

Discharge with Drain: Reduction in Hospital Length of Stay after Selective Neck Dissection

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Introduction

- While closed-suction drain placement during selective lateral neck dissection (SLND) is an established practice among head and neck surgeons, there is limited evidence to guide drain management.¹⁻³
- Variable practices regarding drain management were identified among providers at our institution with presence of drain as a possible barrier to timely discharge.**

Objective

To perform a quality improvement initiative to identify and optimize practices regarding drain management and removal after SLND.

Methods

- The A3 problem solving method was used to identify and evaluate interventions for drain management and removal after SLND. n=10 surgeons who routinely perform SLND were surveyed regarding drain management and removal preferences.
- Pre-intervention retrospective cohort study of (n=53) adult patients undergoing unilateral or bilateral SLND from May to December 2019 at a tertiary academic medical center was performed. Post-intervention matched cohort analysis of (n=43) adult patients from January to June 2021 performed.
- Patients undergoing combined procedures (n=67) with SLND such as free flap reconstruction or cases with identified complications during post-operative admission such as chyle leak, seroma, hematoma formation, or wound infection were excluded from analysis.
- Descriptive statistics and independent two-sample t-test were performed regarding patient demographics including sex, age, and zip code; average length of stay (LOS); drain management; and surgical outcomes.

