Continuing Trends In Awake Tracheotomy Airway Intervention

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Abstract

Objectives: (1) Understand patient and disease characteristics that necessitate urgent surgical airway intervention. (2) Learn which of these factors are predictive of decannulation.

Methods: Here we expand on previously reported trends in urgent surgical airway intervention performed at our affiliated county hospital. The inpatient and outpatient charts of patients who underwent awake tracheotomy from October 2003 to October 2005 were reviewed and the data was combined with previously published data spanning from August 2000 to September 2003. Statistical analysis included Fisher's exact probability, Chi-squared, and T-tests.

Results: Of 137 total patients with obtainable medical records who underwent awake tracheotomy, 114 (83.2%) required this intervention for underlying malignancy, 94.0% of which was squamous cell carcinoma. Other indications included deep space neck infection (4.4%), benign laryngeal mass (3.6%), subglottic stenosis (2.9%), inflammatory conditions (2.9%), and a variety of other etiologies. Of patients with adequate follow-up, 77.2% without underlying malignancy were successfully decannulated, while only 12.1% with malignant etiology could be decannulated, which was significant by Fisher’s exact test (p=0.000001). In addition, the mean time to decannulation was significantly shorter in patients with benign disease at 34.5 days versus 184.6 days in those with malignancy (T test p=0.00017). Location of squamous cell carcinoma did not correlate with decannulation rate (Chi-squared p=0.58). In addition, treatment involving radiation therapy did not change the likelihood of decannulation (Fishar’s exact test p=0.66). Of 65 patients who underwent radiation therapy with or without chemotherapy for treatment of their squamous cell carcinoma, 89.2% remained tracheotomy dependent. A total of 11 complications occurred with no long-term sequelae resulting.

Introduction

Appropriate and timely management of the emergent airway present a challenge to all medical personnel. Otolaryngologists are frequently called upon to assist in managing such situations, requiring cooperation with specialists in other fields, including anesthesia and emergency medicine. Accurate and timely diagnosis is crucial, but is not always straightforward as many patients present without dyspnea and stridor. It is generally accepted that the compromised airway should be secured while the patient is awake. Our previous study reinforced the appropriateness and safety of awake tracheotomy in managing any patient with impending airway obstruction.1 Here we expand on our previous study, focusing more on outcome and data from our institutional population, patients presenting with malignancy causing airway obstruction have a poor prognosis for decannulation regardless of stage at the time of presentation and treatment modality. The majority of patients requiring awake tracheotomy who then undergo organ-preservation treatment for squamous cell carcinoma did not become decannulated due to aspiration, edema or airway stenosis. However, awake tracheotomy is a safe and effective method of securing the airway with a low complication rate, and should be considered in any patient with impending airway obstruction.

Methods and Materials

A retrospective review was performed on all inpatient and outpatient charts of patients who underwent awake tracheotomy at our institutional-affiliated county hospital, John H. Stroger Jr. Hospital of Cook County, from October 2003 to October 2005 and the data was combined with previously published data spanning from August 2000 to September 2003. The project was granted exempt status by the Human Subjects Committee of the Institutional Review Board, and as well as by HIPAA. Subjects were identified by number and data was recorded in spreadsheet format, including demographic information, presenting symptoms, findings, urgency, cause of airway obstruction, treatment interventions, and long-term outcome. Statistical analysis included Fisher’s exact probability, Chi-squared, and T-tests.

Results

Of 137 patients who underwent awake tracheotomy 83.2% required this procedure for underlying malignancy, 94.0% of which was squamous cell carcinoma. Other indications are listed in Chart 1. As a whole, patients presented most commonly with dysphagia (75.2%), followed by hoarseness (61.3%) and dyspnea (51.1%). Of patients with adequate follow-up, 77.2% without underlying malignancy were successfully decannulated, while only 12.1% with malignant etiology could be decannulated, which was significant by Fisher’s exact test (p=0.000001). The mean time to decannulation was significantly shorter in patients with benign disease at 34.5 days versus 184.6 days in those with malignancy (T test p=0.00017). Location of squamous cell carcinoma did not correlate with decannulation rate (Chi-squared p=0.58). In addition, treatment involving radiation therapy did not change the likelihood of decannulation (Fishar’s exact test p=0.66). Of 65 patients who underwent radiation therapy with or without chemotherapy for treatment of their squamous cell carcinoma, 89.2% remained tracheotomy dependent. A total of 11 complications occurred with no long-term sequelae resulting.

Conclusions

These data represent a distinctive population seen at our institutional-affiliated county hospital in that the vast majority of patients with acute airway obstruction requiring awake tracheotomy present with an underlying malignancy. This is in contrast to the recent retrospective study by Yuan et al in which 70% of awake tracheotomies were performed for benign disease.2 This difference may be due to variation in referral patterns. In our population, patients presenting with malignancy causing airway obstruction have a poor prognosis for decannulation regardless of stage at the time of presentation and treatment modality. The majority of patients requiring awake tracheotomy who then undergo organ-preservation treatment for squamous cell carcinoma did not become decannulated due to aspiration, edema or airway stenosis. However, awake tracheotomy is a safe and effective method of securing the airway with a low complication rate, and should be considered in any patient with impending airway obstruction.

Bibliography