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Laporan Kes/*Case Report*

Optimizing Nutritional Transition in an Older Adult with a Supraglottic Laryngeal Tumour and Tracheostomy: A Case Report

Pengoptimuman Peralihan Pemakanan dalam Warga Emas dengan Tumor Larinks Supraglotik dan Trakeostomi: Laporan Kes

ENG WENG KHEE[1], MUHAMMAD HAZRIN HUSIN[2], FATIN HANANI MAZRI[1,3*]

[1]Dietetic Program, Faculty of Health Sciences, Universiti Kebangsaan Malaysia, 50300 UKM Kuala Lumpur, Kuala Lumpur, Malaysia

[2]Department of Dietetics, University Malaya Medical Centre, 59100 Lembah Pantai, Kuala Lumpur, Malaysia

[3]Centre for Healthy Ageing and Wellness (H-Care), Faculty of Health Sciences, Universiti Kebangsaan Malaysia, 50300 UKM Kuala Lumpur, Kuala Lumpur, Malaysia

*Corresponding author; email: fatinhananimazri@ukm.edu.my

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ABSTRACT

Optimizing nutritional transition in older adult with supraglottic laryngeal tumour and tracheostomy is challenging due to dysphagia, nutritional risk, and comorbidities. An 89-year-old man with a supraglottic laryngeal tumour and tracheostomy was referred for diet optimization to transition from ryle's tube feeding to oral intake. He had diabetes, dyslipidemia, dementia, and gastroesophageal reflux disease. International Dysphagia Diet Standardisation Initiative (IDDSI) Level 5 (Minced and Moist) food and Level 0 (Thin) fluids were introduced for trial oral feeding. His weight decreased from 54.4 kg to an estimated 49 kg within 3 months. The primary goal was to reintroduce oral intake gradually while maintaining nutrition by adjusting enteral and oral feeding. Caregivers were educated on IDDSI guidelines to support safe feeding and tube weaning. This case highlights the complexities of nutritional transition in geriatric dysphagia patients, emphasizing individualized dietary strategies, close monitoring, and caregiver involvement to ensure a safe transition while minimizing aspiration and malnutrition risks.

Keywords: supraglottic laryngeal tumour, tracheostomy, transitional feeding, IDDSI, tube feeding weaning

ABSTRAK

Pengoptimuman peralihan pemakanan dalam warga emas dengan tumor laring supraglotik dan trakeostomi adalah mencabar disebabkan oleh disfagia, risiko kekurangan zat, dan komorbiditi. Seorang lelaki berusia 89 tahun dengan tumor larinks supraglotik dan trakeostomi telah dirujuk untuk pengoptimuman diet bagi peralihan daripada pemakanan tiub ryle's kepada pengambilan makanan secara oral. Beliau mempunyai diabetes, dislipidemia, demensia, dan penyakit refluks gastroesofagus. Makanan IDDSI Tahap 5 (Cincang dan Lembap) serta cecair Tahap 0 (Cair) diperkenalkan untuk percubaan pemakanan oral. Berat badannya menurun daripada 54.4 kg kepada anggaran 49 kg dalam tempoh 3 bulan. Matlamat utama adalah untuk memperkenalkan semula pengambilan makanan secara oral secara beransur-ansur sambil mengekalkan status pemakanan dengan menyesuaikan pemakanan enteral dan oral. Penjaga diterang mengenai garis panduan IDDSI bagi menyokong pemakanan yang selamat dan proses peralihan daripada pemakanan tiub. Kes ini menekankan cabaran peralihan pemakanan dalam pesakit geriatrik dengan disfagia, serta kepentingan strategi diet yang diperibadikan, pemantauan rapi, dan penglibatan penjaga bagi memastikan peralihan yang selamat serta mengurangkan risiko aspirasi dan malnutrisi.

