



Unplanned Readmission Following Transoral Robotic Surgery

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Abstract

Objectives: Transoral robotic surgery (TORS) is used with increasing frequency for surgical resection of malignant lesions. In this review, we sought to determine the rate of unplanned readmission after TORS, and to determine which patient or surgical factors increase the likelihood of readmission.

Study design: Retrospective chart review

Methods: Clinical data were reviewed for all patients undergoing TORS for malignant lesions at our institution from the start of our TORS program in March, 2010 through July, 2016. Primary outcome was unplanned readmission to the hospital within thirty days of discharge. Age, sex, T stage, p16 status, specimen size, tumor description, operative site, contralateral tonsillectomy, timing of neck dissection, ligation of cervical vessels, length of hospitalization, anticoagulant use and type, presence of feeding tube on discharge, discharge diet, and prior chemoradiotherapy were analyzed as potential predictors of unplanned readmission following TORS.

Results: 297 patients met eligibility criteria. 23 patients (7.7%) had unplanned readmissions within 30 days. Most common reasons for readmission were oropharyngeal bleed (n=13) and pain/dehydration (n=10). Average time to unplanned readmission was 6.52 days (range 0 – 25 days). There was no statistically significant variable associated with unplanned readmission.

Conclusions: Unplanned readmission following TORS occurs in a small, but significant number of patients. Oropharyngeal bleeding and dehydration were the most common reasons for unplanned readmission following TORS in our series.

Results

297 patients underwent TORS for malignant lesions at our institution over the study period. 240 patients (80.8%) were male and 57 patients (19.2%) were female. Average length of stay following TORS was 2.90 days (range 1 – 36 days). Twenty-three patients (7.7%) were readmitted to TJUH within 30 days of discharge; 13 patients (4.4%) were readmitted for bleeding; 10 patients (3.3%) were readmitted for pain and dehydration. Average time to unplanned readmission was 6.52 days (range 0 – 25 days). Post-operative bleeding occurred in 16 patients (5.4%). There was no statistically significant variable associated with unplanned readmission. Male sex (OR = 32.66, 95% CI 1.95-inf), increased length of stay following TORS procedure date (OR = 1.09, 95% CI 0.99-1.20), and return to OR during initial hospitalization for unplanned procedure (OR = 8.18, 95% CI 2.04-28.21) were associated with increased risk of post-operative bleeding. Female sex (OR = 4.52, 95% CI 1.26-16.18) and prior history of radiation to the head and neck (OR = 4.49, 95% CI 0.92-17.29) were associated with increased risk of unplanned readmission for dehydration. p16 positivity was associated with decreased risk of unplanned readmission for dehydration (OR = 0.21, 95% CI 0.05-0.93). Tumor subsite, T stage, specimen size, unilateral vs. bilateral tonsillectomy, neck dissection, timing of neck dissection, transcervical external carotid vessel ligation, prior chemotherapy, anticoagulation use, discharge diet, and presence of a DHT/PEG tube at discharge had no statistically significant effect on unplanned readmission, bleeding, and unplanned readmission secondary to dehydration rates.

