

Induction Chemoselection for Patients with Advanced Laryngeal Squamous Cell Carcinoma: An Update

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Abstract

Objective: To investigate the impact of induction chemoselection protocols in patients with T4 laryngeal squamous cell carcinoma (LSCC) as an organ preservation alternative to total laryngectomy.

Methods: A single institution retrospective review of patients with T4 LSCC was performed between October 1995 and June 2018. Patients were treated with one cycle of 5-fluorouracil (P+5FU) and either cisplatin or carboplatin and then assessed for response 2 weeks later. Patients who achieved >50% response as determined by radiographic review or endoscopic evaluation received definitive chemoradiation (70Gy with concurrent cisplatin or carboplatin). Patients who had ≤50% response after IC underwent total laryngectomy (TL) followed by pathologic directed adjuvant therapy. Overall survival (OS), laryngectomy-free survival (LFS) and laryngeal preservation (LP) were analyzed. All statistics were performed using SAS 9.4 (SAS Institute, Cary, NC).

Results: A total of 83 patients met inclusion criteria. Among all patients undergoing IC, the average age was 59.1 years (SD 10.0 years) and BMI was 26.9 (SD 5.9). The majority were male (78.3%) and Caucasian (95%). The primary tumor subsite was supraglottic (57.3%), followed by the glottic (26.8%) and transglottic (9.8%). On average, patients had a 46.3 pack year (SD 27.3 pack year) smoking history. In total 64 patients had >50% response following IC and underwent definitive chemoradiation treatment with a laryngeal preservation rate of 62.7% at 5-years. The 5-year OS for this cohort was 57.21% with a LFS of 31.92% and a laryngeal preservation of 59.50%.

Conclusions: Induction chemoselection may serve as a feasible strategy for organ preservation in patients with T4 SCC of the larynx.

Introduction

Methods to improve laryngeal preservation and optimize outcomes in patients with advanced laryngeal squamous cell carcinoma have been investigated through multiple high-level clinical trials. However, most advocate for total laryngectomy in patients with T4a disease. Induction chemoselection (IC) protocols have shown promise as a feasible organ preservation alternative in this patient population. Herein we report an updated institutional experience for IC in patients with T4a LSCC.

Methods

- A single institution review of 83 patients with T4 SCC of the larynx
- Patients were treated upfront with one cycle of P+5FU with either cisplatin or carboplatin
- Patient’s with >50% response as determined by radiology review of endoscopic evaluation received chemoradiation (70Gy with concurrent cisplatin or carboplatin) followed by adjuvant P+5FU
- Non-responders (≤50%) underwent total laryngectomy followed by post-operative radiation
- Overall survival, laryngectomy-free survival, and laryngeal preservation estimates were obtained using Kaplan-Meier statistics

Results

Patient Variables	Patients, No. (%)
Age	59.1 ± 10.0
Gender	
Male	65 (78.3%)
Female	18 (21.7%)
Race	
White	75 (95%)
Non-white	4 (5%)
Site	
Epiglottic	4 (4.9%)
Glottic	22 (26.8%)
Subglottic	1 (1.2%)
Supraglottic	47 (57.3%)
Transglottic	8 (9.8%)
Smoking status	
Never	2 (2.4%)
Former	18 (21.7%)
Current	63 (75.9%)
Pack Years	46.27 ± 27.3
BMI	26.91 ± 5.9

Table 1: Demographic and Disease Characteristics of T4 laryngeal squamous cell carcinoma patients.

