

Evaluating Dysphagia and Xerostomia Outcomes following Primary Surgery for Patients with Oropharyngeal Cancer

Mitesh P. Mehta, MD;¹ Rebecca Prince, BA;³ Zeeshan Butt, PhD;³ Bryce E. Maxwell, HSD;² Brittni N. Carnes, BA, MS;² Urjeet A. Patel, MD;² Katelyn O. Stepan, MD;² Bharat B. Mittal, MD;⁴ Sandeep Samant, MD²

¹Dept. of Otolaryngology, Emory University School of Medicine, ²Dept. of Otolaryngology, Feinberg School of Medicine; ³Dept. of Medical Social Sciences, Surgery, & Psychiatry and Behavioral Sciences, Feinberg School of Medicine; ⁴Dept. of Radiation Oncology, Feinberg School of Medicine

Background

- **Oropharyngeal cancer** (OPC) incidence is increasing in the USA with greater emphasis being placed on OPC patients’ **quality of life** (QOL) after treatment^{1,2}
- **Xerostomia and dysphagia** are adverse effects of OPC treatment and are negatively associated with both functional and QOL outcomes³
- The **M.D. Anderson Dysphagia Inventory (MDADI)** and **Xerostomia Inventory (XI)** evaluate patient-reported subjective dysphagia and xerostomia, respectively^{4,5}
- Although long-term adverse outcomes of non-surgical OPC treatment have been studied, such data regarding **urgically treated OPC patients is not yet available**

Purpose & Hypothesis

- **Purpose:** To assess **long-term** patient-reported **dysphagia and xerostomia outcomes** following definitive surgical management in **patients with OPC**
- **Hypothesis:** MDADI and XI scores will show that OPC patients receiving **surgery alone** (NAT) have **clinically better dysphagia and xerostomia outcomes** than those receiving adjuvant radiotherapy (A-RT) or adjuvant chemoradiotherapy (A-CT/RT), and patients receiving **A-RT** will have **better outcomes** than those with **A-CT/RT**

Methods

Participants

- **Inclusion:** Patients aged 18-90 years with **previously untreated OPC** who were **at least one year out from their primary surgery** performed as definitive treatment during 2015-2019 at Northwestern
- **Exclusion:** Patients with less than one-year follow-up from date of surgery, had begun **CT, RT, or CT/RT as definitive primary management**, or had undergone primary oropharyngeal surgery at another institution

Data Collection

- 105 patients were enrolled, of whom **62 completed the MDADI and XI** via REDCap and made up the volunteer sample for the final analysis
- **Demographic information, medical history, and treatment information** were extracted from the electronic medical record for outcome stratification
- **MDADI** ranges from **20** (worst dysphagia-related QOL) **to 100** (best dysphagia-related QOL) while **XI** ranges from **5** (no xerostomia) **to 25** (severe xerostomia)

Statistical Analysis

- OPC management strategies were compared by using MDADI and XI scores with an **ANOVA** and **Tukey’s Honestly Significant Difference** test
- **Multiple regression modeling** was also used to assess the effects of covariates on MDADI and XI scores

