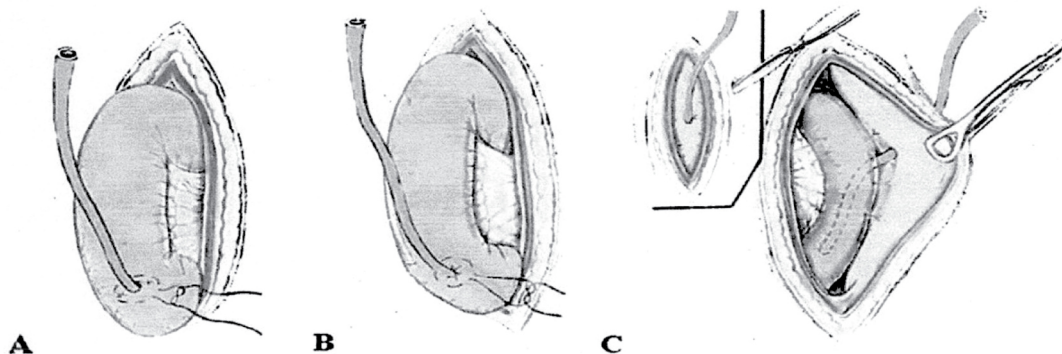


Figure 1 Stamm Jejunostomy

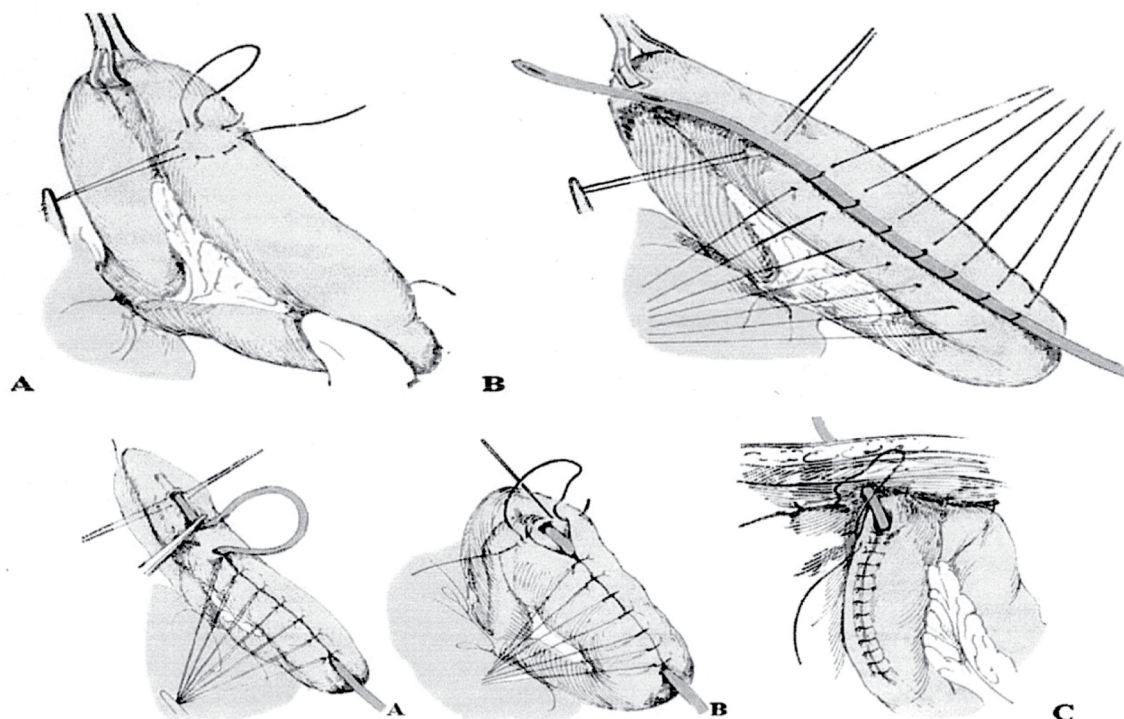


Figure 2 Witzel Jejunostomy

Results:

