

Comparison of Nutritional and Clinical Outcomes in Patients with Head and Neck Cancer Undergoing Chemoradiotherapy Utilizing Prophylactic versus Reactive Nutrition Support Approaches



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ABSTRACT

Background The optimal method of tube feeding for patients with head and neck cancer remains unclear. A validated protocol is available that identifies high-nutritional-risk patients who would benefit from prophylactic gastrostomy tube placement. Adherence to this protocol is ultimately determined by clinical team discretion or patient decision.

Objective The study aim was to compare outcomes after adherence and nonadherence to this validated protocol, thus comparing a prophylactic and reactive approach to nutrition support in this patient population.

Design We conducted a prospective comparative cohort study. Patients were observed during routine clinical practice over 2 years.

Participants/setting Patients with head and neck cancer having curative-intent treatment between August 2012 and July 2014 at a tertiary hospital in Queensland, Australia, were included if assessed as high nutrition risk according to the validated protocol (n=130). Patients were grouped according to protocol adherence as to whether they received prophylactic gastrostomy (PEG) per protocol recommendation (prophylactic PEG group, n=69) or not (no PEG group, n=61).

Main outcome measures Primary outcome was percentage weight change during treatment. Secondary outcomes were feeding tube use and hospital admissions.

Statistical analysis performed Fisher's exact, χ^2 , and two sample *t* tests were performed to determine differences between the groups. Linear and logistic regression were used to examine weight loss and unplanned admissions, respectively.

Results Patients were 88% male, median age was 59 years, with predominantly stage IV oropharyngeal cancer receiving definitive chemoradiotherapy. Statistically significantly less weight loss in the prophylactic PEG group (7.0% vs 9.0%; $P=0.048$) and more unplanned admissions in the no PEG group (82% vs 75%; $P=0.029$). In the no PEG group, 26 patients (43%) required a feeding tube or had $\geq 10\%$ weight loss.

Conclusions Prophylactic gastrostomy improved nutrition outcomes and reduced unplanned hospital admissions. Additional investigation of characteristics of patients with minimal weight loss or feeding tube use could help refine and improve the protocol.

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THE ROLE OF DIETARY COUNSELING IN IMPROVING nutrition outcomes for patients with head and neck cancer has been well documented,^{1,2} but the optimal management with patients requiring enteral tube feeding remains unclear, and so no firm recommendations can be made.^{1,3} The debate in the literature continues as to whether patients with head and neck cancer should have a nasogastric tube or gastrostomy tube^{4,5} and the optimal timing of gastrostomy placement.^{6,7} Enteral feeding tubes can

either be placed before the commencement of treatment in anticipation of the need for tube feeding later on (prophylactic) or they can be placed during treatment when deemed required (reactive). Studies comparing prophylactic vs reactive gastrostomy tube placement have mixed findings, with some reporting less weight loss and fewer unplanned admissions,^{8,9} and others reporting no difference in nutrition outcomes, disease control, or survival.^{10,11} However, rates of weight loss despite prophylactic gastrostomy placement

were still clinically significant, with approximately 10% weight loss or more at 3 months posttreatment^{9,12} and at 6 months posttreatment.^{10,11} The detrimental impact of malnutrition is well documented in terms of increased complications and health care costs in surgical patients.¹³ The impact of poor nutrition outcomes has also recently been shown to have a significant prognostic effect on reducing survival outcomes for patients with head and neck cancer receiving radiotherapy¹⁴ and reducing their quality of life,¹⁵ and thus is a key outcome measure to consider.

A validated protocol has been developed in Australia¹⁶ to identify patients who would benefit from gastrostomy insertion before treatment (Figure 1) and form part of the local hospital's procedure on the "Swallowing and Nutrition Management Guidelines for Patients with Head and Neck Cancer." The published protocol has been included as part of internationally endorsed dietetics guidelines on the nutritional management of patients with head and neck cancer.¹⁸ The true extent of protocol implementation is unknown; however, the literature continues to report the approach to prophylactic gastrostomy selection remains varied between hospitals in Australia¹⁹ and worldwide.²⁰⁻²² The protocol uses clinical information at diagnosis based on tumor site and treatment plan and

nutritional status to determine the patients' future nutrition risk rating and pathway of care. Patients classified as high risk are recommended for prophylactic gastrostomy placement and all other patients are managed reactively, as required. This protocol has shown a number of positive outcomes, with reduced unplanned admissions and length of stay,²³ improved nutrition outcomes with protocol adherence,¹² and no detrimental impact on swallowing function.²⁴ After local implementation at the tertiary hospital where the protocol was developed, initial adherence to the recommendation of prophylactic gastrostomy placement for high-risk patients was 75% in 2008,²⁵ which improved to 89% in 2010¹⁶; however, since then, it has fallen to 60% in 2015 (T. E. Brown, A. Chan, K. Dwyer, et al, unpublished data, October 2016). This decline appeared to coincide with the introduction of helical intensity-modulated radiotherapy at this hospital site in 2010. The reason for the health care teams' decline in adherence to this recommendation has been based on the premise that helical intensity-modulated radiotherapy has improved dose reduction for organs at risk,²⁶ therefore reducing radiotherapy toxicities and potential nutrition impact symptoms, which may imply aggressive nutrition support via a gastrostomy might no longer be required. However,

