



ORIGINAL ARTICLE

Comparative analysis of quality of life in advanced laryngeal and oral cancer undergoing extensive surgeries

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Abstract

Introduction: Total laryngectomy has significant impact in vital functions of patients as breath, swallow and speech, and may influence their quality of life. The COMMANDO surgery followed by adjuvant radiotherapy is a mutilating surgery that impacts patients swallowing, saliva, chewing, and speech, interfering with their quality of life.

Objective: To describe and evaluate comparatively factors associated with lower quality of life in patients with advanced larynx and oral cavity cancer undergoing extensive surgeries. **Materials and Methods:** 95 patients with laryngeal cancer and 47 with oral cavity cancer underwent extensive surgeries. The fourth version of University of Washington Quality of Life Questionnaire (UW-QOL) was used. **Results:** Regarding the subjective domains, they evaluate quality of life related to health as good in both subsites. Worst scores in QOL domains after total laryngectomy were presented in mood, activity, rehabilitation through esophageal speech and absence of vocal emission. Worst scores in QOL domains after COMMANDO were presented in chewing, swallowing, speech, and absence of saliva. The average composite score for quality of life in larynx was 80.4 and oral cavity was 64.6. **Conclusion:** The high value for the average composite score of QOL after total laryngectomy showed positive assessment of QOL compared to lower values reported after COMMANDO. The absence of vocal emission was the only domain independently associated with a decreased QOL according to the UW-QOL. Oral cavity patients reported that they cannot even chew soft foods and can only eat some solid food.

Keywords: quality of life; head and neck cancer; surgery.

Introduction

Treatments for advanced laryngeal and oral cavity malignancies may involve radical surgeries followed by adjuvant radiotherapy, leading to important physiological, functional and aesthetic dysfunctions for patients. Quality of life assessment has become an important tool in assessing disease, health and treatments impact.

Laryngeal cancer accounts for approximately 25% of malignancies in the head and neck region, and 2% of all malignancies, accounting for the

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death of 83,000 people per year worldwide¹. In Brazil, for 2018-2019, it is estimated the occurrence of 6,390 new cases of laryngeal cancer in men and 1280 in women, with an estimated risk of 6.17 cases per 100,000 men and 1.20 per 100 thousand women².

The impact of advanced laryngeal cancer and its extensive surgical treatments determine significant morbidity in patients' lives. Total laryngectomy significantly impacts essential functions such as breathing, swallowing and communication of patients, and may influence their quality of life and in social context. It is possible to obtain voice rehabilitation through three main different methods: the esophageal voice, the electrolarynx and the use of tracheoesophageal phonatory prostheses. The rehabilitation of the voice through the tracheoesophageal prosthesis is currently considered the gold standard because it provides great improvement in the vocal quality and in the time of phonation^{3,4}.

Oral cavity cancer is the fifth most incident in total new cases in 2018, accounting for 97,000 deaths per year worldwide¹. For the 2018-2019 biennium in Brazil, 11,200 new cases of oral cavity cancer in men and 3,500 in women are estimated, with an approximate risk of 10.86 new cases per 100,000 men and 3.28 per 100,000 women².

In Brazil, patients arrive late in the specialized services of head and neck oncology due to factors such as delayed diagnosis and access difficulties to quality health services, having as a result worse survival rates and radical and mutilating surgeries⁵.

The treatment for patients with oral cavity cancer in stages III and IV consists mainly of the composite operation including resection of the mouth lesion, mandible segment and cervical emptying (segmental pelveglossomandibulectomy with cervical emptying) with or without reconstruction, followed by adjuvant radiotherapy. The objectives of the treatment are: to offer cure, rehabilitation of normal functions, and aesthetic and psychosocial quality of life, in this order. Even with this combination of treatments, studies show that curative treatment occurs only in the minority of patients and that less than 30% will survive after 5 years⁵.

Reconstruction of functional and aesthetic defects should be done immediately, and if possible, include mandibular reconstruction. Radiotherapy is an adjunctive therapy modality that aims at the best curative outcome of these advanced diseases. However, it can cause side effects and inconvenience for the patient to eat during and after the application period⁵.