Figure 1. MDADI and XI Patient Scores

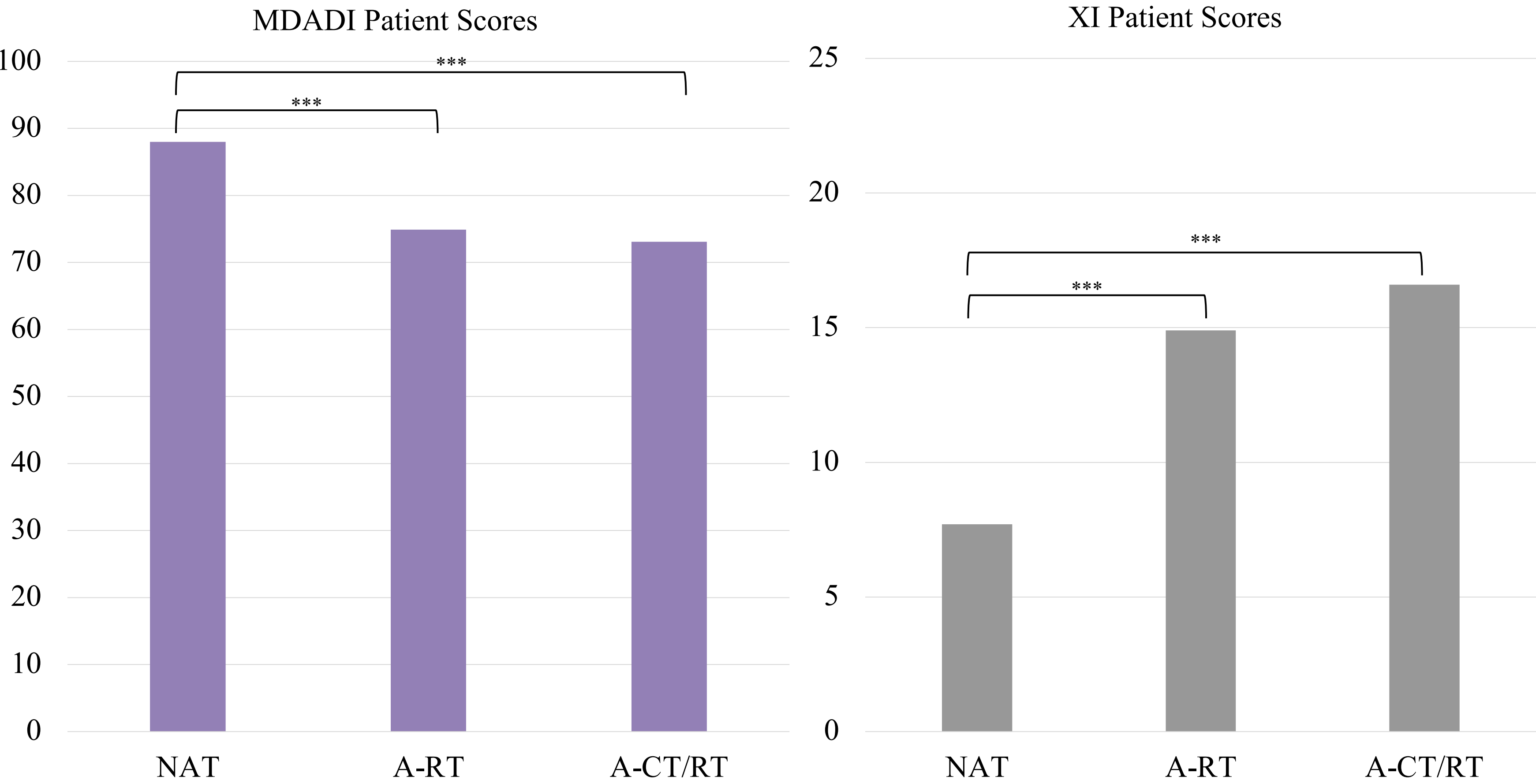


Figure 1. Data is reported as mean MDADI and XI scores. Higher MDADI scores are associated with subjectively less severe dysphagia. Lower XI scores are associated with less symptomatic xerostomia. Pairwise p values<0.05 indicated by ***.

Table 1. Multiple Regression Analysis

Multiple Regression of MDADI Scores	Standardized β Coefficient	p value
Treatment Type		
NAT	REF	REF
RT	-13.61	0.02
CT/RT	-13.92	0.01

Multiple Regression of XI Scores	Standardized β Coefficient	p value
Treatment Type		
NAT	REF	REF
RT	7.90	0.001
CT/RT	9.40	0.0004
Primary Site Location		
Base of Tongue	REF	REF
Tonsil	4.07	0.02

Table 1. Age, T-stage, N-stage, smoking history, primary site location, neck radiation details, and treatment type were selected a priori as potential predictive factors associated with MDADI and XI scores. Only variables significantly (p<0.05) associated with MDADI or XI scores according to the model are shown here. REF indicates the covariate was chosen as the reference variable.

Results

- **Sample characteristics:** 45% <65 years, 81% male, 60% never smokers, 50% base of tongue primaries, **16% (10) received NAT, 48% (30) received A-RT, 36% (22) received A-CT/RT** with median follow-up of 2.2 years
- **NAT** had a significantly **better** mean **MDADI** score than A-RT (88.0±8.65 vs. 74.9±14.67, p=0.03) and than A-CT/RT (88.0±8.65 vs. 73.1±15.06, p=0.02), but **A-RT and A-CT/RT were not significantly different**
- **NAT** also had a significantly **better** mean **XI** score than A-RT (7.7±3.37 vs. 14.9±6.86, p<0.01) and than A-CT/RT (7.7±3.37 vs. 16.6±6.32, <0.01), but **A-RT and A-CT/RT were not significantly different**
- **NAT patients achieved minimum clinically important difference** (MCID) with better postoperative swallowing and xerostomia relative to A-RT and A-CT/RT patients
- **Multivariable linear regression:** A-RT and A-CT/RT were associated with worse postoperative MDADI scores (β=-13.61, p=0.01; β=-13.92, p=0.02) and with worse postoperative XI scores (β=7.90, p<0.01; β=9.40, p<0.01) relative to NAT
- Tonsillar cancer was associated with worse postoperative XI scores (β=4.07, p=0.02) than base of tongue cancer

Limitations

- Patient population enrolled from a **tertiary care center** can lead to **sampling bias** for increased disease severity
- **Limited sample size** affects the power of the study
- **Lack of preoperative MDADI and XI scores** as post-treatment outcomes are associated with baseline function²

Conclusions & Significance

- **First study** comparing **post-surgical adjuvant management strategies** in OPC patients by examining **long-term adverse outcomes** using both the MDADI and XI
- Patients with OPC who have undergone **A-RT or A-CT/RT** following surgery face greater subjective dysphagia and more symptomatic xerostomia, meaning **clinically worse outcomes**, relative to those experienced by patients who undergo **NAT**
- However, **no difference** was observed **between A-RT and A-CT/RT outcomes**
- Our findings can be drawn upon when **counseling patients** regarding **QOL outcomes of OPC treatments**

References

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