Figure 1. Tumor Subsite

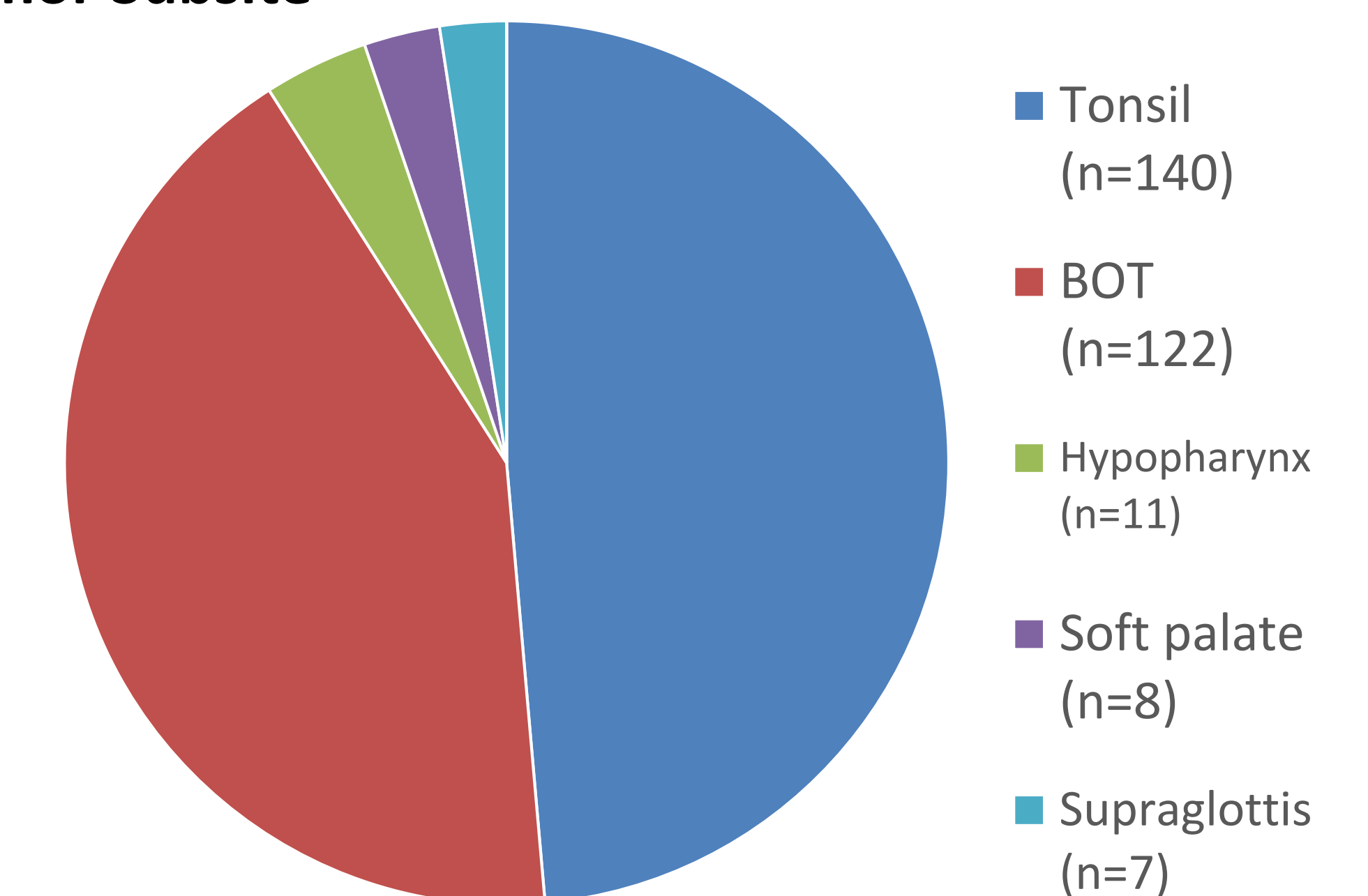
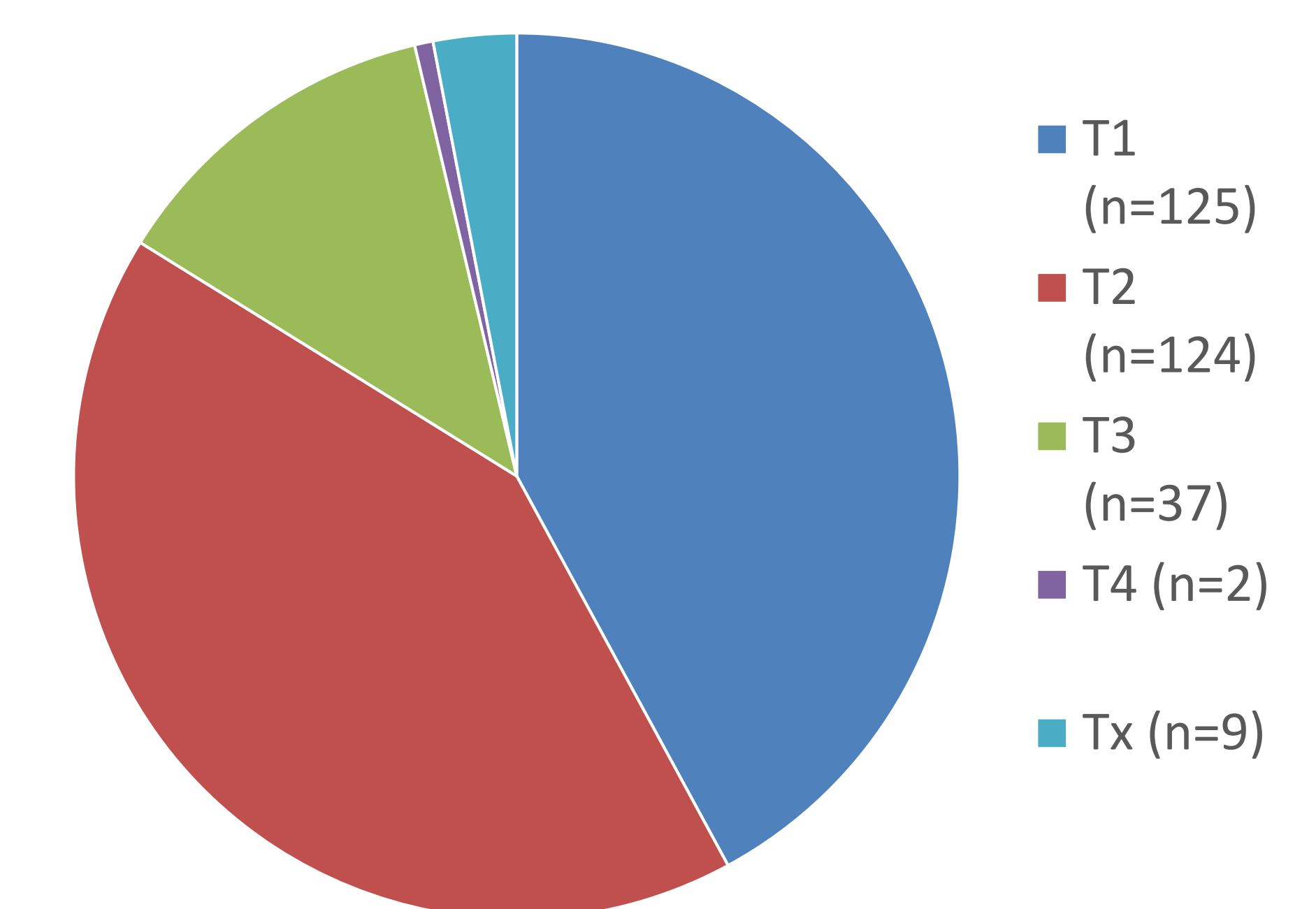