The World Health Organization (WHO) defines quality of life as "the individual's perception of their position in life in the context of the culture and value system in which they live in relation to their goals, expectations, standards and concerns".⁶ Quality of life assessment tools are important tools for measuring the effect of treatments on patients' lives, as well as providing *feedback* from the patients' perspective, in a structured and measurable way⁷.

Currently, there are several specific instruments available for assessing quality of life in patients with head and neck cancer. One of the most commonly used is the University of Washington Quality of Life Questionnaire (UW-QOL)

4th version, which provides a simple measure of health-related quality of life and has been shown to be feasible for use in the head and neck cancers scenario. Its clinical use can enhance patients' awareness of the effects of different types of treatments and identify patients who are in poorer health and who would benefit from more appropriate interventions^{8,9}.

Published by the same authors, in a previous study with 95 patients with laryngeal cancer, the questionnaire was relevant when evidencing the important clinical aspects after the treatments were instituted. For patients submitted to total laryngectomy, the worst QOL scores were mood, activity, speech-language pathology rehabilitation through esophageal voice and absence of vocal emission. The mean composite score for quality of life in the larynx was 80.4. The elevated average of the QOL score of patients with laryngeal cancer evidenced that they positively assessed their quality of life. The absence of vocal emission was the only domain independently associated with the worse QOL according to UW-QOL¹⁰.

The health-related quality of life of patients treated for advanced carcinoma of the larynx and oral cavity tends to decrease during treatment, stabilizing around 12 months post treatment¹¹. Although total laryngectomy has a permanent and significant impact on swallowing, breathing and speech in patients, they have good long-term health-related quality of life following the treatment³. On the other hand, the treatment for advanced cancer of the oral cavity has a greater impact on the swallowing, saliva, chewing and speech of the patients, interfering in their quality of life¹¹.

This article aims to describe the quality of life and comparatively analyze the factors associated with poorer quality of life in patients with advanced laryngeal and oral cavity malignancies submitted to radical surgeries.

Methods

An observational, cross-sectional study was conducted in patients enrolled at the National Cancer Institute, from 2004 to 2013. Adult patients older than 18 years and with confirmed diagnosis of squamous cell carcinoma (SCC) of the larynx and oral cavity were included in stages III and IV. In case of laryngeal neoplasms, patients treated with total laryngectomy were added to neck dissection, with or without adjuvant radiotherapy. In the case of oral cavity, patients treated with composite operation including resection of mouth lesion, mandible segment and cervical emptying, followed by adjuvant radiotherapy were included.

Those under 18 years of age, hospitalized during the data collection period, with active disease and patients with less than six months of surgical treatment were excluded.

Eligible patients signed a Free and Informed Consent Term. The study was approved by the Ethics and Research Committee of the National Cancer Institute under number 96/09.

The fourth version of the UW-QOL University of Washington Quality of Life Questionnaire was used, validated into Portuguese¹². It is composed of 12 questions related to specific functions of the head and neck, as well as

related to activity, recreation, pain, mood and anxiety. Each domain has three to five response categories with scores ranging from 0 (worst) to 100 (best) that can be assessed individually or by the total score (composed of the mean of the twelve domains). There are also three subjective questions that do not have their own scores, which refer to comparisons between patients or groups of patients¹².

Descriptive and independent variables related to socio-demographic characteristics (age, gender, race, marital status, schooling), clinical (clinical staging according to the TNM classification, tumor topography according to the International Classification of Diseases for Oncology, ICD-O)¹³, and treatment (type of surgery, radiotherapy, chemotherapy, and speech-language rehabilitation).

For the calculation of the sample size, the average score of the QOL of 81 was considered¹². Considering a standard deviation of 10 with a maximum error of 2 and a level of significance of 5%, it would be necessary to include 96 patients. In the selected period, 142 cases were eligible, this being the final study population.

A descriptive study of the analyzed population was carried out, using the means and standard deviation for the continuous variables and frequency distribution for the categorical ones. The Kolmogorov-Smirnov test was used to evaluate the normal distribution of the quality of life score and the independent quantitative variables. The independent quantitative variables, because they did not present a normal distribution, were categorized according to the theoretical reference¹². To test the collinearity of the qualitative independent variables, the Pearson correlation coefficient was calculated. All variables tested had a correlation coefficient lower than 0.50.