Root Cause Analysis Findings

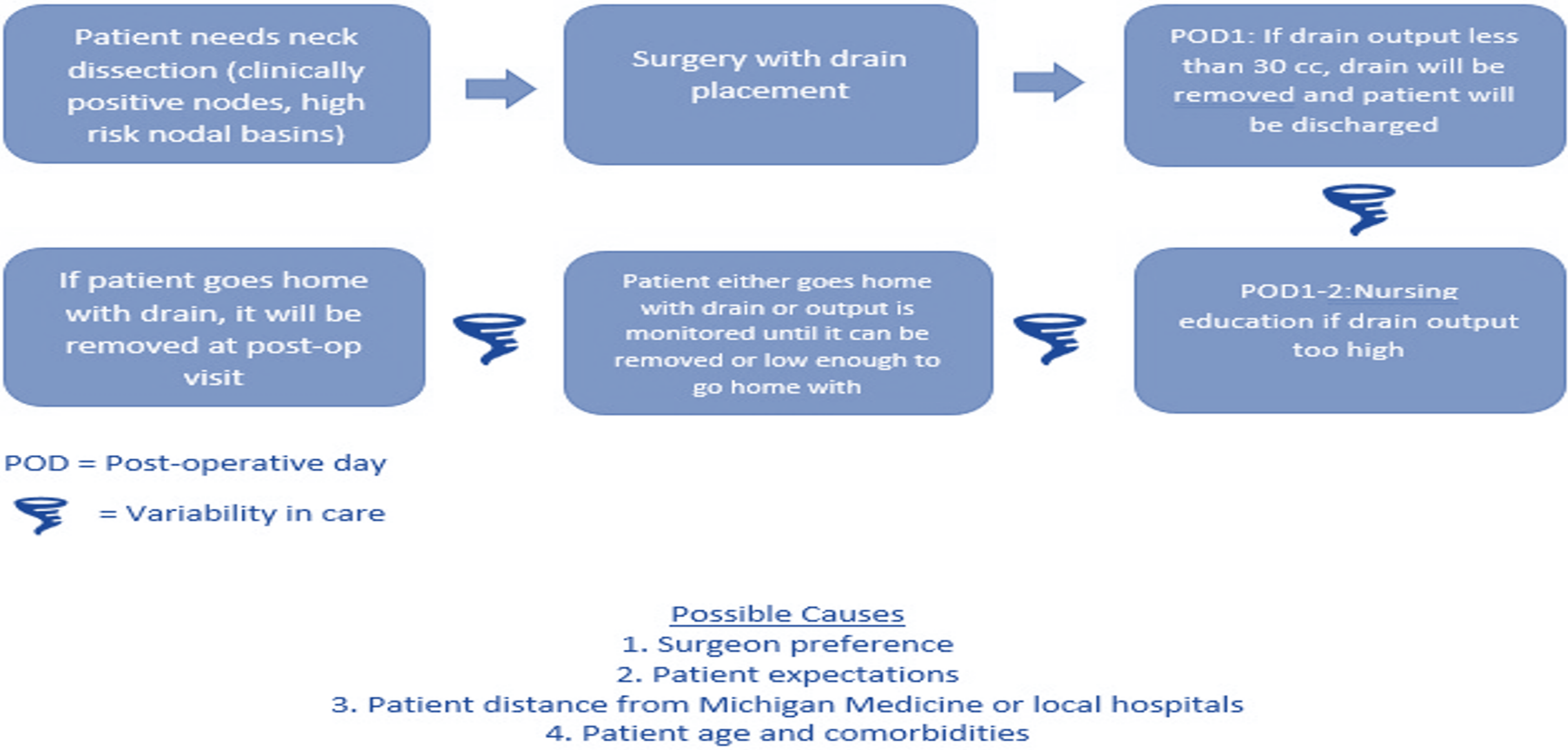


Figure 1: Surgeon Identified Barriers to Drain Removal Prior to Discharge

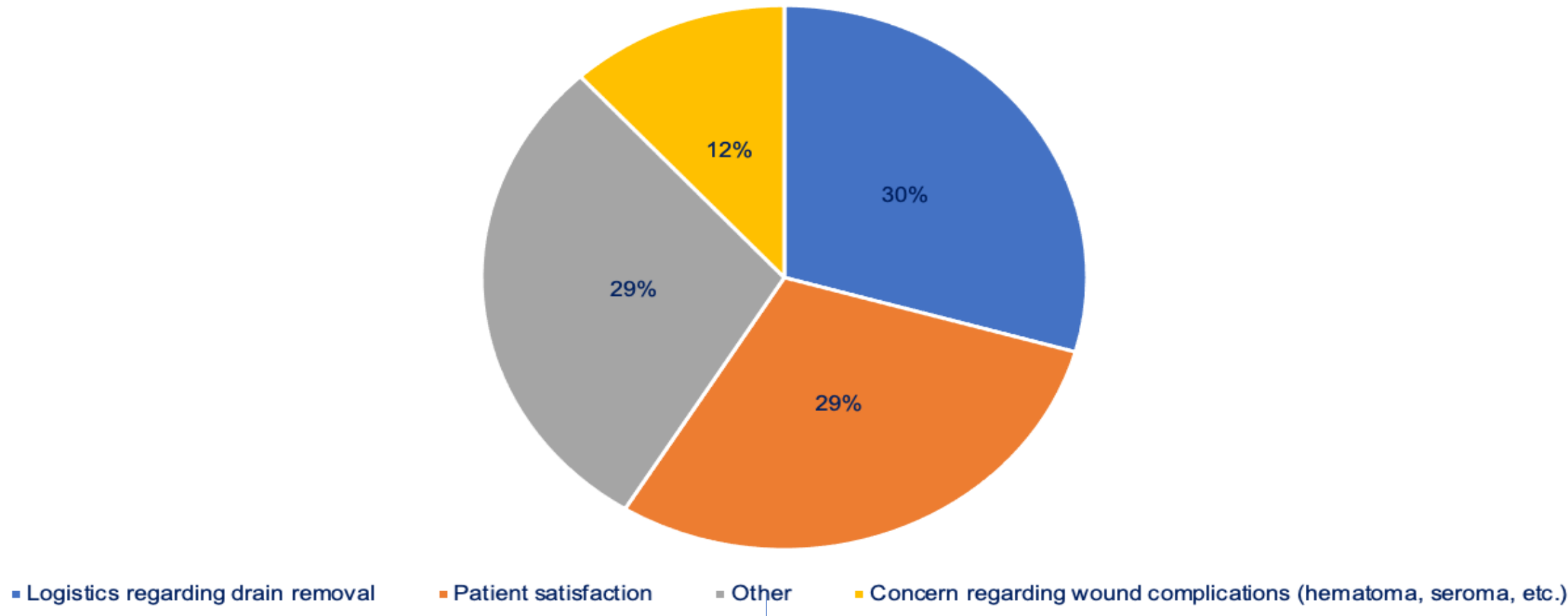


Table 1: Pre-Intervention Surgeon Drain Management Preferences and Practices

Question	Response (n=10)
	<30cc/24 hrs or 10cc/shift (80%)
	<50cc/24 hrs (10%)
Threshold for Drain Removal (<i>threshold (%)</i>)	<75cc/24 hrs (10%)
Comfortable sending patients home with drain (% yes)	100%
Comfortable sending patients home with multiple drains (% yes)	90%
Preoperative teaching performed regarding postoperative drain expectations and management (% yes)	80%

