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Quality of life and functional outcomes of TORS without adjuvant radiation therapy for oropharyngeal cancer

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ABSTRACT

Objectives: To compare quality of life (QOL) of patients who underwent transoral robotic surgery (TORS) with adjuvant radiation therapy (RT), adjuvant chemoradiation therapy (CRT), or no adjuvant therapy in the treatment of oropharyngeal cancer.

Study Design: Prospective cohort study.

Methods: Medical records were reviewed for 112 patients treated for oropharyngeal cancers at a tertiary care academic center from April 2008 to July 2015. Patients were administered the Head and Neck Cancer Inventory (HNCI) to evaluate QOL preoperatively, and at 3 weeks, 3 months, 6 months, and 1 year post-surgery. QOL data was compared between 14 patients treated with TORS alone, 31 with adjuvant RT, and 67 with adjuvant CRT by a linear mixed effects model. Demographic, clinicopathologic, and follow-up data were also collected.

Results: Mean follow-up was 35 months. The HNCI response rates at 3 weeks and 3, 6, and 12 months were 80%, 60%, 55%, and 46%, respectively. Eating scores for TORS alone were significantly higher than for adjuvant RT or CRT at 3 and 6 months post-surgery. Patients with TORS alone and adjuvant RT had higher social function when compared to adjuvant CRT at 3 months. There were no statistically significant differences ($p < .05$) in overall QOL, speech, or aesthetics at any time point.

Conclusions: Patients with oropharyngeal cancer treated with TORS alone maintain higher QOL than with adjuvant RT or CRT in eating and social function following surgery. Adjuvant RT and CRT appear to negatively affect QOL, suggesting a potential need for deintensification of radiation or chemotherapy to preserve post-operative patient function.

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This work was supported in part by the OSU College of Medicine Barnes Research Scholarship.

INTRODUCTION

Oropharyngeal cancer was historically treated with primary open surgery or primary radiation therapy (RT)/chemoradiation therapy (CRT). Using these interventions, patients often suffered toxicities affecting oropharyngeal and laryngeal function as well as significant declines in health-related quality of life (QOL).¹ In the last decade, transoral robotic surgery (TORS) has emerged as a minimally invasive treatment option for oropharyngeal cancer. TORS has been shown to preserve optimal patient function and long-term QOL.²

Following TORS, many patients receive post-operative RT or concurrent CRT based on high-risk features discovered upon clinical and pathologic evaluation. This adjuvant therapy has been associated with many adverse events as well as declines in speech, eating, and overall QOL outcomes.^{1,2} Thus, patients who receive TORS alone present an interesting research opportunity to the head and neck surgeon who seeks a balance between maintaining patient QOL and achieving favorable clinical outcomes.

The aim of this study was to compare the clinical, functional, and QOL outcomes of patients who underwent TORS with adjuvant RT or CRT to those without adjuvant therapy in the treatment of oropharyngeal cancer.

METHODS AND MATERIALS

This study was conducted by examining medical records from 112 patients treated for oropharyngeal cancers. Intervention consisted of primary surgical resection via TORS, neck dissection as indicated, and post-operative RT or concurrent CRT offered to patients with high-risk disease features according to the National Comprehensive Cancer Network guidelines. Patients were administered the Head and Neck Cancer Inventory (HNCI) to evaluate QOL preoperatively, and at 3 weeks, 3 months, 6 months, and 1 year post-surgery.

Data was compared between 14 patients treated with TORS alone, 31 with adjuvant RT, and 67 with adjuvant CRT using a linear mixed effects model to assess the group differences of QOL over time. Comparisons between treatment groups were assessed via Fisher's exact tests for categorical variables. Cox proportional hazards models were used to assess univariate association between treatment group and survival.

