

Indications for Gastrostomy Tube Placement in Oral Cancer Patients Undergoing Resection with Immediate Free Flap Reconstruction.



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Introduction

Oral cancer treatment often includes aggressive surgical resection with free flap-based reconstruction with or without chemotherapy and radiation. Many of these patients will require a gastrostomy tube (G-tube) during the course of treatment, but predicting who remains challenging. While some patients undergo G-tube placement preoperatively, in others the need for a G-tube is not determined until the patient has failed swallow evaluation or failed-to-thrive postoperatively. This study aims to identify potential predictors of G-tube placement among patients undergoing head and neck cancer resection with free flap-based reconstruction to guide clinical decision-making.

Methods

Retrospective Chart Review

Inclusion: Patients that underwent resection with immediate free flap-based reconstruction at DHMC between 2011 – 2019

*Exclusion: Tumors not involving the oral cavity or oropharynx, non-free flap (pedicled) or delayed reconstruction, and mortality within 7 days of surgery

Patient Demographics & Co-Morbidities

- Age
- BMI
- ASA Class
- Hx of Diabetes and/or CAD/PVD
- Current Tobacco and/or EtOH Use

Tumor Characteristics & Prior Treatment

- Site
- Stage (TNM, AJCC)
- Grade
- Radiation
- Chemotherapy
- Surgery

Pre-Operative Indicators

- Nutrition Assessment
- Palliative Care Consult
- Weight Loss, Dysphagia, Malnutrition
- Albumin/Pre-albumin Values

Surgical Treatment

- Operating Resection & Reconstruction Surgeon
- Type of Resection
- Type of Reconstruction
- Tracheostomy
- Surgical Complications

Inpatient Course

- Speech Pathology Consult (Timing & Diet Recommendations)

Gastrostomy Tube

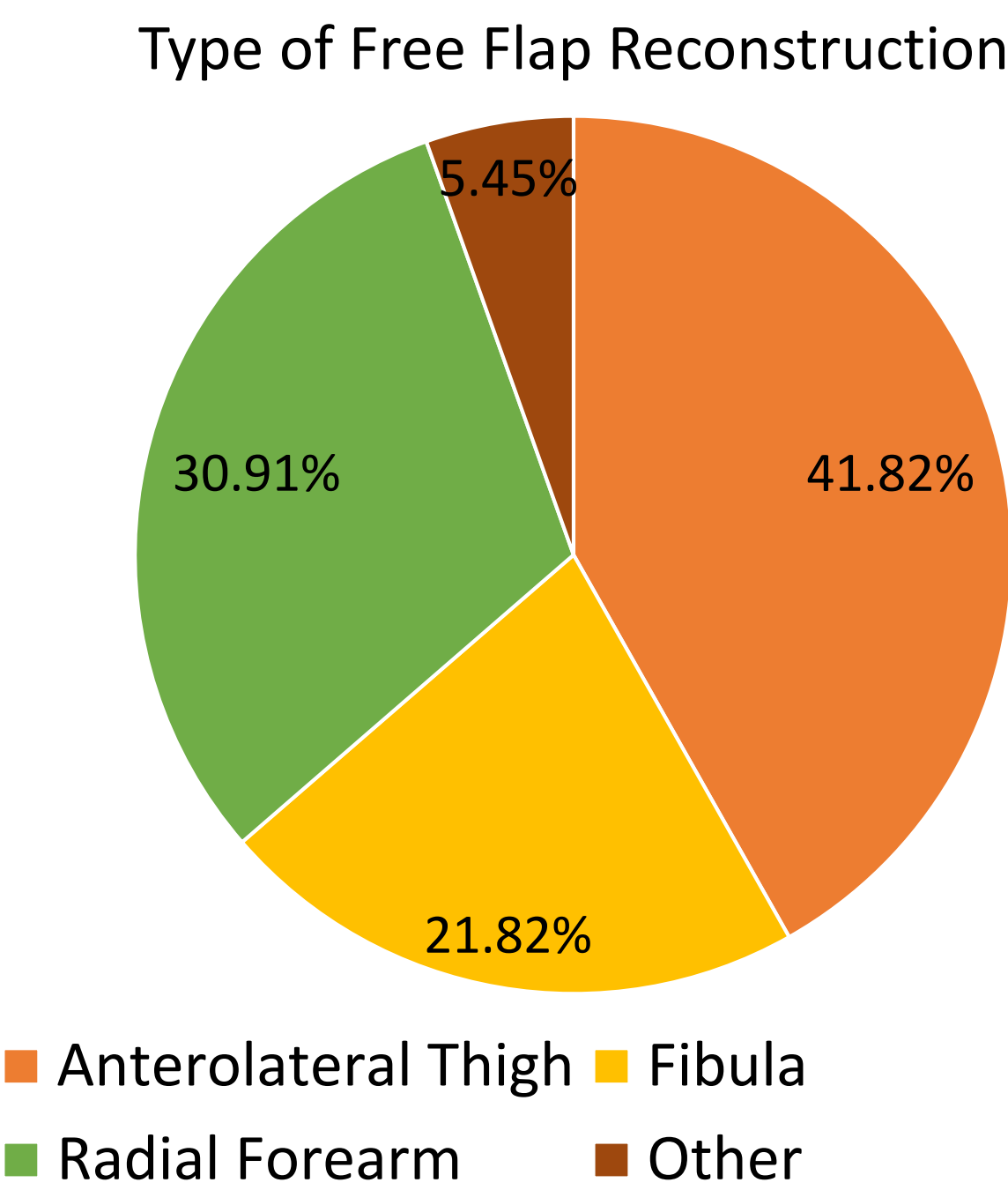
- Pre-operative vs. Post-operative placement
- Service Consulted
- Complications

