Postoperative Complications Following Laryngectomy: Social and Environmental Risk Factors

Carter T. Patterson, BS; Spencer G. Shumway ‡, BS; Theodore D. Klug, MD, MPH; Rusha J. Patel, MD, FACS

‡ Presenting Author

Background

The incidence of laryngeal cancer in the U.S. has been decreasing, but mortality rates have not declined proportionally, leading to higher case-fatality rates.[1] Complications following laryngectomy—such as fistulas, infections, and pneumonia—are influenced by medical risk factors including malnutrition, cardiopulmonary disease, tobacco use, and elevated pre-operative thyroid stimulating hormone (TSH). Socioeconomic factors also contribute, with Black patients and unmarried individuals facing higher risks of complications. One underexplored determinant is food desert residence, which is strongly linked to nutritional deficits and adverse health outcomes.[2]

Objectives

We hypothesize that living in a food desert increases the risk of post-laryngectomy complications and aim to further evaluate this relationship alongside other socioeconomic factors.

Results

Table 1. Patient demographics and characteristics.

Age	
Mean	66.3
Median	67
Range	46–87
Sex, n (%)	
Female	10, (18.9%)
Male	43, (81.1%)
Race, n (%)	
African American	5, (9.4%)
Caucasian	48, (90.6%)
Insurance, n (%)	
Medicare/Medicaid	42, (79.2%)
Private/Other	8, (15.1%)
Unknown	3, (5.7%)
Marital Status, n (%)	
Single	20, (37.7%)
Married	26, (49.1%)
Divorced	6, (11.3%)
Widowed	1, (1.9%)
Distance from Hospital (miles), n (%)	
< 20	15, (28.3%)
20-100	18, (34.0%)
> 100	19, (35.8%)
Unknown	1, (1.9%)
Lives in a Food Desert, n (%)	
Yes	23, (43.4%)
No	29, (54.7%)
Unknown	1, (1.9%)
History of Depression, n (%)	
Yes	11, (20.8%)
No	42, (79.2%)
History of Anxiety, n (%)	
Yes	9, (17.0%)
No	44, (83.0%)
BMI, n (%)	
Underweight	5, (9.4%)
Normal	25, (47.2%)
Overweight	18, (34.0%)
Obese	4, (7.5%)
Morbidly Obese	1, (1.9%)
Unknown	1, (1.9%)
Diabetes Mellitus, n (%)	
Yes	8, (15.1%)
No	45 (84.9%)
History of Peripheral Vascular Disease, n (%)	
Yes	5, (9.4%)
No	48, (90.6%)
Smoking Status, n (%)	
Former	36, (67.9%)
Current	7, (13.2%)
Never	3, (5.7%)
Unknown	7, (13.2%)
Neoadjuvant Radiation, n (%)	
Yes	18, (34.0%)
No	35, (66.0%)
Neoadjuvant Chemotherapy, n (%)	
Yes	13, (24.5%)
No	40, (75.5%)
Adjuvant Radiation, n (%)	
Yes	20, (37.7%)
No	33, (62.3%)
Adjuvant Chemotherapy, n (%)	
Yes	18, (34.0%)
No	35, (66.0%)
Primary Method of Communication (1-year post-op), n (%)	
TEP	32, (60.4%)
Electrolarynx	1, (1.9%)
Board	7, (13.2%)
Writing	1, (1.9%)
Unsure	12, (22.6%)
Primary vs. Salvage Laryngectomy, n (%)	
Primary	35, (66.0%)
Salvage	18, (34.0%)
Primary vs. Salvage TEP, n (%)	
Primary	26, (49.1%)
Salvage	15, (28.3%)
Unknown	12, (22.6%)

Table 2. Food desert status and post-operative complications of laryngectomies.

Surgical Site Infection	Yes	No	Total
Food Desert	5	18	23
Non-Food Desert	6	23	29
Total	11	41	52
p-value	**0.0397 ***		
Odds Ratio	**1.06**		

Hematoma	Yes	No	Total
Food Desert	6	17	23
Non-Food Desert	5	24	29
Total	11	41	52
p-value	0.165		

Fistula	Yes	No	Total
Food Desert	6	17	23
Non-Food Desert	6	23	29
Total	12	40	52
p-value	0.134		

30-Day Readmission	Yes	No	Total
Food Desert	5	18	23
Non-Food Desert	4	25	29
Total	9	43	52
p-value	0.147		

TEP Complication	Yes	No	Total
Food Desert	13	10	23
Non-Food Desert	16	13	29
Total	29	23	52
p-value	0.292		

Primary vs. Salvage	Yes	No	Total
Food Desert	7	16	23
Non-Food Desert	11	18	29
Total	18	34	52
p-value	0.079		

Table 3. Marital status and post-operative complications of laryngectomies.

