

## 'My Practice' Achalasia and maintaining adequate nutrition: the role of enteral tube feeding

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### Background

Ned\*, a 71 year old retired gentleman, had been living independently with his wife for many years. He had a past medical history of type 1 diabetes, hypothyroidism, hypertension and diabetic retinopathy, but he was otherwise fit and well and enjoyed being active and helping to look after his grandchildren. He was diagnosed with achalasia - a rare motility disorder of the oesophagus - at the lower oesophageal sphincter (LOS). This was treated with balloon dilations, helier hyotomy (a laparoscopic procedure to weaken the muscles of the LOS) and toupet fundoplication, which were successful and enabled him to continue with a normal diet for several years. However, over time his achalasia worsened and he was admitted to hospital and referred to a dietitian.

### Initial Assessment

Ned first presented to the dietitian during this inpatient admission. He was referred with a 10kg unintentional weight loss (13% of his original body weight) in the previous 4 months (admission weight 67kg, BMI 25kg/m<sup>2</sup>) since the symptoms of his achalasia had recurred. The dietitian estimated Ned's daily nutritional requirements to be; 2013kcal, 67g protein and 2010ml fluid, yet his nutritional intake was in significant deficit of this. The aim of dietetic intervention was to meet Ned's nutritional requirements to stabilise his weight.

### Dietetic Management

Nutritional support was provided including food fortification advice but this alone was unlikely to meet his requirements, so Ned also received a prescription of oral nutritional supplements (ONS) which

he managed well. A combination of supplements was chosen due to Ned's taste preferences, consisting of 3 x 200ml Fortijuice, 3 x 200ml Fortisip Bottle, and 3 x 30ml Calogen daily, providing 2205kcal, 59g protein and 1290ml of fluid. Ned received balloon dilations for his achalasia which enabled him to gradually return to a normal diet, and he was discharged home soon after with an ongoing ONS prescription to be taken as required.

Ned's swallowing difficulties recurred several times over the next 12 months, leading to multiple hospital readmissions and dilations. Nine years after his initial achalasia diagnosis, his swallow function had deteriorated further and he was admitted to hospital again. His weight had fallen an additional 17kg (25% of his original body weight) to 50kg (BMI 18kg/m<sup>2</sup>), he had developed iron and vitamin B12 deficiencies and with frequent hypoglycaemic episodes, his diabetes was becoming increasingly difficult to manage. At this time, Ned's daily nutritional requirements for weight gain were 2200kcal, 60g protein and 1500ml fluid. Unable to achieve adequate nutrition through oral intake and with limited oral feeding options left, Ned consented to supplementary enteral tube feeding to top up his oral diet.

As the medical team wanted to preserve the stomach in case of a future oesophagectomy, a jejunostomy was placed and enteral tube feeding was initiated. Ned's enteral feed volume was built up gradually to a combined regimen of 500ml Nutrison Energy at 60ml/hour overnight and daytime bolus feeds of 3 x 100ml Fortisip Compact and 2 x 30ml Calogen, providing 2125kcal,

66g protein and 1600ml fluid. This regimen was chosen as Ned preferred not to be connected to the pump during the day. Two weeks later, Ned's weight had increased to 53.6kg (BMI 20kg/m<sup>2</sup>) and he was discharged home with his care transferred to the home enteral feeding (HEF) team.

### Community Dietetic Review

Once Ned was home, the HEF team reviewed him regularly, and over the next six months his weight increased to 58kg (BMI 21kg/m<sup>2</sup>). However, soon after, Ned decided to discontinue his bolus feeds, as he was no longer tolerating these. Now receiving only 500ml Nutrison Energy via his jejunostomy each day and with ongoing challenges with his oral intake, Ned had a significant nutritional deficit and was at risk of further weight loss. The dietitian decided that Ned should receive all of his nutrition through a continuous pump regimen. Ned could not tolerate large volumes and preferred short feeding durations to allow him flexibility and independence in his lifestyle, so the dietitian selected a higher energy (2kcal/ml) feed to provide adequate nutrition in a smaller volume.

Ned's feeding regimen was changed to 1000ml Nutrison Concentrated (500ml overnight and 500ml during the day) to be taken continuously via the pump in addition to water flushes. This provided 2000kcal, 75g protein and 1750ml fluid and was nutritionally complete. He tolerated this well and found the reduced volume suited his lifestyle. Ned also

Fortijuice, Fortisip and Fortisip Compact are Foods for Special Medical Purposes for the dietary management of disease related malnutrition and must be used under medical supervision.

Calogen and Calogen Extra are Foods for Special Medical Purposes for the dietary management of conditions requiring a high energy intake and must be used under medical supervision.

Nutrison Energy is a Food for Special Medical Purposes for the dietary management of disease related malnutrition in patients with higher energy needs and must be used under medical supervision.

received a Flocare Infinity Go Bag, which allowed him to continue to be active whilst feeding.