Univariate analysis with logistic regression models on each of the predictors were performed followed by selection of the best multivariable model using LASSO penalized hierarchical Bayesian logistic regression model. Remaining predictors after LASSO were fit using a hierarchical Bayesian model without LASSO penalty and accounting for resection and reconstruction surgeon. Univariate analysis we reported p-values while for multivariate models we report odd ratios and confidence intervals to denote significance.

Results

- 108 patients were included (mean age 60 years).
- Most common primary tumor location was oral cavity (76.36%), followed by oropharynx (10.00%)
- Forty-six patients (41.82%) had T4 tumors.
- Majority of patients (82.73%) did not undergo formal preoperative nutrition assessment

- Forty-eight (44.44%) had dysphagia pre-operatively; 17 (35.41%) of these patients underwent preoperative G-tube placement, while 21 (43.75%) required a G-tube postoperatively
- Thirty-six patients experienced weight loss preoperatively and 12 underwent preoperative G-tube placement, while 16 required one postoperatively



Sixty-nine patients (63.88%) required a G-tube pre- or post-operatively, with 72.46% of these patients undergoing postoperative placement. Eighty-seven (79.09%) patients required tracheostomy.

Factors Associated with G-tube Placement

Univariate Analysis

- BMI ≥ 30 ($p=0.022$; $p_{adj}=0.173$)
- Nodal Stage > N1 ($p=0.018$; $p_{adj}=0.168$)
- Subtotal/Total Glossectomy ($p=0.012$; $p_{adj}=0.168$)
- Tracheostomy ($p=0.000$; $p_{adj}=0.001$)

Multivariate Analysis

- Tracheostomy (OR: 78.565; [CI: 7.948 – 1349.497])
- Anterolateral Thigh (OR: 16.340; [CI: 1.060 – 483.185])
- Age ≥ 65 (OR: 9.323; [CI: 1.570 – 81.963])

Factors Associated with Lack of G-tube Placement

Univariate Analysis

- Prior Treatment – Surgery ($p=0.034$; $p_{adj}=0.228$)
- Maxillectomy ($p=0.015$; $p_{adj}=0.168$)
- Radial Forearm ($p=0.048$; $p_{adj}=0.282$)

Multivariate Analysis

- Maxillectomy (OR: 0.001; [CI: 0.000 – 0.087])
- Neopharynx Resection (OR: 0.003; [CI: 0.000 – 0.479])

Results

Among all G-tube patients, 7 patients (10.14%) experienced a G tube-related complication.

- Malfunction (n=1)
- Dislodged (n=4)
- Other (n=3)

Only 1 patient required operative management

Discussion

Malnutrition or failure-to-thrive is a concern in patients with oral cancer undergoing resection with immediate free flap reconstruction. Gastrostomy tubes are not without risk and determining who requires a pre- or post-operative G-tube remains a clinical dilemma.

Our analysis suggests factors that are significantly associated with placement of a G-tube include patients undergoing a subtotal/total glossectomy, tracheostomy placement, and/or anterolateral thigh reconstruction. Patients with preoperative dysphagia or weight loss are also likely to require a G-tube. On the other hand, patients undergoing a maxillectomy and/or radial forearm reconstruction are associated with lack of G-tube placement.

Limitations to the study include heterogeneous data, potential confounders, small sample size, and retrospective methodology.

Future Directions

Additional research to develop a clinical decision-making algorithm is underway. Future research will guide a multi-disciplinary perioperative pathway with nutritionists, speech therapists, and palliative care clinicians.

Contact

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