



# Tube feeding via a jejunostomy following esophagectomy: is it necessary?

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Esophagectomy is a complex and technically challenging procedure that is accompanied with substantial postoperative morbidity and mortality (1). However much has changed over the past years and implementation of enhanced recovery after surgery (ERAS) programs and minimal invasive surgery are important elements that have improved perioperative care. Early start of nutrition has been an essential element of ERAS programs in other types of abdominal surgery, however this has since long been a matter of debate in patients undergoing esophagectomy (2). The potentially increased risk of aspiration pneumonia and the incidence and detrimental consequences of anastomotic leakage are the main arguments for many surgeons to have a patient orally fasted for several days.

However, patients need to be fed postoperatively and especially in esophagectomy patients this may be problematic. Some of these patients are preoperatively diagnosed with malnutrition and the reconstruction with a gastric conduit affects the eating pattern and patients will lose weight. In most centers, an oral fasting period of at least 5 days is given postoperatively after which oral intake is gradually expanded. To overcome the initial nil-by-mouth period several strategies are available such as administration of parenteral nutrition or start of enteral nutrition via tube feeding.

Compared to fasting, parenteral nutrition can provide adequate nutrition, improve wound healing and reduce postoperative complications following surgery. However, in major abdominal surgery it has been shown that enteral nutrition is preferred over parenteral nutrition with respect

to patient recovery and postoperative complications. Also, in esophageal surgery, enteral nutrition was introduced and compared with parenteral nutrition in the first days after esophagectomy and it was found that morbidity could be reduced by enteral nutrition (3).

Enteral tube feeding is therefore generally given in the current practice via either a jejunostomy or a nasojejunal tube. It has become increasingly clear that these artificial routes of feeding are not without complications. Many studies report tube-feeding related complications, especially in patients receiving a jejunostomy. Although the majority of these tube-feeding related complications are reported to be minor complications (dislocation, infection or tube obstruction), some serious complications have also been described. A recent study of Akiyama *et al.* shows that jejunostomy feeding is associated with a higher rate of bowel obstruction following esophagectomy (4). The cause of bowel obstruction varied in these patients from occlusion or torsion of the jejunum at the site of insertion, but in all cases, reoperation was required. Instead, patients that were not enterally fed did not present this complication and had a similar recovery rate.

Although the authors provide several technical considerations as to why these complications could have occurred in these patients, it is in line with previous studies showing feeding via a jejunostomy has (a low incidence) risk for the patient. And even a mortality rate of 0–0.5% and reoperation rate of 0–2.9% was reported (5,6). An alternative for a jejunostomy is a nasojejunal or nasoduodenal tube. This is less invasive and not associated

with major complications. However, dislocation is a main problem and can occur up to 20–35% in patients, leading to discomfort and postponement of feeding. One randomized controlled trial compared jejunostomy feeding with nasojejunal tube feeding and showed that dislodgement was the main complication in patients that received the nasojejunal feeding, whereas jejunostomy insertion was associated with entry-site infection and leakage and even re-operation (7).

Based on the complications associated with administration of tube feeding via a jejunostomy or nasojejunal tube it may be worthwhile to reconsider the need for an oral fasting period following esophagectomy.

As mentioned before, a nil-by-mouth period following esophagectomy has become standard of care out of fear for aspiration pneumonia and anastomotic leakage, however it is questionable whether this is necessary. Some trials have been performed showing that in certain patients, applying strict selection criteria, early start of oral intake is feasible and safe. A large randomized controlled trial showed in patients that underwent upper gastrointestinal surgery that length of hospital stay was shorter in patients that started directly with oral intake compared with patients that were given enteral feeding via a jejunostomy, without affecting postoperative complications (8). However, in this trial the patients that were included underwent many types of upper gastrointestinal procedures and only eight of these patients underwent an esophagectomy. A more recent study in patients after esophageal and gastric surgery showed that early start of oral intake showed similar results; length of hospital stay was reduced by early start of oral intake, without affecting the postoperative complications rate in selected patients postoperatively (9). The most recent study by Sun *et al.* showed that direct start of oral intake next to total parenteral nutrition was non-inferior to delayed start of oral intake in patients undergoing a McKeown MIE (10).

Although these studies seem promising in selected patients, the question remains whether direct start of oral intake is safe in the majority of patients after an esophagectomy. A prospective feasibility study from our group showed in 50 non-selected patients that direct start of oral intake following minimal invasive esophagectomy was safe and feasible (11). Patients could reach 58% of their caloric needs on POD 5 with a median intake of 1,205 kcal. This is comparable with studies on ERAS programs in colorectal surgery. However, 30% of the patients in the early oral feeding group received artificial feeding on POD5, mainly because of a complication

prohibiting oral intake and in 1 patient due to insufficient intake that day. A randomized controlled clinical trial is started to show the outcome of direct start of oral intake on functional recovery compared with an oral fasting period of five days and tube feeding via a jejunostomy (12).

In conclusion, it is unclear whether an oral fasting period of five to seven days needs to be installed following esophagectomy patients. When tube feeding is used via a jejunostomy to overcome the oral fasting period, this is associated with complications. The need for jejunostomy feeding needs to be critically evaluated especially considering ERAS programs that are increasingly being implemented following esophagectomy.

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### Footnote

*Conflicts of Interest:* The author has no conflicts of interest to declare.

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