For the evaluation of the association between the independent variables and the quality of life domains scores, the differences between the averages of each score were calculated, and the statistical difference was obtained through analysis of variance. In the identification of the variables to be included in the modeling of multiple linear regression, a difference of 7 points or more between each UW-QOL category and/or statistical significance was considered as clinical significance, with a value of $p < 0.20$ ¹⁴. The multiple linear regression was performed by the *stepwise forward* method and the composite quality of life score was calculated for the total population studied as an outcome. For the domains, multiple linear regression was not undertaken because the necessary assumptions were not fulfilled. The homoscedasticity and possible biases of the model were analyzed through residue analysis and all assumptions were observed. In order to identify the explanatory power of the model, the coefficient of determination was used. All analyzes were performed with the help of SPSS 21.0 (IBM, São Paulo).

Results

A total of 142 patients were included in the study, of which 95 (66.9%) had laryngeal cancer and 47 (33.1%) had oral cavity cancer. At the date of the interview, the average age was 61.8 years (DP 8.4), 60.6% of the population included in the study had more than two-year postoperative follow-up.

The study population was predominantly male (88.0%), with low schooling (52.8%), Caucasian (61.3%), and at the moment of the interview lived with

a partner (64.8%), presented clinical staging IV (70.4%), and was submitted to adjuvant radiotherapy (95.7%). Larynx cancer patients were submitted to total laryngectomy and neck dissection (92.6%), predominantly rehabilitated with tracheoesophageal prosthesis (43.2%), followed by electrolarynx (33.7%) and, at the time of the interview, presented vocal emission (85.3%). Among the patients with oral cavity cancer, most of the tumors were located in the tongue (61.7%), followed by the gingival border (38.3%). Most patients that underwent composed radical surgery of the mouth were reconstructed with myocutaneous flap (38.3%) and with microsurgical reconstruction (27.7%) (Table 1).

Table 1. Demographic and clinical characteristics of the patients cohort (n=142).

Variable	Laryngeal cancer (n=95)	Oral cavity cancer (n=47)	Total (n=142)
	n (%)	n (%)	n (%)
Gender			
Male	86 (90.5)	39 (83.0)	125 (88.0)
Female	9 (9.5)	8 (17.0)	17 (12.0)
Education, y			
1-7	49 (51.6)	26 (55.3)	75 (52.8)
≥ 8	42 (44.2)	21 (44.7)	63 (44.4)
No information	4 (4.2)	0 (0.0)	4 (2.8)
Ethnic group			
White (Caucasian)	62 (65.3)	29 (61.7)	91 (64.1)
Others	29 (30.5)	18 (38.3)	47 (33.1)
No information	4 (4.2)	0 (0.0)	4 (2.8)
Marital status			
Married	67 (70.5)	25 (55.6)	92 (64.8)
Single	24 (25.3)	20 (44.4)	44 (31.0)
No information	4 (4.2)	2 (4.3)	6 (4.2)
Age, y			
≤ 60	56 (59.6)	26 (55.3)	82 (58.2)
> 60	38 (40.4)	21 (44.7)	59 (41.8)
Time since surgery, y			
≤ 2	31 (32.6)	25 (53.2)	56 (39.4)
> 2	64 (67.4)	22 (46.8)	86 (60.6)
Primary tumor (T)			
T3	38 (40.0)	9 (19.1)	47 (33.1)
T4	57 (60.0)	38 (80.9)	95 (66.9)
Regional lymph nodes (N)			
N0	61 (64.2)	26 (55.3)	87 (61.3)
N1	17 (17.9)	9 (19.1)	26 (18.3)
N2	17 (17.9)	10 (21.3)	27 (19.0)
N3	0 (0.0)	2 (4.3)	2 (1.4)
T Stage			
III	34 (35.8)	8 (17.0)	42 (29.6)
IV	61 (64.2)	39 (83.0)	100 (70.4)

Table 1. Continued...