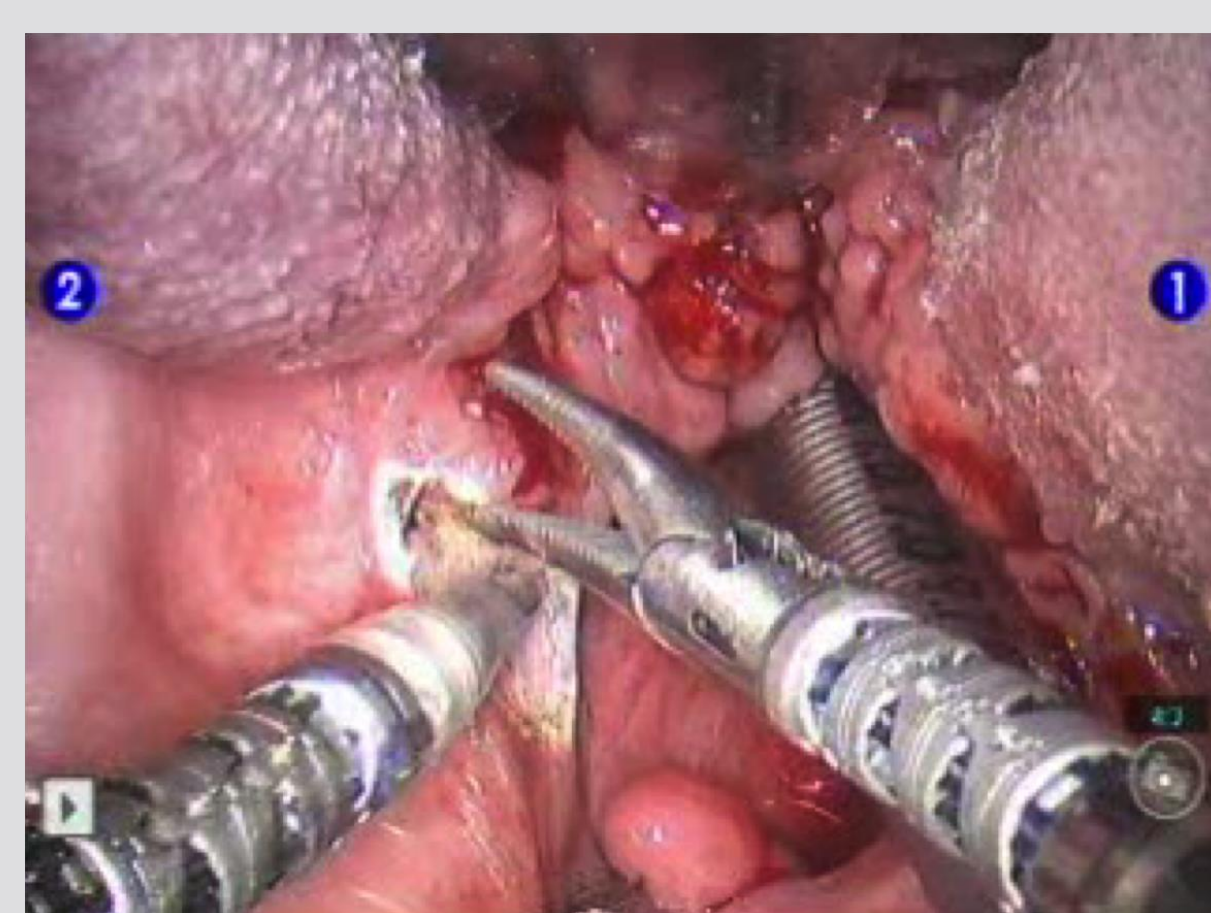


Figure 1. TORS lingual tonsillectomy.