Fistula	Yes	No	Total
Married	4	23	27
Other	2	24	26
Total	6	47	53
p-value	**0.0465 ***		
Odds Ratio	**2.09**		

30-Day Hospital Readmission	Yes	No	Total
Married	3	24	27
Other	2	24	26
Total	5	48	53
p-value	**0.0148 ***		
Odds Ratio	**1.57**		

TEP Complication	Yes	No	Total
Married	17	10	27
Other	14	12	26
Total	31	22	53
p-value	0.323		

Primary vs. Salvage	Yes	No	Total
Married	17	10	27
Other	18	8	26
Total	35	18	53
p-value	0.111		

* indicates significance

Methods

We conducted a retrospective study of patients who underwent total laryngectomy for head and neck cancer at the University of Oklahoma Health Sciences Center between July 2022 and October 2024. Demographic, clinical, and socioeconomic data were collected through chart review, including medical history, tumor characteristics, and post-operative complications. Marital status and food desert residence were specifically assessed, with the latter determined using patient zip codes and the USDA Food Research Atlas. Significant and near significant statistical findings were analyzed using multivariate analysis

Discussion

This study identified food desert residence as a significant risk factor for post-operative surgical site infections following laryngectomy, and unmarried status as a risk factor for mucocutaneous fistulas and 30-day hospital readmission. These findings suggest that both nutritional access and social support influence recovery and highlight the importance of addressing socioeconomic vulnerabilities in patient care. Our results align with prior studies linking food desert residence to adverse surgical outcomes and marital status to increased readmissions in laryngectomy patients.[3–4] To our knowledge, this is the first study to document the impact of food desert status on laryngectomy outcomes. While limitations include its retrospective, single-institution design and relatively small, homogenous sample, these findings support the need for larger, multi-site studies to confirm the role of socioeconomic factors in predicting complications.

Figure 1

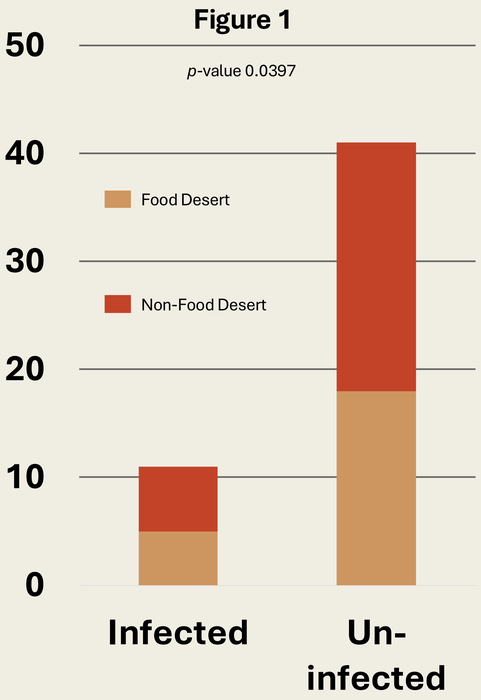


Figure 2

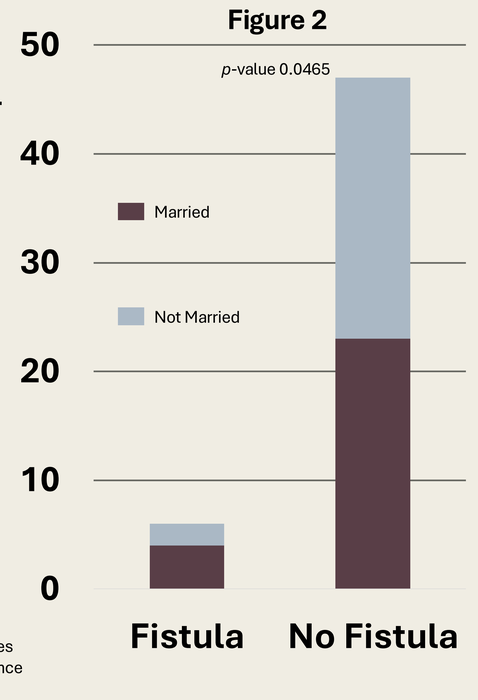
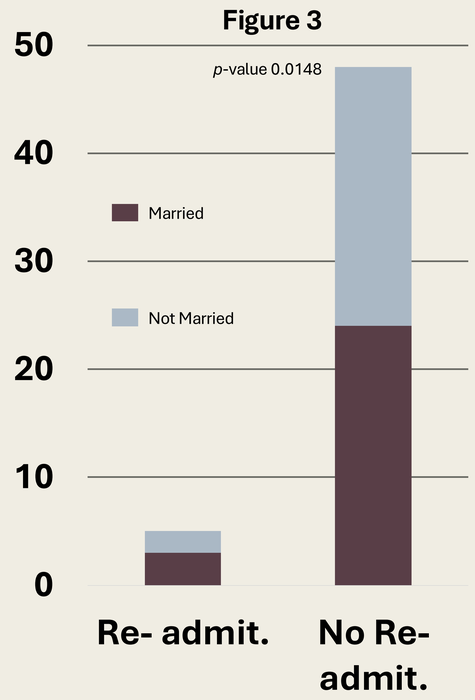


Figure 3



Contact

Rusha J. Patel, MD, FACS
Head and Neck Microvascular Surgery Fellowship Program Director
Associate Professor
Department of Otolaryngology – Head and Neck Surgery
University of Oklahoma College of Medicine

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