Developing a protocol for gastrostomy tube insertion in patients diagnosed with head and neck cancer

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Selecting patients with head and neck cancer requiring a pretreatment gastrostomy feeding tube is not straightforward. The nutritional status and functional deficits associated with the cancer, its treatment, and the long-term side effects predicate the need for gastrostomy tube placement. However, gastrostomy tubes are not without morbidity and are an added burden to the patient. The aim of this retrospective case series review was to evaluate the clinical characteristics of newly diagnosed patients with head and neck cancer treated with curative intent having gastrostomy placement, with the intent of developing a protocol to help with the timely selection of patients for pretreatment gastrostomy insertion. A gastrostomy tube was placed in 32%. A regression model identified 5 independent predictors ($P < .001$) to predict gastrostomy tube placement: overall clinical stage, tumor site, clinical T stage, patient age, and clinical N stage. A protocol to help the multidisciplinary team to decide whether a pretreatment gastrostomy tube should be placed is suggested. (Oral Surg Oral Med Oral Pathol Oral Radiol 2014;117:551-559)

The incidence of head and neck (H&N) cancer is rising in England.[1] There is evidence of improved survival[2] but also recognition of the late effects of treatment and its effect on function and health-related quality of life (HRQOL).[3] Treatment of H&N cancer is associated with significant morbidity and malnutrition due to swallowing difficulties.[4-10] A subgroup of patients will require dietary supplementation to meet nutritional requirements. The gastrostomy tube is a well-established method of providing nutrition in patients who are unable to maintain nutritional requirements via the oral route. Feeding gastrostomy tubes can be inserted percutaneously under direct vision using an endoscope (known as percutaneous endoscopic gastrostomy [PEG]), under radiologic guidance (called radiologically inserted gastrostomy [RIG]), or using a conventional open or laparoscopic surgical approach. PEG is the most commonly employed technique, owing to fewer complications.[11] A significant number of these tubes are placed prophylactically (i.e., before the start of treatment in anticipation of swallowing difficulties faced during or after treatment). The length of time during which patients are dependent on gastrostomy tubes ranges up to 7.1 months, with a median of 21 weeks.[12,13] A cross-sectional study by Cheng et al.[14] that included 98 patients reported that the prevalence of gastrostomy tube was 30% at 1 month and 8% at 3 years. The percentage of patients with long-term dependence on gastrostomy feeding varies across studies according to subgroups and can be as high as 41% at 12 months and 17% at 48 months in patients undergoing intense chemoradiotherapy.[15]

The role of nutritional supplementation via tube feeding is well established in patients undergoing treatment of H&N cancer, especially if their treatment plan includes the use of chemoradiation.[16,17] This can be achieved with nasogastric or gastrostomy tubes. There is a consensus for using a gastrostomy tube if nutritional supplementation is likely to last more than 4 weeks.[18] But it is not clear whether the gastrostomy tubes should be prophylactic (i.e., placement before the start of treatment) or reactive (i.e., placement if patients develop swallowing dysfunction during the course of treatment). Various single-center retrospective analyses and case note reviews have described benefits of prophylactic gastrostomy tubes and recommended their use in all patients undergoing chemoradiotherapy,[19-21] whereas others have argued against such practice because it leads to long-term dependence on tube feeding in addition to other complications.[17,22-24] A retrospective study determined that a significant number of patients (47%) never used their PEG or used it for less than 2 weeks, although the results need to be viewed with caution because usage data were not available for one-third of patients.[25] In addition, gastrostomy feeding

Statement of Clinical Relevance

A retrospective analysis of gastrostomy tube insertion in patients with head and neck cancer was performed with a view to developing a protocol. Statistically significant factors form the basis of the suggested protocol. Gastrostomy usage, complications, and quality of life are reported.

