

# Upfront Tracheostomy for Laryngeal Cancer Affords Worse Survival Than Endoscopic Debulking Despite Similar Tumor Burden

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## Introduction

Advanced laryngeal squamous cell carcinoma (LSCC) is a devastating disease. Patients diagnosed with advanced disease typically require surgical intervention to allow for stabilization of their airway prior to definitive chemoradiotherapy (CRT) strategies<sup>1</sup>. At the University of Chicago, there is excellent overall survival in patients who have received definitive CRT for large-volume advanced disease. However, prior work has demonstrated that Upfront Tracheostomy (UT) yields worse overall and disease-specific survival in this group when compared to a similar cohort that has undergone Endoscopic Debulking (ED) to address a partially or totally obstructed airway<sup>2</sup>. The reasons for this and the characteristics of tumor burden between the two cohorts have not been previously delineated. We hypothesize that this finding persists when controlling for tumor size and seek to identify if the difference in survival is reflected in the late-term effects of CRT and UT as determined through the lens of dysphagia.

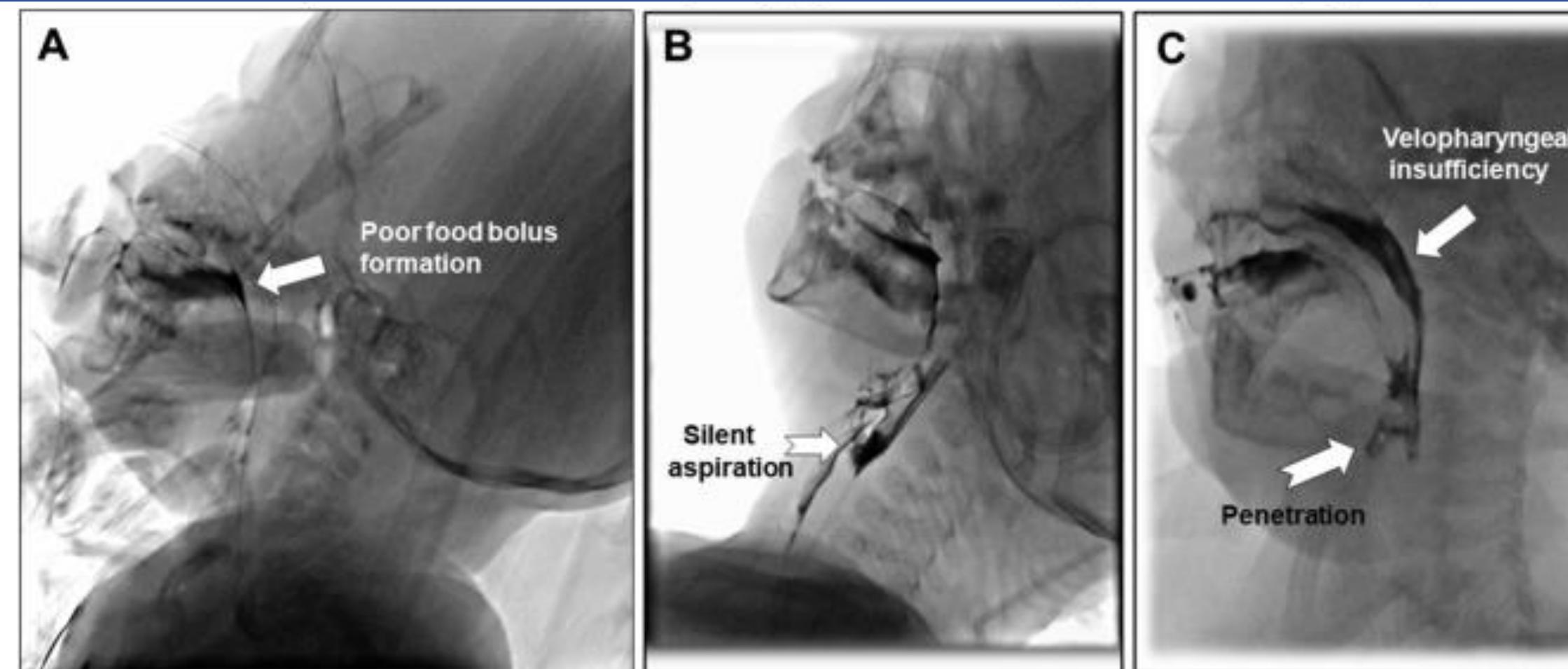


Figure 1. Representative VFSS showing aspiration and penetration<sup>3</sup>

## Methods and Materials

This project is a retrospective review of the UCMC institutional records of 48 patients diagnosed with T4 LSCC from 2009 to 2019 who received either CRT alone, CRT following UT, or CRT following ED. Patients were stratified based on maximum tumor length. Patients received pre- and post-CRT Video Fluoroscopic Swallow Studies (VFSS), with metrics including Laryngeal Vestibule Closure, Hyolaryngeal Movement, Aspiration, and Penetration evaluated over time. Descriptive statistics and logistic regression were run to determine significant differences between CRT, UT, and Debulking groups.

	White Pts	Black Pts	Overall	P-value
Average greatest tumor length (cm)	3.62	3.31	3.52	0.272

Table 1. Tumor burden (cm) by race

## Results

Previously presented data showed that patients receiving UT from 2010-2019 had decreased overall survival (aHR=5.5 [1.7-18.1];  $p=0.005$ ) and Laryngectomy-Free Survival (aHR = 7.2 [2.0-25.2];  $p=0.002$ ) compared to those who received ED<sup>2</sup>. Regarding late-term sequelae of CRT - In total, 8 cases in our cohort received CRT alone, 13 received ED, and 27 received UT (n=48).

## Results (cont.)

No significant difference was discovered between these groups in terms of tumor size ( $p=0.272$ ), though Black patients were more likely to undergo UT than ED ( $p=0.03$ ). In evaluating VFSSs before and thereafter, no significant difference in Aspiration ( $p=0.408$ ), Penetration ( $p=0.420$ ), or Hyolaryngeal Movement ( $p=0.420$ ) were found between treatment groups despite similar tumor burden.

	CRT	UT	ED	All
# White Patients (% of cohort)	7 (20.6%)	15 (44.1%)	12 (35.3%)	34 (100%)
# Black Patients (% of cohort)	1 (7.1%)	12 (85.6%)	1 (7.1%)	14 (100%)

Table 2. Treatment strategy by race ( $p=0.03$ )

## Conclusions

Upfront tracheostomy is associated with poor 5-year survival and disease-specific survival as previously shown. This was not due to difference in tumor size between the cohorts based on mean greatest tumor lengths. Additionally, difference in survival amongst groups were not associated with more significant dysphagia/aspiration before and/or after definitive Chemoradiation Treatment. More work is necessary to determine why patients who undergo Endoscopic Debulking have a survival benefit.

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