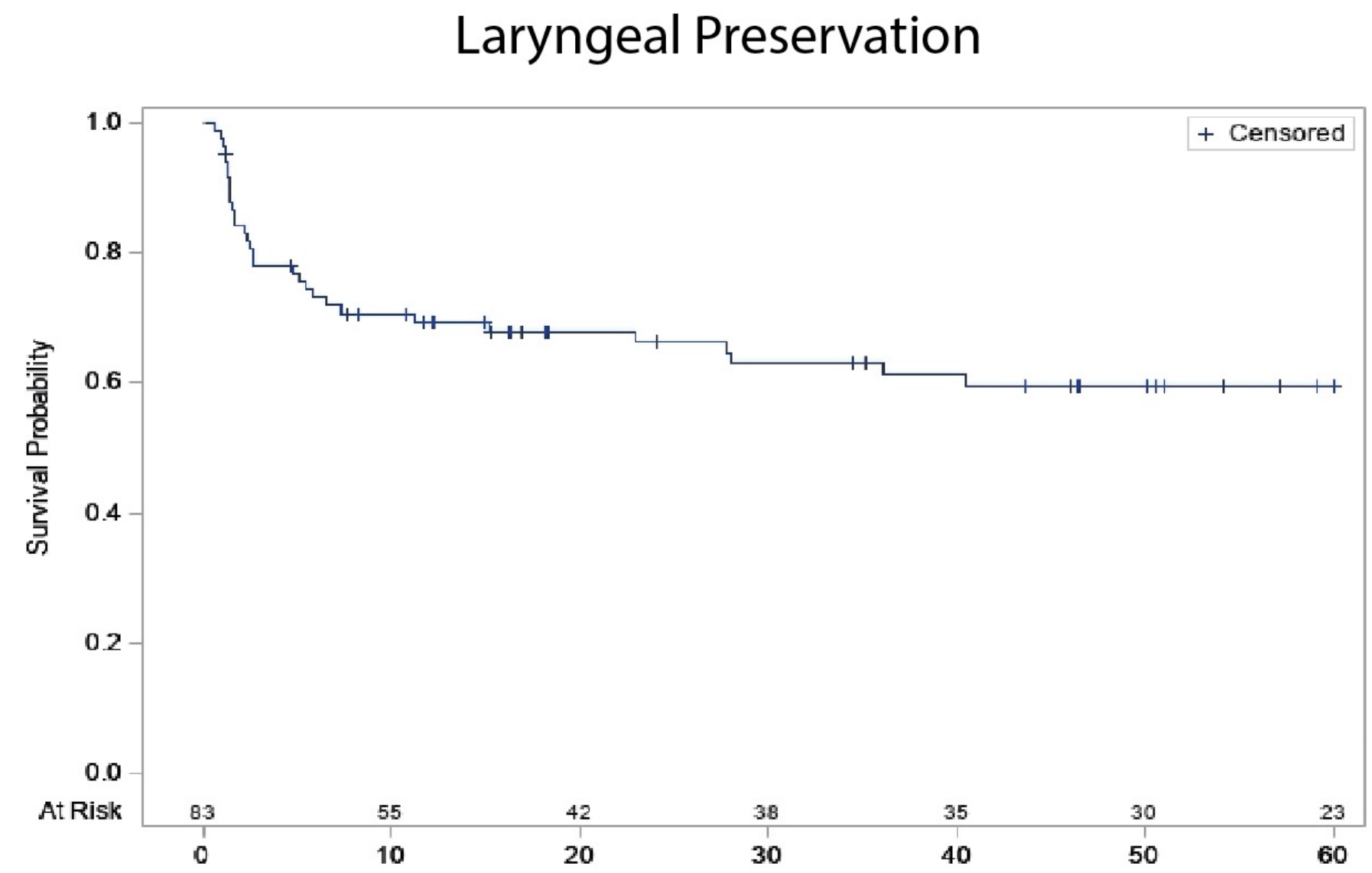
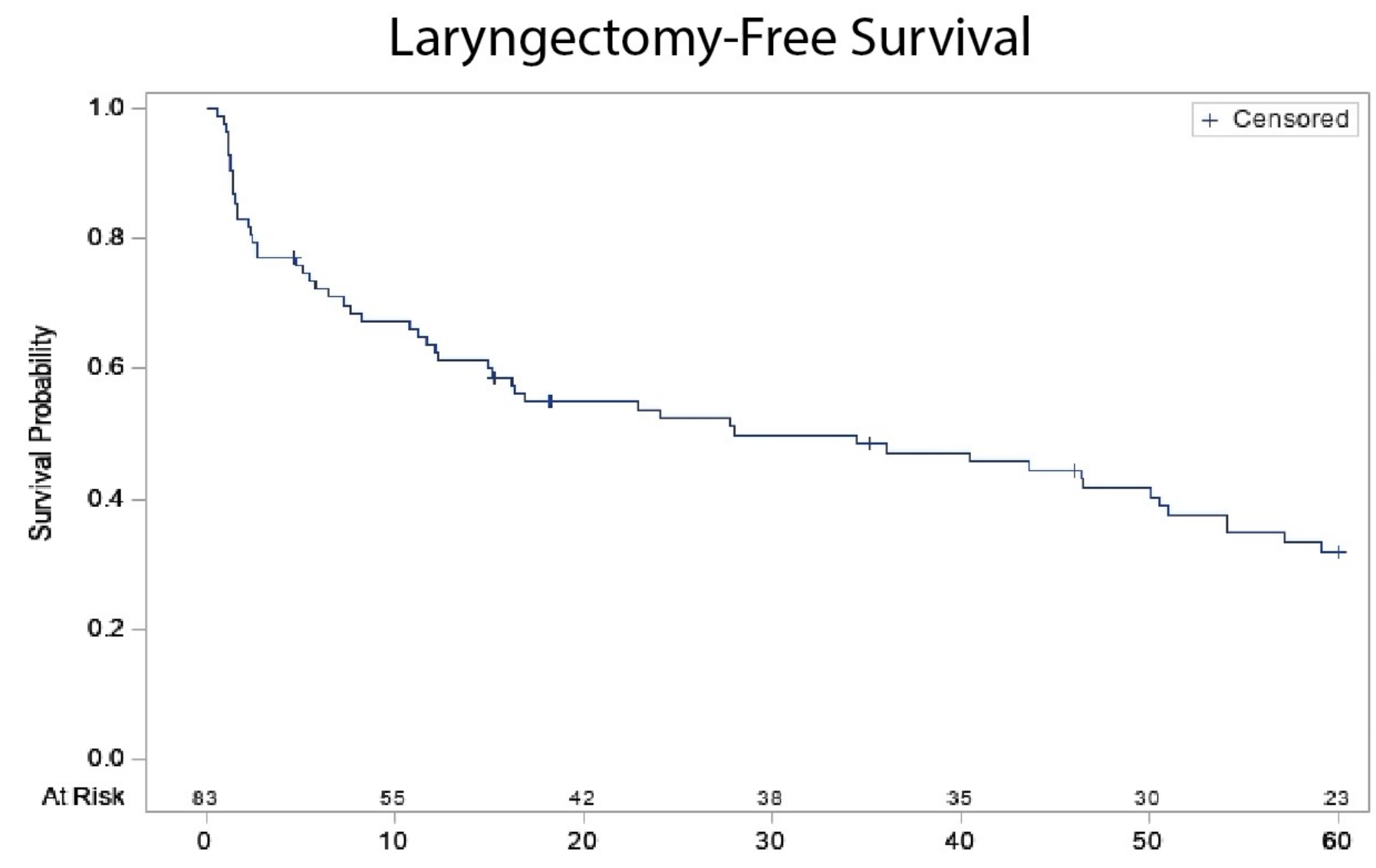