Kata kunci: tumor larinks supraglotik, trakeostomi, peralihan pemakanan, IDDSI, proses penamatan pemakanan tiub

BACKGROUND

The supraglottis originates from the third and fourth branchial arches, while the glottis and subglottis develop from the fifth and sixth. Despite being distinct, no clear anatomical barrier separates them. Supraglottic laryngeal tumours can invade the glottis via the paraglottic space, increasing the risk of lymphogenous metastasis due to high vascularity and late symptom onset (D Hornig, J. 2024). These tumours are 30 times more common in men and linked to hypertension, smoking, and dyslipidemia (Seo et al. 2020). Symptoms are often non-specific, including dysphagia, odynophagia, hoarseness, or cough, leading to delayed diagnosis (D Hornig 2024).

A tracheostomy is often required in patients with supraglottic laryngeal tumour to bypass airway obstruction and improve ventilation (Raimonde, A.J. et. al. 2023). It involves creating a surgical opening in the trachea to facilitate breathing. On the other hand, tracheostomy can lead to complications such as dysphagia, increased aspiration risk, and altered laryngeal sensation (Suiter et al. 2003).

One of the most used methods for patients who have difficulty consuming food orally is nasogastric tube (NGT) feeding which aimed at meeting nutritional requirements. A transitional feeding is the progression from one feeding to another while ensuring that a patient continues to meet their nutritional requirements. The International Dysphagia Diet Standardisation Initiative (IDDSI) framework provides standardized guidelines for safe feeding in individuals with swallowing difficulties. In this case, the primary goal was to ensure patient safety during the transition to oral intake by modifying food textures and drink thickness according to the IDDSI framework, while also meeting the patient's nutritional requirements.

CASE PRESENTATION

The patient is an 89-year-old retired secondary school male teacher, currently staying with caregiver. The patient came on wheelchair with ryle's tube and tracheostomy in-situ during first visit. The patient was admitted to the Emergency Department six months ago following a motor vehicle accident, which resulted in right-sided 3rd to 7th rib fractures, right pneumothorax, and extensive bilateral subcutaneous emphysema. Bronchoscopy and tracheostomy were performed for prolonged ventilation. After tracheostomy placement, the patient reported difficulty swallowing, coughing, and choking on food, necessitating the use of tube feeding. At the same time, the patient was diagnosed with supraglottic laryngeal tumour and left sided vocal cord paresis via scope through right nose. The patient was referred to a dietitian and prescribed bolus feeding during hospitalization. After three months on ryle's tube feeding, a swallowing assessment conducted by a speech therapist showed improved swallowing function, allowing the initiation of an oral feeding trial. The patient was prescribed with IDDSI Food Level 5 and Fluid Level 0 by the speech therapist. Consequently, the patient was referred to the dietetic outpatient clinic for diet optimization during the transitional feeding phase.

NUTRITION CARE PROCESS

The patient weighed 54.4 kg three months ago with a BMI of 20.2 kg/m² (underweight) (Lipschitz 1994). Due to mobility limitations, weight loss was estimated at current weight of 49 kg using knee height (Chumlea et al. 1984), though discrepancies exist between methods. His lipid profile was within normal range except for slightly low HDL (0.87 mmol/L), likely due to a sedentary lifestyle. Hemoglobin levels improved (119 g/L to 155 g/L) post-MVA blood loss, while leukocytosis (10.8 x 10^9/L) indicated infection. Sodium levels stabilized (131 to 143 mmol/L), reflecting improved hydration. The HbA1c level was 5.2%, indicating good glycaemic control within the past 3 months. Meanwhile, the patient did not practise self-monitoring blood glucose (SMBG) at home. Clinically, he experienced constipation for over two weeks (Bristol Stool Chart type 2), necessitating further investigation. He required tube feeding assistance and reported the patient has swallowing difficulty but can chew well without dentures. He received medications for gastroesophageal reflux disease (GERD), dementia, dyslipidemia, and constipation, including Pantoprazole, Metoclopramide, Rivastigmine, Atorvastatin, and Lactulose.

This is the patient's first time seeing a dietitian in the outpatient setting. Upon assessment, the patient was fully on ryle's tube feeding for the past 3 months.

The full regimes are as below:

- 8.5 scoop Nutren GlucoBalance + 250 mL H2O + 80 mL flushing, 3 hourly 5 times/day at 7am, 1pm, 4pm, 7pm and 10pm
- 8 scoop Nutren Fiber + 210 mL H2O + 50 mL flushing, 1 time/day at 10am

This provides him 1585 kcal, 78.4g protein and 1910 mL H2O.