Variable	Laryngeal cancer (n=95)	Oral cavity cancer (n=47)	Total (n=142)
	n (%)	n (%)	n (%)
Adjuvant treatment			
No	4 (4.2)	2 (4.3)	6 (4.2)
Yes	83 (87.4)	42 (89.4)	125 (88.0)
Yes + Chemotherapy	8 (8.4)	3 (6.4)	11 (7.7)
Tumor Site			
Larynx	91 (95.8)	--	--
Larynx and Hypopharynx	4 (4.2)	--	--
Tongue	--	29 (61.7)	--
Gingival border	--	18 (38.3)	--
Larynx surgery			
Total Laryngectomy + Neck Dissection		--	--
Total Laryngectomy + Neck Dissection + Pharyngectomy	88 (92.6)		
Pelviglossomandibulectomy			
Without reconstruction	--	16 (34.0)	--
With myocutaneous flap reconstruction	--	18 (38.3)	--
With microsurgical reconstruction		13 (27.7)	
Speech therapy			
Esophageal Speech	22 (23.2)	--	--
Artificial Larynx	32 (33.7)	--	--
Tracheoesophageal Speech	41 (43.2)	--	--
Voice emission			
No	14 (14.7)	--	--
Yes	81 (85.3)	--	--

The results concerning the objective domains of UW-QOL are presented in Table 2. The average composite quality of life score in the larynx was 80.4 while for the oral cavity was 64.6. Regarding the subjective domains, 38.9% of the patients with laryngeal cancer reported a better outcome when compared to the month before the diagnosis of cancer, while 38.3% of the patients with oral cavity cancer reported being just a little better these days. When questioned about how they evaluated their health-related quality of life in the last 7 days, there was a predominance of those who considered it to be good (45.1%). In addition, when they were asked how they evaluated their quality of life related to health and overall quality of life (considering personal well-being) in the last 7 days, there was a predominance of those who considered it to be good (45.1% and 47.2% respectively) (Table 3).

The average values of the scores of the domains of the UW-QOL Questionnaire according to the clinical and demographic variables are described in Table 4. Men presented clinically (≥ 7 points of difference) better scores in the domains of appearance, swallowing, chewing, taste, saliva and anxiety. The differences were statistically significant in relation to women in recreation domains

Table 2. Scores for the University of Washington Quality of Life Questionnaire (n=142).

UW-QOLv4 Domain	Categories	Laryngeal cancer	Oral Cavity cancer	Total
		n (%)	n (%)	n (%)
Pain	I have severe pain, not controlled by medication	0 (0.0)	1 (2.1)	1 (0.7)
	I have severe pain controlled only by prescription medicine	0 (0.0)	1 (2.1)	1 (0.7)
	I have moderate pain - requires regular medication	16 (16.8)	7 (14.9)	23 (16.2)
	There is mild pain, not needing medication	13 (13.7)	11 (23.4)	24 (16.9)
	I have no pain	66 (69.5)	27 (57.4)	93 (65.5)
Appearance	I cannot be with people due to my appearance	1 (1.1)	1 (2.1)	2 (1.4)
	I feel significantly disfigured and limit my activities due to my appearance	0 (0.0)	10 (21.3)	10 (7.0)
	My appearance bothers me, but I remain active	11 (11.6)	16 (34.0)	27 (19.0)
	The change in my appearance is minor	49 (51.6)	15 (31.9)	64 (45.1)
	There is no change in my appearance	34 (35.8)	5 (10.6)	39 (27.5)
Activity	I am usually on the bed or a chair and I don't leave home	0 (0.0)	0 (0.0)	0 (0.0)
	I don't go out because I don't have the strength	0 (0.0)	1 (2.1)	1 (0.7)
	I am often tired and have slowed down my activities, although I still go out	13 (13.7)	13 (27.7)	26 (18.3)
	There are times when I can't keep up my old pace, but not often	40 (42.1)	18 (38.3)	58 (40.8)
	I am as active as I have ever been.	42 (44.2)	15 (31.9)	57 (40.1)
Recreation	I can't do anything enjoyable	0 (0.0)	1 (2.1)	1 (0.7)
	There are severe limitations to what I can do, mostly I stay at home and watch TV	6 (6.3)	8 (17.0)	14 (9.9)
	There are many times when I wish I could get out more, but I'm not up to it	10 (10.5)	7 (14.9)	17 (12.0)
	There are a few things I can't do but I still go out and enjoy life	35 (36.8)	9 (19.1)	44 (31.0)
	There are no limitations to recreation at home or away from home	44 (46.3)	22 (46.8)	66 (46.5)
Swallowing	I cannot swallow because it "goes down the wrong way" and chokes me	2 (2.1)	2 (4.3)	4 (2.8)
	I can only swallow liquid food	3 (3.2)	17 (36.2)	20 (14.1)
	I cannot swallow certain solid foods	40 (42.1)	18 (38.3)	58 (40.8)
	I can swallow as well as ever	50 (52.6)	10 (21.3)	60 (42.3)
Chewing	I cannot even chew soft solids	2 (2.1)	26 (55.3)	28 (19.7)
	I can eat soft solids but cannot chew some foods	25 (26.3)	20 (42.6)	45 (31.7)
	I can chew as well as ever	68 (71.6)	1 (2.1)	69 (48.6)
Speech	I cannot be understood	0 (0)	1 (2.1)	1 (0.7)
	Only my family and friends can understand me.	27 (28.4)	5 (10.6)	32 (22.5)
	I have difficulty saying some words, but I can be understood over the phone	58 (61.1)	34 (72.3)	92 (64.8)
	My speech is the same as always	10 (10.5)	7 (14.9)	17 (12.0)
Shoulder	I cannot work or do my hobbies due to problems with my shoulder	1 (1.1)	0 (0.0)	1 (0.7)
	Pain or weakness in my shoulder has caused me to change my work / hobbies	9 (9.5)	9 (19.1)	18 (12.7)
	My shoulder is stiff, but it has not affected my activities or strength	23 (24.2)	8 (17.0)	31 (21.8)
	I have no problem with my shoulder	62 (65.3)	30 (63.8)	92 (64.8)