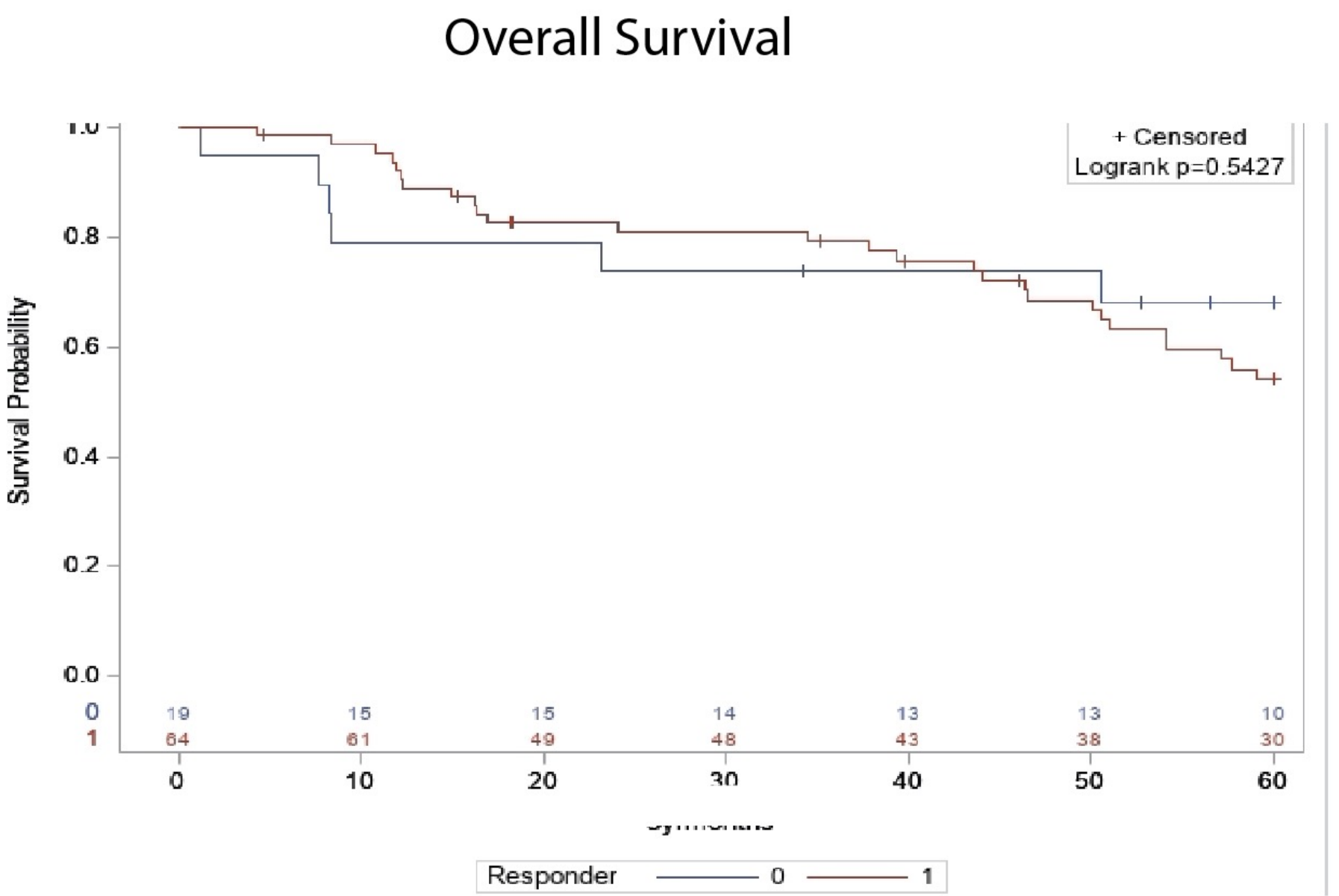