During the study period, the total number of patients was 230; 122 patients (53%) had feeding jejunostomy as a part of their management, whereas the remaining 108 patients (47%) did not have feeding jejunostomy. Feeding jejunostomy was performed in 76 male patients (62%) and in 46 female patients (38%). 148 patients were urgent trauma cases while 82 patients were having either gastrointestinal or neurological disorders (table 1). Table 1 also shows that feeding jejunostomy was performed in 20 out of 82 elective procedures; this figure went up to 102 out of 148 operations when it comes to urgent surgeries. The table also clarified that the most common indication was pancreaticoduodenal injuries 84 patients (36.7%). Table 2 shows that upon using feeding jejunostomy the BMI increased in 48 patients (39.34%) versus 4 patients (3.7%) without feeding jejunostomy. On the other hand, BMI decreased in 4 patients (3.27%) having feeding jejunostomy, while in those without feeding jejunostomy the decrement noticed in 68 patients (62.96%). Moreover, BMI remained stable in 70 patients (57.37%) with feeding jejunostomy, while it stabilized in only 18 patients (33.33%) without feeding jejunostomy, regarding all the above findings; they were statistically significant (P value < 0.001). Considering Lymphocytes count, it increased in 64 patients (52.45%) with feeding jejunostomy, remained normal in 56 patients (45.9%), while it reduced in 2 patients only. In contrast, those patients

without feeding jejunostomy the count was increased in only 4 patients, whereas it remained stable in 38 patients (35.1%), and decreased in 66 patients (61.1%) as shown in table 3, regarding all the above findings; they were statistically significant (P value < 0.001).

Table 4 clarified the results of serum protein level; it shows that this level remained stable in 68 patients (55.73%) with feeding jejunostomy, while only 14 patients (12.96%) without feeding jejunostomy the protein level remained stable. There was no decline in serum protein level in feeding jejunostomy group, whereas the about 88 patients (81.48%) without jejunostomy showed reduction in serum protein levels. Even more, the level increased in 54 patients (44.26%) with feeding jejunostomy, while it went up in only 6 patients of the other group, regarding all the above findings; they were statistically significant (P value < 0.001).

Figure 3 shows that 45 patients out of 122 with feeding jejunostomy developed complications; diarrhea was the most common complication following feeding jejunostomy, it developed in 14 patients (11.5%), followed by abdominal distension and cramping; they developed in 10 patients (8.2%) and 8 patients (6.55%) respectively, while the least complications encountered during feeding jejunostomy use was nausea followed by constipation, which developed in 3 patient (2.46%) and 2 patients (1.64%) respectively. regarding all the above findings; they were statistically significant.

Table 1 - Indications for feeding jejunostomy

Operation Type	Indications	Total	With jejunostomy		Without jejunostomy	
			No.	Percentage	No.	Percentage
Urgent	Oesophageal injuries	6	6	2.5%	0	0
	Pancreaticoduodenal injuries	114	84	36.7%	30	13%
	Maxillofacial injuries	28	12	5%	16	7%
Elective	Gastrectomy	2	2	0.9%	0	0
	Pncreatic fistula	14	8	3.5%	6	2.5%
	Advance upper GI tumors	12	6	2.6%	6	2.5%
	Thyrolaryngeal tumors	30	2	0.9%	28	12.2%
	Upper motor neuron lesions	24	2	0.9%	22	9.5%
Total		230	122	53%	108	47%

Table 2 - Results of BMI with and without jejunostomy

BMI results	Patients with jejunostomy		Patients without jejunostomy	
	No.	Percentage	No.	Percentage
Increased	48	39.34%	4	3.7%
Stabilized	70	57.37%	18	33.33%
Decreased	4	3.27%	68	62.96%

P value < 0.001

Table 3 - Results of lymphocytes count

Lymphocytes count results	Patients with jejunostomy		Patients without jejunostomy	
	No.	Percentage	No.	Percentage
Increased	64	52.45%	4	3.7%
Stabilized	56	45.9%	38	35.1%
Decreased	2	1.63%	66	61.1%

P value < 0.001

Table 4 - Results of Serum Protein

Serum Protein results	Patients with jejunostomy		Patients without jejunostomy	
	No.	Percentage	No.	Percentage
Increased	54	44.26%	6	5.55%
Stabilized	68	55.73%	14	12.96%
Decreased	0	0	88	81.48%