Table 2. Continued...

UW-QOLv4 Domain	Categories	Laryngeal cancer	Oral Cavity cancer	Total
		n (%)	n (%)	n (%)
Taste	I cannot taste food	2 (2.1)	3 (6.4)	5 (3.5)
	I can taste some food	14 (14.7)	11 (23.4)	25 (17.6)
	I can taste most food normally	22 (23.2)	9 (19.1)	31 (21.8)
	I can taste food normally	57 (60.0)	24 (51.1)	81 (57.0)
Saliva	I have no saliva	1 (1.1)	6 (12.8)	7 (4.9)
	I have too little saliva	17 (17.9)	25 (53.2)	42 (29.6)
	I can taste most food normally	30 (31.6)	5 (10.6)	35 (24.6)
	I can taste food normally	47 (49.5)	11 (23.4)	58 (40.8)
Mood	I am extremely depressed about my cancer	0 (0.0)	1 (2.1)	1 (0.7)
	I am somewhat depressed about my cancer	9 (9.5)	11 (23.4)	20 (14.1)
	I am neither in a good mood nor depressed about my cancer	10 (10.5)	7 (14.9)	17 (12.0)
	My mood is generally good and only occasionally affected by my cancer	26 (27.4)	13 (27.7)	39 (27.5)
	My mood is excellent and unaffected by my cancer	50 (52.6)	15 (31.9)	65 (45.8)
Anxiety	I am very anxious about my cancer	2 (2.1)	5 (10.6)	7 (4.9)
	I am anxious about my cancer	5 (5.3)	3 (6.4)	8 (5.6)
	I am a little anxious about my cancer	25 (26.3)	18 (38.3)	43 (30.3)
	I am not anxious about my cancer	63 (66.3)	21 (44.7)	84 (59.2)

Table 3. Patients Classification of Global Quality of Life (QOL).

UW-QOLv4 Global Questions	Categories	Larynx	Oral cavity	Total
		n (%)	n (%)	n (%)
Compared to the month before you developed cancer , how would you rate your health-related quality of life?	Much better	37 (38.9)	10 (21.3)	47 (33.1)
	Somewhat better	22 (23.2)	18 (38.3)	40 (28.2)
	About the same	27 (28.4)	15 (31.9)	42 (29.6)
	Somewhat worse	7 (7.4)	2 (4.3)	9 (6.3)
	Much worse	2 (2.1)	2 (4.3)	4 (2.8)
In general, would you say your health-related quality of life during the past 7 days has been:	Outstanding	18 (18.9)	2 (4.3)	20 (14.1)
	Very good	16 (16.8)	6 (12.8)	22 (15.5)
	Good	41 (43.2)	23 (48.9)	64 (45.1)
	Fair	20 (21.1)	13 (27.7)	33 (23.2)
	Poor	0 (0.0)	2 (4.3)	2 (1.4)
Overall quality of life includes not only physical and mental health, but also many other factors, such as family, friends, spirituality, or personal leisure activities that are important to your enjoyment of life. Considering everything in your life that contributes to your personal well-being, rate your overall quality of life during the past 7 days.	Outstanding	20 (21.1)	3 (6.4)	23 (16.2)
	Very good	15 (15.8)	7 (14.9)	22 (15.5)
	Good	44 (46.3)	23 (48.9)	67 (47.2)
	Fair	16 (16.8)	11 (23.4)	27 (19.0)
	Poor	0 (0.0)	3 (6.4)	3 (2.1)
Very poor	0 (0.0)	0 (0.0)	0 (0.0)	