NUTRITION DIAGNOSIS

[New] Enteral nutrition administration inconsistent with needs related to physiological changes allowing return from ryle's tube feeding to oral diet [Physiologic Metabolic Etiology] as evidenced by

improved swallowing function and the patient being prescribed IDDSI Food Level 5 and Fluid Level 0 following a swallowing test.

NUTRITION INTERVENTION & RESULTS

The estimated requirements are calculated as below (Volkert et al. 2022):

Energy: 32-38kcal x 49kg (estimated body weight) = 1600-1900kcal/day
Protein: 1.2 g/kg x 64.6 kg (ideal body weight at BMI 24 kg/m2) = 77.5 g/day
Fluid: 2L/day
There were two follow-ups done after the first visit and the intervention plans were summarized in the Table 1 below:

TABLE 1 Nutrition intervention and follow-ups

<table>
<tr><th colspan="2">Dietitian First Visit</th></tr>
<tr><td colspan="2">The caregiver was introduced to the IDDSI Framework and guided on following Level 5 (Minced & Moist) food and Level 0 (Thin) fluid protocols. Ryle's tube feeding was recommended to continue alongside gradual oral intake. The IDDSI Fork Drip and Spoon Tilt Tests were demonstrated to ensure safe feeding practices.</td></tr>
<tr><td>Suggested enteral feeding regime</td><td>• 8.5 scoops Nutren GlucoBalance + 250 mL H2O + 100 mL flushing, 4 times/day (7am, 1pm, 4pm and 10pm)
• 8 scoops Nutren Fiber + 210 mL H2O + 100 mL flushing, 2 times/day (10am and 7pm)
• Energy: 1,570 kcal; Protein: 73g
• Nutren Fiber was increased to twice daily, and the flushing volume was raised to 100 mL per feeding to alleviate constipation.</td></tr>
<tr><td>Suggested oral regime</td><td>Meal Introduction & Safety
• Oral intake encouraged between tube feeding times.
• Gradual feeding: Start with ½ spoonful per feed, ensuring no food/fluid remains before next bite.
• Safety measures: Stop if coughing occurs, resume slowly 3–4 times; halt if persistent.
• Maintain upright position for 30 minutes post-feeding to prevent reflux.
Meal Plan & Nutritional Strategies
• Provided a structured meal plan (3 main meals + 2 snacks) with meal timings, cooking methods, and food examples.
• Recommended nutrient-dense meals (e.g., adding 2-3 tsp vegetable oil/margarine to porridge/soup).
• Increased protein intake (minced fish/chicken in porridge).
• Increased fiber intake (minced vegetables, crushed fruits for constipation prevention).
• Educated on low-salt meal preparation using natural herbs and spices.</td></tr>
<tr><th colspan="2">First Follow Up (1 week after initial visit via WhatsApp and phone call)</th></tr>
<tr><td colspan="2">The patient's current body weight was 49kg. Bowel movements normalized to once daily (Bristol Stool Chart type 4), resolving constipation. The patient adhered to the recommended menu plan, consuming three main meals daily and tolerating both tube and oral feeding without discomfort, choking, or aspiration. The caregiver strictly followed IDDSI guidelines, though occasional choking on plain water was noted. A detailed 24-hour dietary recall was conducted as follows:
Oral intake:
• Breakfast (8-9am): ½ of hard-boiled egg and 1 mug plain water.
• Lunch (1.30pm): 1.5 small Chinese bowl of porridge (1.5 exchange of fish, broccoli, 2 tsp of vegetable oil) and 1 bottle of chicken essence.
• Dinner (5-6pm): 2 small Chinese bowl of porridge (2 exchanges of fish, broccoli and 3 tsp of vegetable fats) and 1/2 mug plain water
• Energy: 666.5 kcal (achieved 42% from EER); Protein: 40.7g of protein (achieved 53% from requirement)
Enteral Feeding:
• 8.5 scoops Nutren GlucoBalance + 250 mL H2O + 80 mL flushing, 5 times/day (7am, 1pm, 4pm and 10pm)
• 8 scoops Nutren Fiber + 210 mL H2O + 50 mL flushing, 2 times/day (10am and 7pm)
The patient reported feeling bloated and experiencing stomach discomfort due to a sensation of fullness.</td></tr>
</table>