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does not improve survival and is associated with poorer quality of life (QOL).[26-28] One retrospective analysis concluded that clinical judgment appears to be sufficient for deciding which patients will benefit from prophylactic tube placement.[29] In another review of practice in cases where PEG tubes were not placed prophylactically, 18% of patients without recurrent disease at 6 months and 6% of those without recurrent disease at 1 year were dependent on PEG tubes.[30] Recently published guidelines suggest intensive patient follow-up and prophylactic feeding tube insertion should be seriously considered for individuals initially presenting with 1 or more of the following symptoms: significant weight loss (more than 5% in 1 month or more than 10% in 6 months), body mass index (BMI) below 18.5, dysphagia, anorexia, dehydration, pain, or any other symptom that interferes with the ability to eat.[31]

A comprehensive review of multiple studies and a systematic review of available evidence concluded that current evidence is insufficient to make a definitive recommendation for prophylactic gastrostomy tube insertions and that further studies are necessary to determine the effect of such practices on tumor control and patient survival. Such studies are also necessary to assess the effect of timing of PEG insertion on the long-term outcomes of PEG tube dependence and eating ability.[32,33] A web-based survey at a tertiary referral center in England concluded that there is no national consensus on which patients to recommend for gastrostomy and that consideration should be given to the development of clinical decision-making models in an attempt to systematize the decision-making process.[34] Hence, the aim of this case note review was to evaluate what proportion of newly diagnosed patients with H&N cancer treated with curative intent at Aintree University Hospital had gastrostomy placement over a period of 5 years between 2005 and 2009. We have analyzed the proportion and duration of prophylactic gastrostomy tubes that were used for feeding after initiation of treatment or that continued to be used at discharge from the hospital after surgery. We also aimed to report the clinical characteristics, timing, and complications, with the purpose of informing discussions on the development of a protocol to help with the timely selection of patients for prophylactic gastrostomy tube insertion.

METHODS

A retrospective case series review of 947 patients treated for primary H&N squamous cell carcinoma between 2005 and 2009 at University Hospital Aintree was performed. Patients with cutaneous and salivary gland malignancy, those treated with palliative intent, and those living overseas were excluded. Mortality status was tracked via the Office for National Statistics.

Table I. Characteristics of patients having prophylactic and reactive gastrostomy tubes

	Prophylactic GT (N = 224)	*Reactive GT (N = 65)*	P*
Gender			
Male	72% (162)	91% (59)	.001
Age (y)			.10
<55	33% (74)	32% (21)	
55-69	41% (92)	29% (19)	
70+	26% (58)	38% (25)	
Primary treatment			
Surgery and RT	40% (90)	52% (34)	<.001
Surgery alone	18% (41)	37% (24)	
Chemo/RT alone	42% (93)	11% (7)	
Free flap (if surgery)			
No free flap	35% (46)	54% (35)	.005
Soft	46% (60)	23% (15)	
Composite	19% (25)	12% (8)	
T stage			
T3/T4	62% (137/222)	35% (23/65)	.02
N stage			
N1+	43% (97/223)	45% (29/65)	.89
Overall clinical stage			
3-4	83% (186)	72% (47)	.08
Tumor location			
Oral	26% (59)	35% (23)	.005
Pharyngeal	50% (113)	31% (20)	
Laryngeal	12% (27)	26% (17)	
Other H&N	11% (25)	8% (5)	
Specialty			
MFU	46% (102)	43% (28)	.78
ENT	54% (122)	57% (37)	
Year diagnosed			
2005-2006	41% (92)	34% (22)	.18
2007-2008	37% (82)	32% (21)	
2009	22% (50)	34% (22)	

GT, gastrostomy tube; *MFU*, Aintree Maxillo Facial Unit; *ENT*, Aintree Ear Nose & Throat Department; *RT*, radiotherapy; *H&N*, head and neck.
*Fisher exact test for gender and specialty; otherwise, χ^2 test.

Clinical data from the H&N cancer database at the time of primary cancer treatment were supplemented with dietetic and archive records. Patient weight (kg), BMI, albumin (g/L), PEG or RIG placement, and dietitian input were recorded. Questions about feeding tubes formed part of the annual postal survey of H&N cancer survivors in 2012. It included questions regarding feeding tubes ever placed, tubes currently in situ, the timing of removal, and the frequency of use to supplement food/nutrition. We recorded the immediate and late complications associated with gastrostomy tube insertion.

The University of Washington Quality of Life Questionnaire (UWQOL) version 4 is well established.[35] For this study, the UWQOL was analyzed in terms of its 2 subscale composite scores, "physical function" and "social-emotional function," and a single 6-point "overall" QOL measure. Physical function is the simple average of the swallowing, chewing, speech,