Table 4. Regression Coefficients between composite score of UW-QOL and selected variables (n=142).

Composite score	Coefficient (Beta)	CI 95%	p Value
Gender (male x female)	6.83	0.33 a 13.32	0.040
Time since Surgery, y (≤ 2 x > 2)	-6.78	-11.16 a -2.41	0.003
Tumor Site (larynx x oral cavity)	13.94	9.37 a 18.51	<0.001
r ² adjusted	0.297		
p (model)	<0.001		

r² adjusted= coefficient of multiple determination; CI= confidence interval; p = significance level.

(p = 0.038), mood (p = 0.003) and composite score (p = 0.025). Caucasian patients presented better scores for all domains analyzed, however, only with clinical significance for the recreation and mood domains. Patients who reported having a partner at the time of the interview, considering clinical significance, presented better scores in the areas of chewing and absence of saliva. There was no statistical significance for any other variable analyzed. Among patients with clinical staging III, better quality of life scores were observed for all domains analyzed compared to clinical staging IV, with a clinical difference (≥ 7 points difference) for mood and anxiety, and a statistically significant difference for appearance (p <0.001), swallowing (p <0.001), chewing (p <0.001), saliva (p = 0.044) and composite score (p = 0.008). Patients with more than two years elapsed between surgery and the date of the interview had higher quality of life scores with clinical and statistical significance, except for swallowing and saliva. Patients with laryngeal cancer presented predominantly better scores than those with oral cavity cancer. A statistically significant difference was observed in the appearance domains (p <0.001), activity (p = 0.023), swallowing (p <0.001), chewing (p <0.001), saliva (p <0.001), mood (p = 0.002), anxiety (p = 0.006) and composite score (p <0.001). The other domains did not present statistically significant associations.

In the construction of the multiple linear regression model, considering the variables with clinical or statistical significance, the men presented a difference of 6.82 points in the composite score in relation to the women (p = 0.040). Those patients with less than two years between surgery and the date of the interview had a worse coefficient (-6.78) than those with more than two years (p = 0.003). A better composite score was observed for patients with laryngeal cancer than those with oral cavity (13.94 points in the score, p <0.001). This model accounts for about 30% of the composite quality of life score in this population (r²=0.297) (Table 5).

Table 5. Regression Coefficients between composite score of UW-QOL and selected variables.

Composite Score	Coefficient (Beta)	CI 95%	p Value
Sex (male x female)	6,83	0,33 a 13,32	0,040
Time between Surgery and interview (≤ 2 years x > 2 years)	-6,78	-11,16 a -2,41	0,003
Topography (larynx x oral cavity)	13,94	9,37 a 18,51	<0,001
r ² adjusted	0,297		
P Value (model)	<0,001		

r² adjusted= coefficient of multiple determination; p= significance level.

Discussion

This is a pioneering study on the quality of life of patients with advanced cancer, emphasizing the two main anatomical sites of the head and neck, which result in several dysfunctions, with negative repercussions on the quality of life of these patients. In this study, 142 patients were included, 95 (66.9%) with laryngeal cancer submitted to total laryngectomy and 47 (33.1%) with oral cavity cancer submitted to oral cavity surgery. The results show that, in relation to demographic and clinical characteristics, the population was predominantly male (8 men for each woman with laryngeal cancer and 5 men for each woman with oral cavity cancer), less than 60 years of age, with low schooling, Caucasian, lived with a partner at the time of the interview, presented clinical staging IV, and had been submitted to radiotherapy. Similar results were obtained in other studies where the patients with laryngeal and oral cavity cancer were mostly men, and with low schooling^{3,4,15}.