RESULTS

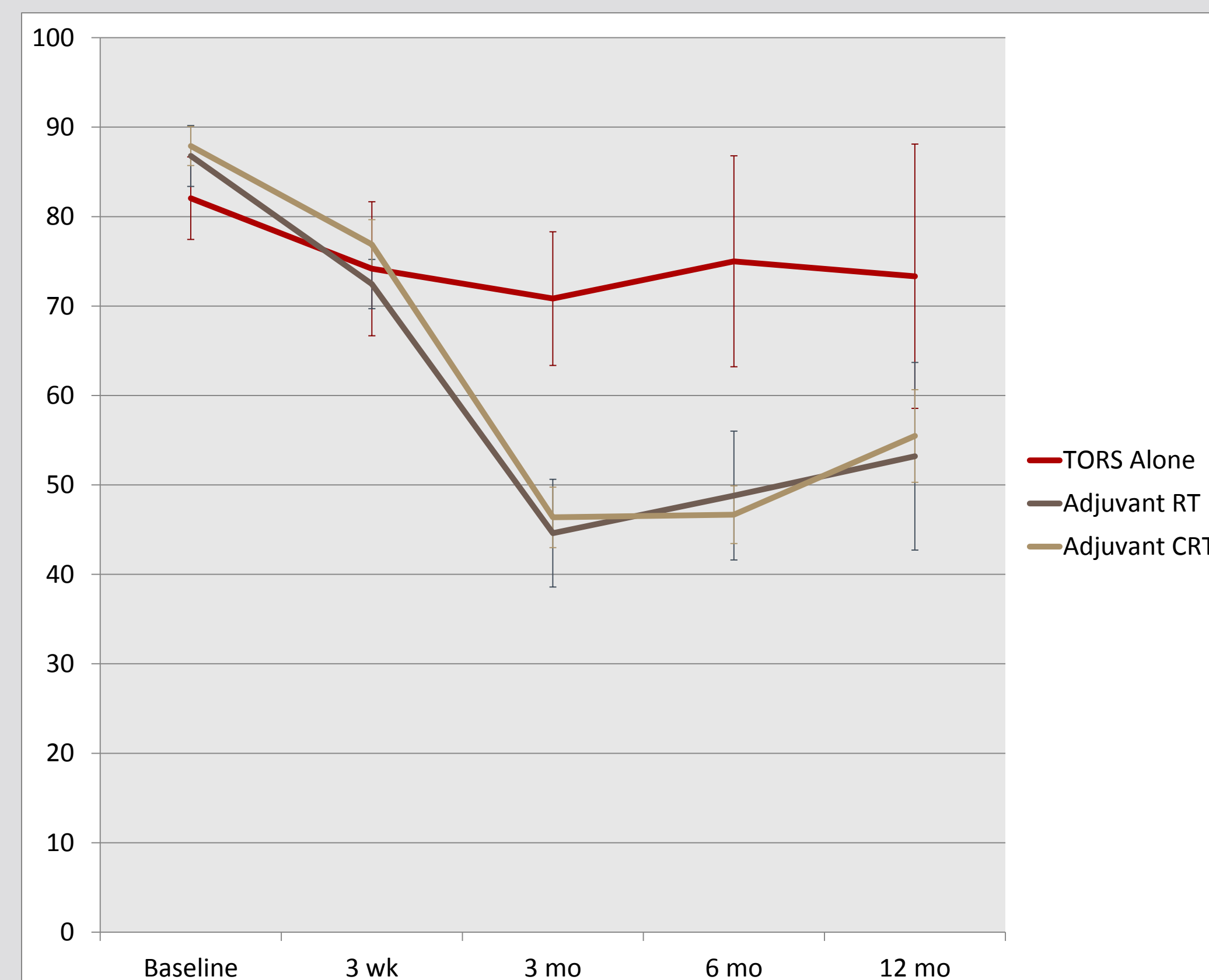


Figure 2. Eating (attitudinal) QOL scores. *TORS Alone > Adjuvant RT at 3 and 6 mo ($p=0.0008, 0.0032$) and Adjuvant CRT at 3 and 6 mo ($p=0.0014, 0.0005$).