Adjusted enteral feeding regime	Feeding can be administered orally or via the tube based on patient preference. • 4.5 scoops Nutren Fiber + 150 mL H2O, 2 times/day (10am and 7pm) • 4.5 scoops Nutren GlucoBalance + 150 mL H2O, 1 time/day (1pm) • 8.5 scoops Nutren GlucoBalance + 150 mL H2O, 2 times/day (4pm and 10pm) • The 7:00am tube feeding was omitted to encourage better breakfast intake at 8-9.00am. • Energy: 958 kcal (58% from EER) ; Protein: 44.82 g (57% from requirement)
Adjusted oral regime	• Increased fluid intake at least 2,000 mL per day (including oral intake and tube feeding) to meet hydration needs and prevent constipation. • Encouraged to increase fruits intake. • Suggested to ease choking on plain water by sipping slowly before swallow.
Second Follow Up (3 weeks after initial visit via WhatsApp and phone call)	
The patient's appetite increases a lot and able to tolerate food well. The caregiver claimed that the patient was able to eat by himself without assistance. The usual diet recall was reported by the caregiver as below: Diet History: • Breakfast (8-9am): 1 whole egg, 1 small Chinese bowl of misua mee, 1 exchange of chicken, mashed carrots, 2 tsp of vegetable oil and 1 mug of warm water. • Morning Tea (12.00pm): 1/2 exchange of mashed papaya with 4.5 scoop Nutren GlucoBalance + 250 mL H2O • Lunch (1.30pm): 2 small Chinese bowl of porridge, 1 exchange of pork, minced broccoli and cauliflower, 2 tsp of vegetable oil and 1 bottle of chicken essence. • Afternoon Tea (5pm): 1/2 exchange of mashed banana with 4.5 scoop Nutren GlucoBalance + 250 mL H2O • Dinner (8.00pm): 2 small Chinese bowl of porridge, 2 exchanges of fish, minced carrots, 2 tsp of vegetable oil and 1 mug of warm water. The estimated total oral intake was approximately **1276.6 kcal (achieved 80% from EER)** and **64.7g (1.3g/kg/d) of protein (achieved 83% from requirement).**	
Since the patient met 80% of his energy and 83% of his protein requirements through oral intake and tolerated it well, tube feeding was discontinued. A speech therapist confirmed safe swallowing, and the patient remained on IDDSI Food Level 5 (Minced & Moist) and Fluid Level 0 (Thin). Nutren GlucoBalance and Nutren Fiber were continued as oral supplements for periods of reduced appetite. The caregiver was advised to follow the prescribed menu on sick days. The nutrition diagnosis was considered resolved following successful weaning from ryle's tube feeding and progression to a full oral diet.	

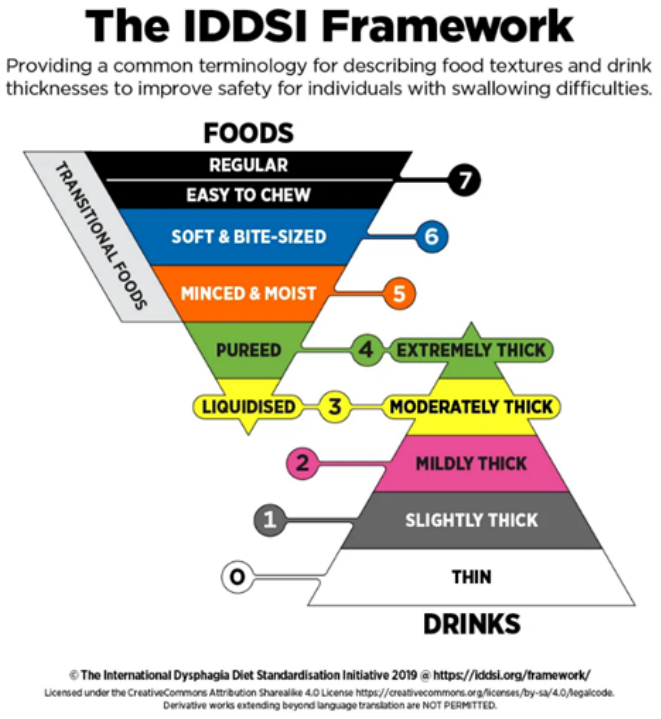

FIGURE 1 The IDDSI Framework (International Dysphagia Diet Standardisation Initiative. 2019)