Figure 2. T Stage



Introduction

The Hospital Readmissions Reduction Program, established by the Affordable Care Act, aims to reduce unplanned hospital readmissions by 20% and requires the Centers for Medicare and Medicaid Services to reduce payments to hospitals with excess readmission.¹ Recent studies have focused on the 30-day unplanned readmission rate and its associated risk factors for several procedures in head and neck cancer patients with rates ranging from 5.1%-11.9%.²⁻⁵ There is a paucity of data on the unplanned readmission rate following transoral robotic surgery (TORS). A review utilizing the National Cancer Database (NCDB) showed that TORS had an overall unplanned readmission rate of 4.4%.⁶ Increased awareness and identification of risk factors associated with unplanned readmission following TORS will allow for interventions to mitigate these costly occurrences.

Methods and Materials

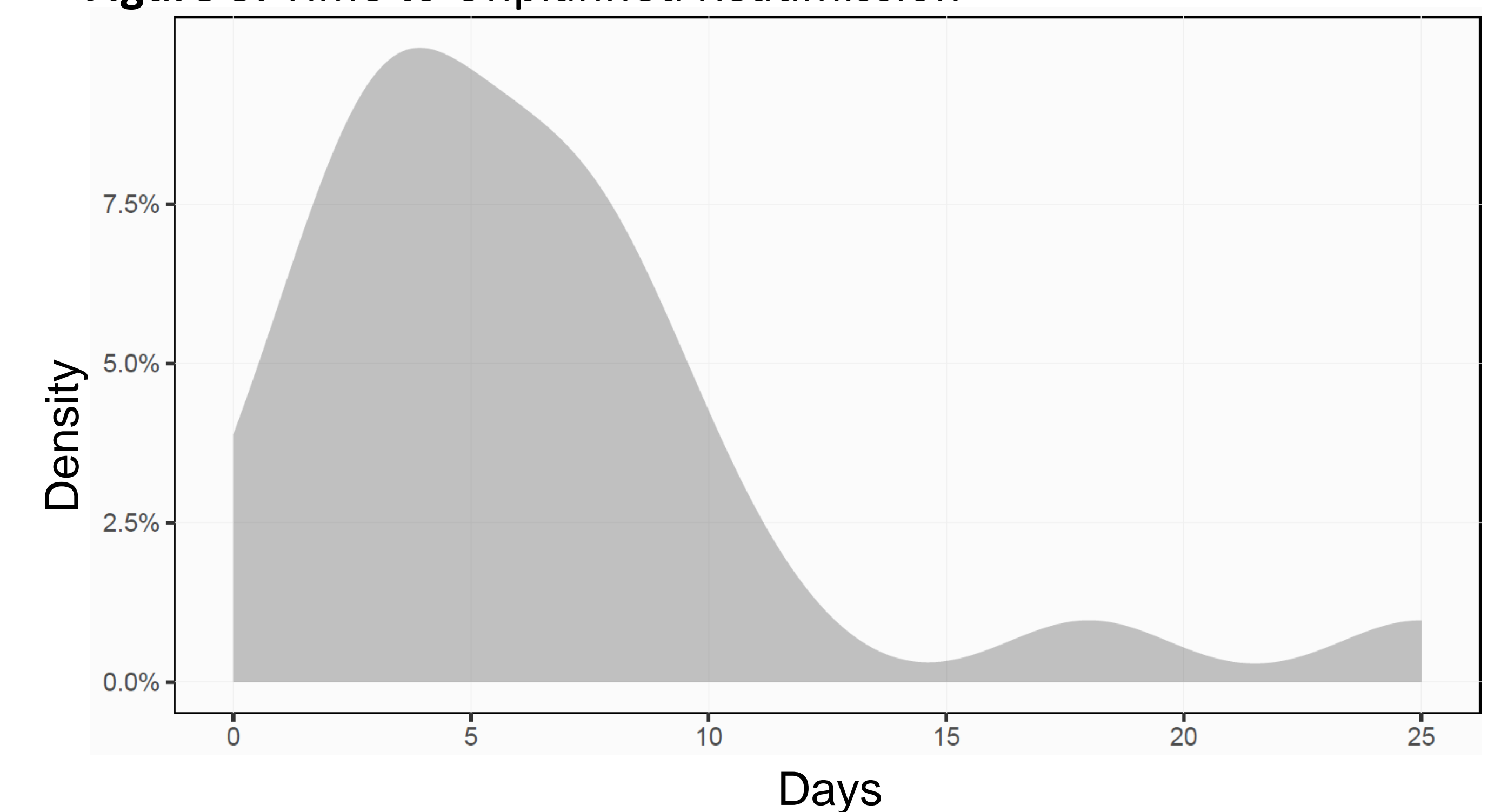
Following IRB approval, clinical data were reviewed for all patients undergoing TORS for malignant lesions at our institution since the inception of our TORS program in 2010 through July 2016. Primary outcome was unplanned readmission within 30 days of discharge from the hospital. Age, sex, T stage, p16 status, specimen size, tumor description, operative site, contralateral tonsillectomy, timing of neck dissection, ligation of cervical vessels, length of hospitalization, anticoagulant use and type, presence of feeding tube on discharge, discharge diet, and prior chemoradiotherapy were analyzed as potential predictors of unplanned readmission following TORS.