Figure 1: 60-month overall survival, laryngectomy-free survival, and laryngeal preservation Kaplan-Meier estimates and curves.

Study Population

- 83 T4a LSCC patients met inclusion criteria
- Average age of the study population was 59.1 (SD 10) and BMI was 26.9 (SD 5.9), and average pack years was 42.27 (SD 27.3).
- Patients were predominantly white (95%), male (78.3%), and current smokers (75.9%).
- The most common site was supraglottic (57.3%) followed by glottic (26.8%).
- Of 83 patients undergoing IC, 64 were responders and 19 were non-responders
- Median follow up of 58 months
- There was no difference in age, gender, BMI or nodal status between responders and non-responders

Survival Analysis

- 57.21% overall survival amongst the entire T4a patients
 - Responders had a 54.11% 5-year OS compared to 68.02% OS amongst non-responders (p=0.5247)
- Overall, the cohort had a 31.92% laryngectomy-free survival and 41.42% laryngectomy-free survival among responders
- Overall, the cohort had a 59.50% laryngeal preservation rate and 73.55% laryngeal preservation rate among responders

Conclusions

- Induction chemoselection may be a feasible treatment strategy for organ preservation in T4 cancer patients
- More research is needed to better understand the impact of functional outcomes, such as tracheostomy, Nasogastric tube, and percutaneous endoscopic tube dependance alongside speech understandability in these patients

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