

# The Complications of Jejunostomies in the Post-Operative Period

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## ABSTRACT

**Objectives:** To determine the type and frequency of complications relating to jejunostomy feeding tubes following oesophagectomy for oesophageal malignancy. **Methods:** A retrospective analysis of 25 patients who had undergone oesophagectomy. Physicians' notes, nursing and nutrition notes were analysed and any complication relating to the jejunostomy tube was recorded. **Results:** Of the 25 patients reviewed, 14 (56%) had mild complications associated with the jejunostomy tube. Three (12%) experienced diarrhoea, 3 (12%) had abdominal distention, 3 (12%) bloating, 3 (12%) cramping, 1 (4%) constipation, 1 (4%) reflux. In 13 patients, all of the symptoms were mild and resolved in one to two days with treatment. One patient who developed diarrhoea died of sepsis before an outcome could be determined. **Conclusion:** The complications relating the jejunostomy feeding were minor, short-lived and easily treatable. These minor complications are acceptable considering the nutritional advantages that jejunostomy tubes offer patients post-operatively.

## INTRODUCTION

Post-operative nutritional support of patients undergoing major surgery has been shown to have a

major positive impact on subsequent recovery.<sup>1</sup> Enteral nutrition has been shown to be superior

to parenteral nutrition in this respect by a number of studies.<sup>2</sup> This direct form of feeding maintains functional capacities of the intestine, including digestion and absorption of nutrients,

hormone and enzyme production and maintenance of peristaltic movements.<sup>3</sup> It avoids the use of a central venous catheter that can lead to sepsis and pleuropulmonary accidents. It can be administered for lengthy time periods and the patient can easily adapt to enteral nutrition at

home.<sup>4</sup> Placement of a jejunostomy tube for the purpose of enteral feeding is a surgical procedure that involves the insertion of a catheter into the lumen of the proximal jejunum. In the post-operative period however, enteral feeding by jejunostomy tube can lead to a number of complications. This study aimed to analyse the type and proportion of complications in patients who received jejunostomies while undergoing surgery for oesophageal malignancy.

## METHODS

The study was a retrospective chart analysis of patients who had received jejunostomy tubes during first, second, or third-stage oesophagectomy for oesophageal carcinoma. The list of patients was obtained from a chart database. The charts were subsequently removed from the oesophageal library and reviewed. The charts were then analysed to determine the type and frequency of jejunostomy related complications, specific interventions and outcome.

*Surgical Technique:* The technique used in all patients for jejunostomy placement during

oesophagectomy has been described in other literature.<sup>5</sup> In brief, a catheter is passed through the anterior abdominal wall into the lumen of the jejunum via an intramural tunnel. The tube is advanced to a distal position in order to prevent reflux. A purse-string suture is used to secure the catheter entry site. Any excess catheter is removed from the peritoneal cavity until the jejunum lies adjacent to the parietal peritoneum. The jejunum is then secured in place with a few

interrupted sutures.

*Protocol for Enteral Nutrition:* The feed was started on the first post-operative day in all patients. The rate of delivery commenced at 30 ml/hr and the rate was gradually increased every eight hours until the desired rate was reached. For a 70 kg person, the target volume was 100 ml/hr (2 litres over 20 hours). Development of GI symptoms occasionally necessitated the slowing or even cessation of the feed for a short period of time, which was then generally recommenced once symptoms had resolved.

## RESULTS

Table 1. Complications of Jejunostomy

Complications	n=25	%
Diarrhoea	3	12
Nausea	3	12
Abdominal Distension	3	12
Abdominal Cramping	3	12
Constipation	1	4
Reflux	1	4

Twenty-five patients (22 men) of median age 58.5 (range 40-76) were studied. All patients underwent oesophagectomy for malignancy, one patient undergoing a one-stage procedure, 14 a two-stage and the remaining 10 patients a three-stage oesophagectomy. Minor GI complications arose in 12 of the 25 patients, with some patients having more than one complication (Table 1).

In all cases, duration of symptoms was short-lived and usually resolved within 24-48 hours of initiation of appropriate treatment. Nausea was treated by administration of prochlorperazine and constipation was treated with prune juice via the jejunostomy tube.

Three patients in this series developed diarrhoea (e"4 bowel motions/day) and were initially treated with loperamide. In two patients, the feeding rate was slowed from 100 mls/hr until the diarrhoea subsided. In one patient, the jejunostomy feed was stopped several times over a period of two days due to recurrent episodes. In this instance, the feeding was recommenced at normal rate once the diarrhoea had resolved. Two patients in the series experienced loose bowel motions. However, the frequency did not exceed two episodes per day and therefore they were not included as having experienced this complication. In these instances, the symptoms resolved within a day by slowing the feed rate by 20 mls/hr.

Six patients experienced abdominal distention and cramping, and in all cases the symptoms resolved within several days. Intervention consisted of either slowing the feed rate or stopping the feed temporarily. In all but one case the feed was then recommenced at the normal rate once the symptoms subsided. In these patients, recommencement was well-tolerated. One patient who had cessation of feed due to abdominal distention did not have the feed recommenced, as she died the following day as a result of overwhelming sepsis. The origin of the sepsis could not be determined.

One patient experienced some difficulty with reflux necessitating cessation of his feed. However, the feed was then recommenced approximately eight hours later and the patient experienced no further difficulties.

## DISCUSSION

Enteral feeding via jejunostomy tube is considered standard practice in most hospitals for patients undergoing surgery for oesophageal malignancy. Patients with oesophageal malignancy are often malnourished and denied oral intake for one to two weeks post-operatively. Enteral feeding aims to maintain nourishment post-operatively and prevent prolonged complications that may result from lack of nutrition. It has been demonstrated in animal studies that lack of nutrients in the gut

leads to decreased mucosal integrity, bacterial translocation and sepsis.<sup>6</sup> Immunogenicity, hormone production and the ability to regain full absorptive capacity are also compromised by

lack of direct nutritional support.<sup>7</sup>

Enteral feeding is not without complications and there is considerable debate over the frequency and severity of complications that jejunostomy tubes can produce. The most severe complications include major mechanical problems, e.g. intraperitoneal leakage and catheter

occlusion.<sup>8</sup> Abscess formation and bowel necrosis have also occurred.<sup>9</sup> By far the most common complications are GI complications, e.g. diarrhoea, abdominal distention, and bloating. A large prospective study (n=500) published in the British Journal of Surgery reported the

incidence of diarrhoea as 15%, abdominal distention 5% and cramping 3%.<sup>10</sup> A study of catheter feeding jejunostomy in patients after major abdominal trauma concluded that 83% of the study group had one or more GI complaints compared to 50% of a control group who had GI complaints

despite not being given enteral feeding.<sup>11</sup>

In this retrospective chart review, 56% of patients had GI complaints which all resolved within two to three days with appropriate action. Gastrointestinal complaints are extremely common after oesophageal surgery. It is difficult to conclude from a retrospective study which GI complaints were due to the enteral feeding and which were due to the effects of the surgery. In any case, this chart review demonstrated that out of 25 patients, none had complications requiring jejunostomy replacement or removal.

## CONCLUSION

In summary, jejunostomy tubes are an effective and safe way of delivering nutrition post-operatively. They produce GI complications which are generally mild and resolve quickly with non-invasive treatment. 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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