DISCUSSION

Transitional feeding is the gradual shift from tube feeding to an oral diet, ensuring nutritional needs are met exclusively through oral intake. In this case, the patient had been on full ryle's tube feeding for three months and required a structured approach to transition safely. Due to swallowing difficulties, adherence to IDDSI guidelines was crucial (Figure 1). Level 5 Minced & Moist food was introduced to accommodate chewing ability, alongside the IDDSI Flow Test and Fork Drip and Spoon Tilt Tests were used to assess the safety of liquid and food texture (WAHCS 2019). Reductions in tube feeding rate were made in proportion to increased oral intake, with strategies such as pausing tube feeding 1–2 hours before and after meals to stimulate appetite and prevent overfeeding. Bolus feeding was maintained between meals and nocturnal tube feeding was encouraged to promote daytime oral intake (Mejorado, P. 2018). Oral meals were prioritized, with enteral nutrition used as a supplement until full oral intake was achieved. Close monitoring of feeding tolerance, hydration, and tube position was essential to prevent complications. The transition to oral feeding was guided by the patient's ability to meet >60% of energy requirements orally, alongside ongoing swallowing assessments conducted by a speech therapist to ensure safety and adequacy (Muscaritoli et al. 2021; Suzie Ferrie et al. 2015). The dietitian played a key role in optimizing nutritional intake, adjusting dietary plans, and educating both the patient and caregiver on safe feeding practices. Physicians monitored overall health status, addressing any medical complications that could impact nutritional intake. This coordinated effort facilitated the patient's gradual adaptation to oral intake, reduced reliance on enteral nutrition, and ultimately led to successful weaning from tube feeding.

Additionally, patient motivation and caregiver support played a significant role in the success of the nutritional transition (Tappenden et al 2013). The patient showed willingness to attempt oral intake with encouragement although experiencing choking episodes. The caregiver played an active role in ensuring proper feeding techniques, food preparation, and adherence to dietary recommendations. Frequent follow-ups addressed concerns, reinforced dietary modifications, and build confidence in managing oral feeding at home (Pollack et al 2016). As a result, the patient progressively improved oral intake tolerance, reducing dependence on enteral nutrition and ultimately achieving full weaning from tube feeding.

Dietitians play a crucial role in the management of constipation, complementing pharmacological interventions (Bellini et al 2021). In this case, the patient was prescribed an oral nutritional supplement, a fibre-rich formula, alongside dietary counselling. Appropriate sources of fibre-rich vegetables and fruits were encouraged to be incorporated into main meals and snacks, along with maintaining adequate hydration. Constipation may lead to abdominal bloating and reduced food intake, potentially compromising nutritional requirements (Huo et al 2022). Therefore, personalised dietary interventions are essential to support overall patient well-being and optimize nutritional status.

The caregiver shown positive feedback following the successful transition of the patient from ryle's tube feeding to an oral diet:

"I can see uncle enjoying his meal very much now rather than just taking the milk. He also no longer suffers from constipation or bloating. He couldn't have achieved this without your help. Thank you."

CONCLUSION

Dietitians play a crucial role in managing transitional feeding by ensuring adequate nutrition as patients shift from tube feeding to oral intake This process requires individualized dietary planning, continuous monitoring, and adjustments based on the patient's tolerance. Regular assessments of oral intake, weight changes, and feeding tolerance are essential for safely discontinuing tube feeding, with oral nutrition supplement recommended as needed, particularly during periods of reduced intake. A multidisciplinary team—including speech therapists, physicians, nurses, and dietitians—plays a vital role in optimizing the transition. Collaborative efforts ensure a structured, patient-centred approach that minimizes complications, supports nutritional adequacy, and enhances the patient's quality of life.