P value < 0.001

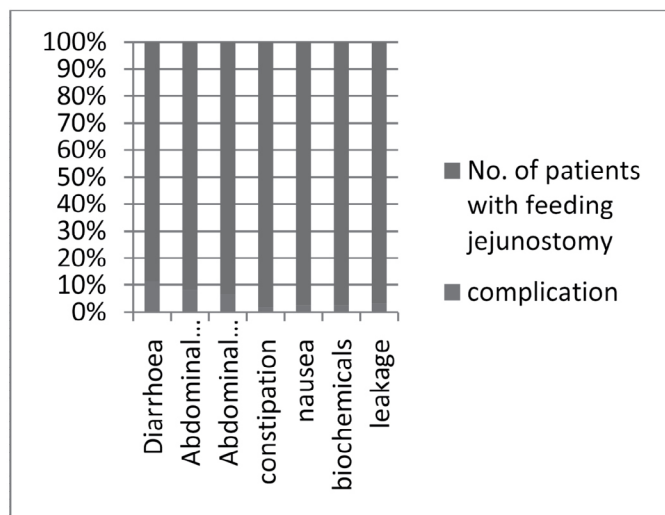


Figure 3 - Complication of feeding jejunostomy

Discussion:

The need for placement of feeding jejunostomy was most encountered in the male patients; we found that 76 (62%) patients were males, while the remaining 46 (38%) patients were females. These results disagree with Mcphee JT. (10) who found that there is no sex prevalence exists. In the other hand, we have got similar results to Zapas J and Pacelli F. (11, 12) in that feeding jejunostomy was indicated more in urgent surgeries and pancreaticoduodenal injuries were the most common indication for feeding jejunostomy insertion in our study, this is in accordance with Pacelli F. and Ward N. (12, 13), Regarding the association between feeding jejunostomy and BMI changes, we found that there was a direct relation between BMI change and feeding jejunostomy insertion. This relation agreed with that of Ward N. study. (13) On the other hand, we discovered that most of the patients with feeding jejunostomy had their BMI either stabilized or increased, in contrast to the other group (without feeding jejunostomy) who showed a reduction in their BMI in most of the cases. These results matched with that of Mors M. etal. (14) Again, only 2 patients with feeding jejunostomy in our study showed reduction in leukocytes count while this number elevated to 33 patients in the other category (without feeding jejunostomy) and this may be contributed to the effect of enteral nutrition in rising immunity, These results disagree with that of Wu Q etal. (15) Who found that there were no significant differences in total lymphocyte count in 29 patients had feeding jejunostomy compared to 32 patients without jejunostomy in his study. When it comes to the relation between serum protein level and feeding jejunostomy, we found that serum protein level was not decrease in any patient with feeding jejunostomy. In contrast to other group (without feeding jejunostomy) where this level decreased in about 80% of patients and that may be due to the supplements of high protein nutrient, these results similar to

that of Ali Ghafouri etal. (16) Who worked on the same subject, and found that the serum protein level was elevated in 30 patients (100%) out of 30 patients having feeding jejunostomy. Considering the complications of feeding jejunostomy, we found that diarrhea was the most common complication (4 patients out of 122 with feeding jejunostomy). This result was in similar to that of Banerjee T (17) who found that only 3 patients (12%) out of 25 patients with feeding jejunostomy developed diarrhea as the most common complication, also Dunkan D.H. and Holmes JH etal. (18, 19), who also reached a similar results. However, H. Medina-Franco etal (20) found 48 patients (42.9%) out of 112 patients had feeding jejunostomy presented with postoperative complications. The most frequent surgical complications were severe sepsis which developed in 13 patients (11.6%).

Conclusions:

This study has confirmed that Jejunostomy tubes are an effective and safe way of delivering nutrition postoperatively. (Especially we have a shortage in the parenteral nutrition formula in our country) It produces gastrointestinal complications which are generally mild and resolve quickly with non-invasive treatment. Our measured parameters (BMI, Lymphocytes count and serum protein levels) were either increased or stabilized in patients with feeding jejunostomy. Considering the benefits of enteral feeding via jejunostomy tube, it can be concluded that the complications observed are minor and acceptable.

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