Regarding the questions concerning the subjective domains of the quality of life questionnaire, 78.9% of the patients considered their quality of life in general good to excellent, and 90.9% indicated that their health was equal to or better than before treatment. These results differed from those reported in the population studied by Vartanian et al.¹² where only 59.3% of the patients considered their quality of life good to excellent, while 74.0% indicated that their health would be equal to or better than before treatment. However, the study of these authors included all sites of head and neck and all staging.

Considering the gender, women had a worse mood score, showing a greater chance of developing depression after treatment. These data were confirmed by the studies of Rogers et al.¹⁶ and Silveira et al.¹⁷ showing that the female gender suffers greatest negative impact of the disease on its quality of life.

The health-related quality of life of patients treated with total laryngectomy and composite mouth surgery tended to decrease during treatment, stabilizing around 12 months post-treatment³. In a recent study on the importance of UW-QOL domains for patients with head and neck cancer, Metcalfe et al.¹¹ demonstrated that in the first 12 months after treatment there is a small fluctuation in items that patients consider important. However, after this period the patients attach great importance to the areas of swallowing, chewing and speech, a fact that remains constant over time.

As in the study conducted by Eadie and Bowker¹⁸, total post-laryngectomy time was associated with higher QOL scores. In our study, this was verified mainly for the speech domain, which agrees with the observations of Metcalfe et al.¹¹ and may be related to the importance of speech-language rehabilitation. Likewise, the patients who presented effective vocal emission at the interview were less anxious and better evaluated their quality of life in relation to their swallowing and speech.

After total laryngectomy, patients need to learn a new form of oral communication and how to deal with changes in breathing and swallowing. Although the specialized literature shows that a large proportion of these patients fit in 12 months after total laryngectomy, there is still a portion that has a great impact on their quality of life in the long term^{3,11,18}. The quality of life questionnaires are focused on the dysfunctions resulting from the

treatments in a short period of time. They do not contemplate the adaptation and cognitive coping that occurs over time, which may lead to the incongruity between the dysfunctions observed in the patients and the meaning in their lives¹⁹.

Compared to the electrolarynx and the esophageal voice, patients who used the tracheoesophageal prosthesis obtained significantly better UW-QOL scores in speech. These results showed that tracheoesophageal prosthesis was considered the best method of speech therapy rehabilitation, resulting in better quality of life and vocal satisfaction. These data agree with Oozeer et al.³ and Balm et al.²⁰, who affirm that the restoration of the voice through the tracheoesophageal prosthesis offers the best possibility of oral communication for the patients submitted to total laryngectomy and should be considered the gold standard for vocal rehabilitation. The preference for vocal prosthesis also lies in the fact that this device can be implanted at the time of total laryngectomy²¹. Regardless of the method of speech-language rehabilitation used, for laryngectomized patients, it is very important to have some rehabilitation so that they can have a better quality of life, aiming at their psychosocial and functional reinsertion.

In relation to the group of patients with advanced malignant neoplasms of the oral cavity, it was not possible to select many patients because most were dead at the time of follow-up and this fact may have influenced the results. However, the small number of patients is in line with an American study that evaluated the quality of life of patients with oral cavity cancer in a retrospective case series for 25 years and found only 46 patients alive and of these, only 26 participated in the study²².

The treatment for patients with advanced oral cavity cancer consists mainly of the composite operation including resection of the mouth lesion, mandible segment and cervical emptying followed by adjuvant radiotherapy. The defects resulting from the resection of the mandible cause a great dysfunction leading to asymmetry, facial disharmony and impairment of chewing, speech and swallowing of patients. Reconstruction of the defects generated remains a challenge for surgeons, with regional flap reconstruction being the most employed. There are several reconstruction options to be considered according to the need of each case, such as locoregional flaps and microsurgical reconstructions with or without bone reconstruction. The complexity of the reconstruction to be employed will depend on the clinical factors of the patient and technical surgical aspects⁵. The priorities of the patients after the surgical treatment are related to the obtained functional result; preserving, whenever possible, deglutition, chewing, speech and saliva; when compared to appearance, activity or pain aspects^{11,23}.