Royal Brisbane & Women's Hospital:
**Swallowing and Nutrition Management Guidelines
 for Patients with Head and Neck Cancer**

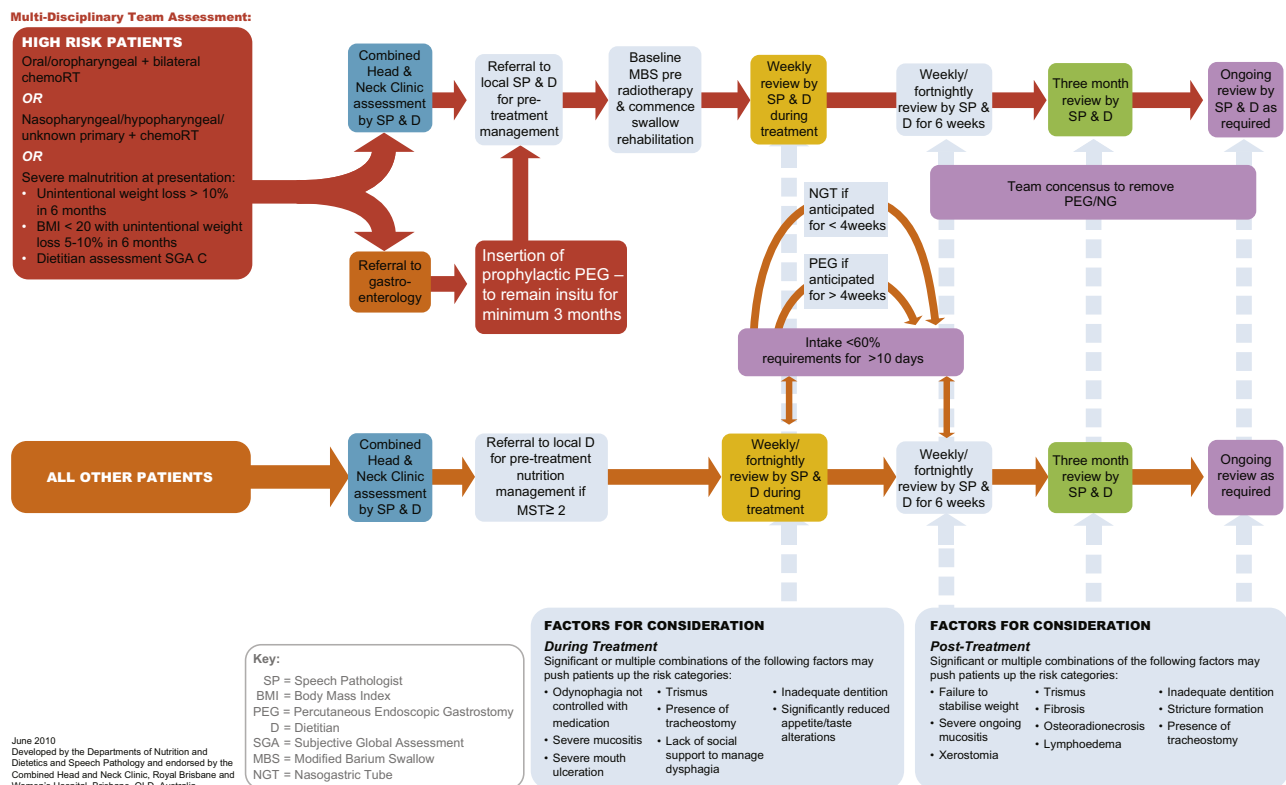


Figure 1. The Royal Brisbane and Women's Hospital Swallowing and Nutrition Management Guidelines for Patients with Head and Neck Cancer—Revised August 2010. (Republished with permission of John Wiley and Sons Inc, from: Improving guideline sensitivity and specificity for the identification of proactive gastrostomy placement in patients with head and neck cancer; Brown T, Crombie J, Spurgin A, et al; *Head & Neck*, volume 38, suppl 1, 2016¹⁷; permission conveyed through Copyright Clearance Center, Inc.)

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