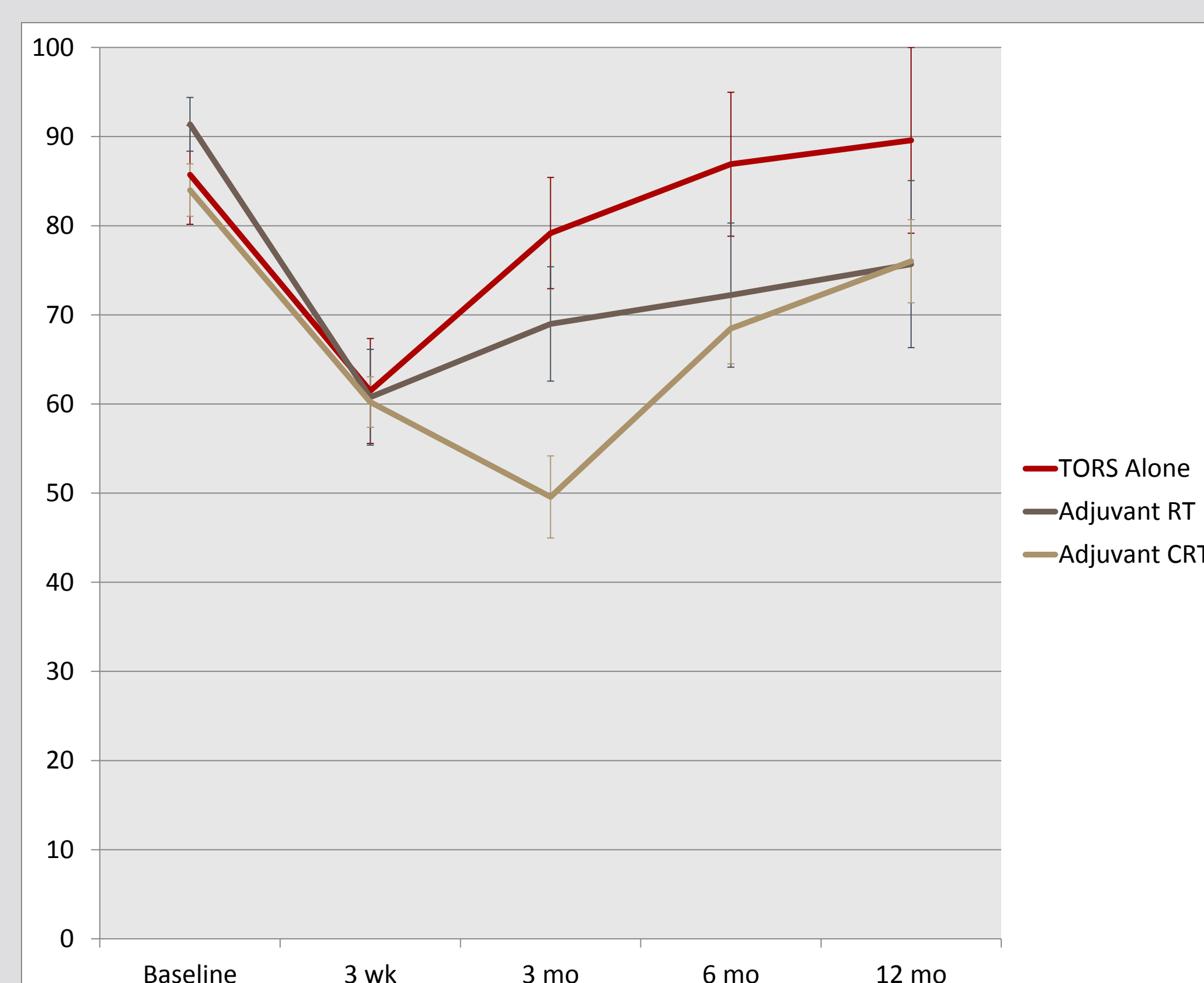


Figure 3. Social Disruption (functional) QOL scores. *TORS Alone > Adjuvant CRT ($p=0.0014$) and Adjuvant RT > Adjuvant CRT ($p=0.023$) at 3 mo.

	TORS Alone	Adjuvant RT	Adjuvant CRT	p-Value
PEG	15%	32%	57%	0.0049 ^a
Trach	15%	10%	10%	0.81
Xerostomia	0%	90%	87%	<0.0001 ^b
Hoarseness	15%	48%	40%	0.12
Dysphagia	54%	74%	76%	0.30
Odynophagia	8%	52%	49%	0.014 ^c
Oral Thrush	0%	16%	42%	<0.0001 ^d
Locoregional Recurrence	14%	3%	12%	0.34
Distant Metastasis	7%	0%	14%	0.06

Table 1. Post-TORS functional outcomes, complications, and clinical outcomes.

PEG=percutaneous endoscopic gastrostomy; Trach=tracheostomy.

^aAdjuvant CRT > Adjuvant RT and TORS Alone.

^bAdjuvant CRT and Adjuvant RT > TORS Alone.

^cAdjuvant CRT and Adjuvant RT > TORS Alone.

^dAdjuvant CRT > Adjuvant RT and TORS Alone.

Treatment Group	HR	95% CI	p-Value
Adjuvant CRT	Reference		
Adjuvant RT	0.17	0.02 1.31	0.09
TORS Alone	0.37	0.05 2.82	0.34

Table 2. Survival analysis. Unadjusted hazard ratios (HR) and 95% confidence intervals (CI) are reported.

DISCUSSION

TORS alone reported higher QOL scores in eating at 3 and 6 months post-surgery compared to adjuvant RT or CRT. TORS alone and adjuvant RT also reported less social disruption than adjuvant CRT at 3 months. Adjuvant RT and CRT experienced more xerostomia and odynophagia post-TORS, and adjuvant CRT had more PEG dependence and oral thrush. With a mean follow-up of 35 months, treatment group was not predictive of survival and there were no significant differences in locoregional recurrence or distant metastasis. Our results substantiate the findings of recent studies that reported superior QOL outcomes in patients who underwent TORS alone,^{3,4} with comparable clinical outcomes.⁵

The results of this study are limited by the small sample size of the TORS alone group. We did not incorporate a multivariate analysis of the effect of demographic, pathologic, and clinical factors on QOL, but rather aimed to provide an overview comparison between treatment groups. However, our findings combined with those of recent reports suggest a need for further investigation of the effect of different doses and frequencies of RT/CRT on clinical, functional, and QOL outcomes to determine an ideal amount of adjuvant therapy.

CONCLUSIONS

For oropharyngeal cancer patients treated with TORS, the morbidity and functional deterioration associated with adjuvant therapy is an important consideration. Head and neck surgeons must weigh the benefit of adjuvant RT or CRT for desirable long-term clinical outcomes against diminished post-operative QOL, especially with regard to eating and social function. Further studies are warranted to investigate the effects of adjuvant therapy in this patient population.

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