Table 1. Unplanned readmission, bleeding, dehydration details

| Patient/Surgical Characteristic | Unplanned Readmission (n= 23) | Odds Ratio (95% CI) | |
|---------------------------------------|-------------------------------|--------------------------|--------------------------|
| | | Bleeding (n= 16) | Pain/Dehydration (n= 10) |
| M/F | 0.84 (0.30, 2.38) | 32.66 (1.95, inf) | 0.22 (.06, 0.79) |
| Prior chemo | 1.21 (0.19, 4.55) | 0.83 (0.04, 4.39) | 3.34 (0.48, 14.5) |
| Prior RT | 2.19 (0.60, 6.42) | 1.40 (0.21, 5.39) | 4.49 (.92, 17.3) |
| Specimen size | 1.00 (0.98, 1.01) | 0.99 (0.97, 1.01) | 0.99 (0.96, 1.02) |
| p16 positivity | 0.53 (0.21, 1.57) | 1.62 (0.43, 10.5) | 0.21 (.05, 0.93) |
| Exophytic/Endophytic | 0.53 (0.20, 1.39) | 0.35 (0.10, 1.27) | 0.73 (0.18, 2.99) |
| Unilateral/Bilateral Tonsillectomy | 0.52 (0.13, 2.04) | 0.38 (0.09, 1.56) | 0.55 (0.06, 5.19) |
| Ligation of vessels | 1.44 (0.53, 3.52) | 1.48 (0.45, 4.23) | 0.79 (0.12, 3.24) |
| Return to OR during initial admission | 3.27 (0.71, 11.4) | 8.18 (2.04, 28.2) | 1.14 (0.00, 8.50) |
| Discharge on anticoagulation | 1.27 (0.47, 3.12) | 1.77 (0.59, 4.96) | 0.31 (0.02, 1.68) |
| Discharge with feeding tube | 0.63 (0.20, 1.63) | 0.77 (0.21, 2.28) | 0.57 (0.09, 2.35) |
| Length of stay following procedure | 0.98 (0.80, 1.10) | 1.09 (.99, 1.20) | 0.94 (0.62, 1.12) |

Bolded items = p < 0.05

Figure 3. Time to Unplanned Readmission



Conclusions

1. Unplanned readmission following TORS occurs in a small but significant number of patients.
2. Oropharyngeal bleeding and dehydration were the most common reasons for unplanned readmission following TORS in our series.
3. Most unplanned readmissions following TORS occurred within one week of discharge
4. Males were at increased risk for bleeding following TORS, whereas females were more likely to be readmitted for dehydration.

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