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REFERENCE

Bellini, M., Tonarelli, S., Barracca, F., Rettura, F., Pancetti, A., Ceccarelli, L., Ricchiuti, A., Costa, F., de Bortoli, N., Marchi, S. & Rossi, A. 2021. Chronic Constipation: Is a Nutritional Approach Reasonable? *Nutrients* 13(10):1-13.

Chumlea, W. C., Roche, A. F. & Webb, P. 1984. Body size, subcutaneous fatness and total

body fat in older adults. *International Journal of Obesity* 8(4): 311–317.

D Hornig, J. 2024. *Supraglottic Cancer: Practice Essentials, History of the Procedure*, *Epidemiology*: EMedicine.

Government of Western Australia WA Country Health Service. 2019. *Enteral Tubes and Feeding - Adults Clinical Practice Standard*: WAHCS HealthPoint.

Huo, J., Wu, L., Lv, J., Cao, H. & Gao, Q. 2022. Effect of fruit intake on functional constipation: A systematic review and meta-analysis of randomized and crossover studies. *Frontier Nutrition* 9:1-13.

International Dysphagia Diet Standardisation Initiative. 2019. IDDSI. IDDSI. https://iddsi.org/

Lipschitz, D. A. 1994. *Screening for Nutritional Status in the Elderly.* Primary Care: Clinics in Office Practice 21(1): 55–67.

Mejorado, P. 2018. *Transitioning Adults from a Tube-feeding to an Oral Feeding in Transitioning Adults from a Tube-feeding to an Oral Feeding in Long-term Care Facilities Long-term Care Facilities*. Master's thesis, The University of Texas Rio Grande Valley. ScholarWorks @ UTRGV.

Muscaritoli, M., Arends, J., Bachmann, P., Baracos, V., Barthelemy, N., Bertz, H., Bozzetti, F., Hütterer, E., Isenring, E., Kaasa, S., Krznaric, Z., Laird, B., Larsson, M., Laviano, A., Mühlebach, S., Oldervoll, L., Ravasco, P., Solheim, T. S., Strasser, F. & Schueren, M. 2021. ESPEN practical guideline: Clinical Nutrition in cancer. *Clinical Nutrition*, 40(5): 2898-2913.

Pollack, A. H., Backonja, U., Miller, A. D., Mishra, S. R., Khelifi, M., Kendall, L. & Pratt, W. 2016. "Closing the Gap." In *Proceedings of the 2016 CHI Conference on Human Factors in Computing Systems*, 577–588. New York: Association for Computing Machinery.

Raimonde, A. J., Westhoven, N. & Winters, R. 2023. "Tracheostomy." *StatPearls.* Treasure Island, FL: StatPearls Publishing

Seo, J.-H., Kim, Y.-D., Park, C.-S., Han, K. & Joo, Y.-H. 2020. Hypertension is associated with oral, laryngeal, and esophageal cancer: a nationwide population-based study. *Scientific Reports* 10(10291): 1-10.

Suiter, D. M., McCullough, G. H. & Powell, P. W. 2003. Effects of tracheostomy on swallowing: A retrospective study. *Dysphagia* 18(4):284–292.

Suzie, F., Suzie, D., Sandra, G., Jenny, H., Katja, J., Nicola, R., Amanda Storer, W. & Nazy Z.. 2015. Enteral Nutrition Manual. January 2015. https://www.scribd.com/document/392624963/Enteral-Nutrition-Manual-January-2015.

Tappenden, K. A., Quatrara, B., Parkhurst, M. L., Malone, A. M., Fanjiang, G. & Ziegler, T. R. 2013. Critical Role of Nutrition in Improving Quality of Care: An Interdisciplinary Call to Action to Address Adult Hospital Malnutrition. *Journal of the Academy of Nutrition and Dietetics* 113(9):1219–1237.

Volkert, D., Beck, A. M., Cederholm, T., Cruz-Jentoft, A., Hooper, L., Kiesswetter, E., Maggio, M., Raynaud-Simon, A., Sieber, C., Sobotka, L., van Asselt, D., Wirth, R. & Bischoff, S.C. 2022. ESPEN practical guideline: Clinical nutrition and hydration in geriatrics. *Clinical Nutrition* 41(4): 958–989.