Patients with staging III had better quality of life scores than patients with staging IV. It was evidenced that in the recreation domain there was statistical significance, showing that patients with staging IV have severe difficulties in leaving home and in interpersonal contact, partly due to the functional and aesthetic sequels that these patients are facing²⁴.

In the present study the type of surgery did not influence the appearance domain, although negative impact was expected for patients undergoing

radical treatments because of their major cosmetic defects and physical and functional sequelae. Gill et al.²⁵ conducted a study comparing groups of patients with head and neck cancer, their caregivers, and health care staff about their concerns and the most important aspects related to treatment. The appearance was related as a factor of greater importance only for the group of professionals of the health area, showing that, in consonance with the results presented here, for the patients or their partners the concern with the appearance was not so important²⁶. In a recent study, Metcalfe et al.¹¹ showed that the priorities of patients with head and neck cancer are mostly functional, such as swallowing and chewing.

The only variable that influenced the quality of life composite score for larynx was voice. Patients without vocal emission presented a reduction of 9 points in the average of the composite score in relation to those with vocal emission. Among patients with oral cavity cancer, the only variable that had an influence on the composite quality of life score was the time elapsed between the surgery and the date of the interview; less than 2 years was associated with the worst composite score. A study by Eadie and Bowker in 2012 demonstrated that the use of the traditional variables used in the literature is not enough to establish association with the domains of quality of life¹⁸.

During the screening of patients eligible for the study, only 47 of the 182 oral cavity screened patients were alive, that is, almost 2/3 of patients with oral cavity cancer died in less than 5 years. The objective of this study was not to evaluate patients' survival, but many deaths were found among patients with oral cavity cancer. Rogers et al.¹⁶ stated that even with the combination of extensive surgery and adjuvant radiotherapy, studies show that curative treatment occurs only in the minority of cases and that less than 30% of patients will survive after 5 years²⁷.

The present study demonstrated that the UW-QOL questionnaire is an important evaluation tool and that its incorporation into the QOL assessment in clinical practice is of great relevance because it allows to optimize and measure the effectiveness of the treatments and their sequels. To improve the quality of life of this group of patients, interventions are needed to support them so they can deal with the impact of the disease and its treatments^{25,28}.

It is important to emphasize the importance of both the incorporation of QOL assessment into daily practice and the need for trained and cohesive multidisciplinary teams aiming at the integral care of patients¹³. Prior identification of concerns, depression and anxiety in patients with head and neck cancer may be beneficial, as depression is often underdiagnosed²⁹. Another factor that could influence patients' quality of life is fear of recurrence, characterized by fear associated with the possibility of cancer recurrence, which is present in 35% of patients surviving cancer according to Ghazali et al.³⁰.

The study had some strengths, such as the inclusion of the major tumor sites in the head and neck area and patients from a single institution; the patients were adequately classified into well-defined subgroups and objective research questions were formulated; the number of patients selected and included in the study agreed with the minimum sample size previously calculated.

In this study, we included several independent variables referenced in the scientific literature as associated with quality of life. However, they partially explained the domains of UW-QOL, evidencing the need to include in future studies other variables that may be associated with this outcome. On the other hand, the studies consulted did not inform the explicative percentage of the linear regression models, which makes it difficult to compare with our results. As in the present study, few authors have examined psychosocial variables and their relationships to QOL, as coping strategies, which have shown an important association with QOL¹⁸.

The results presented described the general aspects of QOL in the population of patients with advanced laryngeal and oral cavity malignancies of the institution, which can be used in the planning and evaluation of control actions in patients submitted to head and neck cancer treatment.

Conclusions

Patients reported that their QOL is equal or slightly better after treatment and considered the average QOL to be good at the time of the interview.

According to the UW-QOL, the worst scores in the QOL domains for patients submitted to total laryngectomy were presented for mood, activity, rehabilitation through esophageal voice and lack of vocal emission. In addition, the absence of vocal emission was the only domain independently associated with the worse QOL.

In the patients submitted to the composite surgery of the mouth, it was observed that the chewing, swallowing, speech and absence of saliva domains were associated with worse quality of life. Patients reported not being able to chew even light foods and are able to swallow only a few solid foods.

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