### Ongoing Management

In the months that followed, Ned underwent oesophageal botox injections at regular intervals, which allowed him to take oral diet in varying quantities in addition to his enteral feed, achieving his highest weight of 69kg (BMI 25kg/m<sup>2</sup>). However, these gradually became less effective and, after 18 months, Ned was fully dependent on his feeding tube once again. His tolerance of enteral feeding rates was also in decline, and he was managing just 27ml/hour overnight. During the day he was able to tolerate up to 87ml/hour but did not want to feed for more than 3 hours as he wished to leave the house without being connected to his feeding pump. Consequently, Ned was receiving only 70ml Nutrison Concentrated, leaving him with an energy deficit of approximately 700kcal, and his weight dropped to 63.2kg (BMI 23kg/m<sup>2</sup>). His blood glucose levels were uncontrolled, ranging from 3.5-17mmol, which was exacerbating his weight loss.

In view of this, the dietitian adjusted Ned's feeding regimen to increase his energy intake whilst minimising volume and limiting his continuous daytime feeding duration to 3 hours. Ned received a combined feeding regimen of 500ml Nutrison Concentrated at 87ml/hr for 3 hours before bed and 27ml/hr overnight, plus daytime feeds of 250ml Fortisip Compact at 87ml/hour over 2.8 hours and 40ml Calogen Extra plus extra fluid flushes, providing 1760kcal, 64g protein and 1500ml fluid to meet his requirements. Ned was also referred to a specialist diabetes dietitian to help optimise his blood glucose control, which would also help to manage his weight loss.

### Outcomes

Ned tolerated this combined feeding regimen well, his weight stabilised at 60.5kg (BMI 22kg/m<sup>2</sup>) and his blood glucose control improved. Ned reported that he would like his weight to be greater, however to balance his quality of life with his nutritional requirements, he accepted that his weight was likely to remain lower whilst he relied solely on tube feeding to meet his needs. Ned continued to

await further medical intervention with a view to treating his achalasia and enable some oral intake once again.

### Discussion

In the management of achalasia, nutrition needs to be considered on an individualised basis. There are no specific guidelines on the nutritional care in achalasia, but it has the same potential impact on nutritional status of those patients suffering with dysphagia secondary to neurological disease or oesophageal cancer<sup>1</sup>.

#### Post-pyloric feeding

Once Ned had his jejunostomy in place, he experienced some of the common side effects of being bolus fed directly into the jejunum, including feed-related diarrhoea<sup>2,3</sup>. This side effect was managed by limiting the rate of feed via the pump and discontinuing bolus feeds. Continuous feeding via the pump is the preferred method of delivery of feed into the jejunum as it does not have the same holding capacity as the stomach and is less equipped to manage a sudden influx of hyperosmotic fluid<sup>2</sup>. Bolus feeding into the jejunum can also cause 'dumping' syndrome, which could have caused further fluctuations in Ned's blood sugar control<sup>3</sup>. There is no consensus on the type of feed that should be administered in jejunal feeding: some advocate elemental or semi-elemental as these may be better tolerated, whilst others support polymeric. In Ned's case, he tolerated polymeric feeds such as Nutrison Concentrated and Fortisip Compact well, as long as they were delivered slowly via the feeding pump.

#### Considering patient outcomes in enteral tube feeding

When deciding on a feeding regimen for Ned, there were several factors to consider. Some related to the complexities of tolerance to jejunal feeding – determining the most appropriate feeding rate, timing, duration and administration method – while others related to maintaining his quality of life, by minimising the impact that tube feeding had on his daily routine. Research has shown that some people who are enterally fed feel this restricts their ability to go out, as feeding requires them to be at home and is time consuming, which impacts negatively on their quality of life<sup>4</sup>. Ned

reported having a similar attitude and experience of tube feeding and did not want to be attached to the pump for long periods during the day. It is important that the dietitian considers these patient perspectives, to establish a feeding regimen that best fits with the patient's lifestyle with a view to preserve their quality of life. By using Nutrison Concentrated, Ned met over 50% of his energy, protein and micronutrient requirements in a low volume overnight, resulting in a smaller volume of feed being required during the day which allowed him to continue with the activities he enjoyed. Patient-centred feeding regimens may be more likely to promote good compliance, resulting in positive nutritional and clinical outcomes.

### Conclusion

Ned's case demonstrates how a combined feeding regimen including Nutrison Concentrated, Fortisip Compact and Calogen Extra was successfully used to support him in meeting his nutritional requirements and achieving a healthy weight. The low volume of feed promoted good tolerance of the regimen and minimised his feeding duration, helping to reduce the impact of enteral feeding on his quality of life. This highlights the potential applications of Nutrison Concentrated, Fortisip Compact and Calogen Extra as low volume feeding jejunal feeding options and should be considered for other patients with achalasia and similar conditions, requiring home enteral feeding.

\*Fictitious name.

### References

1. Dughera L, Chiaverina M, Cacciotella, Cisarò F. Management of achalasia. *Clinical and Experimental Gastroenterology*, 2011;4:33-41.
2. Niv E, Fireman Z, Vaisman N. Post-pyloric feeding. *World Journal of Gastroenterology* 2009;21:15(11):1281-1288.
3. Stroud M, Duncan H, Nightingale J. Guidelines for enteral feeding in adult hospital patients. *Gut*, 2003;52(Supple VII):vii-viii.
4. Brotherton AM, Judd PA. Quality of life in adult enteral tube feeding patients. *Journal of Human Nutrition and Dietetics*, 2007;20(6):513-522.