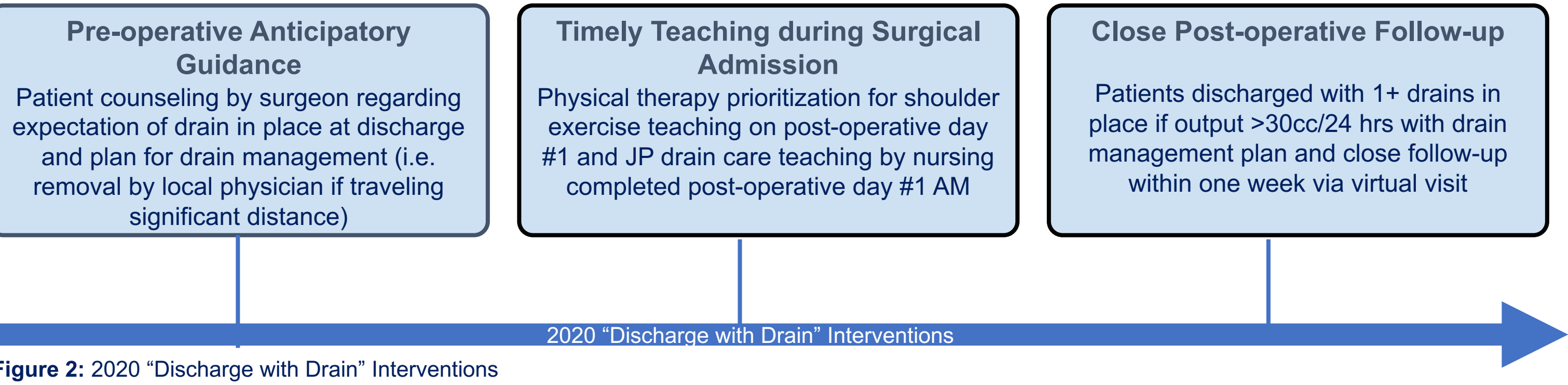


Table 2: Pre-Intervention Closed-Suction Drain Management after Selective Neck Dissection

Patient Demographics and Hospital Stay	Discharged with drain in place (n=26)	Discharged after drain removal (n=27)	
Patient Sex (<i>n</i>)	15M/11F	21M/6F	
Patient Race (% <i>White</i>)	92.3%	96.2%	
Average Distance from Hospital (<i>miles based on zipcode</i>)	90.9 ± 52.1	75.6 ± 63.4	<i>p</i> =0.17
Patient Age (<i>years at time of surgery</i>)	58.3 ± 18.1	61.1 ± 13.5	<i>p</i> =0.27
Average Length of Stay (<i>days</i>)	1.70 ± 0.80	2.42 ± 1.17	<i>p</i> =0.01

Results

Surgeon Drain Management Preferences:

There was a 100% (n=10) surgeon response rate with survey findings summarized in Table 1. While all surgeons expressed comfort with discharging patients with drain in place, 59% identified logistics regarding drain removal, age, and distance from the hospital as patient-specific barriers to discharge with a drain.

Pre-Intervention Analysis:

53 patients underwent SLNDs performed by seven surgeons and 100% underwent intraoperative closed-suction drain placement (see Table 1). Average length of stay was 2.1 ± 1.1 days and 50.9% of patients were discharged with drains in place due to >30cc output over 24 hours (or >10cc/8 hour shift).

- For patients discharged with drain in place, there were no noted complications such as seroma, hematoma formation, chyle leak, or wound infection.
- Average LOS was significantly shorter among patients who were discharged with drain in place versus discharge after drain removal (1.70 ± 0.80 vs. 2.42 ± 1.17 days, *p*=0.01), with estimated increased institutional cost of \$3,335 per patient.**

QI interventions based on A3 analysis outlined in Figure 2 for standardization of closed-suction drain management including preoperative patient counseling, early teaching during surgical admission, and close post-operative follow-up with virtual visit were implemented.

Post-Intervention Matched Cohort Analysis

Post-intervention matched cohort analysis based on gender, age, race, and distance from hospital was performed with findings in Table 3. There was a significant increase in percent of patients discharged with drain (70.4% vs 50.9%, *p*=0.006) and discharged with multiple drains in place (41.8% vs 13.9%, *p*=0.004), with a trend toward significant decrease in average LOS (1.87 ± 0.86 vs 2.34 ± 1.09 days, *p*=0.08).

Table 3: Post-Intervention Closed-Suction Drain Management after Selective Neck Dissection

Patient Demographics and Hospital Stay	Pre-intervention cohort (n=43)	Post-intervention cohort (n=43)	
Patient Sex (<i>n</i>)	37M/6F	37M/6F	
Patient Race (% <i>White</i>)	93.0%	93.0%	
Average Distance from Hospital (<i>miles based on zipcode</i>)	85.9 ± 56.1	90.7 ± 65.5	<i>p</i> =0.26
Patient Age (<i>years at time of surgery</i>)	59.5 ± 16.1	60.3 ± 13.1	<i>p</i> =0.37
Discharged with Drain in Place (%)	50.9%	70.4%	<i>p</i> =0.006
Discharged with Multiple Drains in Place (%)	13.9%	41.8%	<i>p</i> =0.004
Average Length of Stay (<i>days</i>)	2.34 ± 1.09	1.87 ± 0.86	<i>p</i> =0.08

Conclusion

- While there was no significant difference in patient demographics, distance from hospital, or post-operative complications, patients discharged after removal of closed-suction drain for selective neck dissection had significantly longer hospital length of stay, contributing to increased institutional cost of care.
- Standardization of closed-suction drain management after selective neck dissection through preoperative patient counseling and anticipatory guidance can lead to shorter hospitalizations and associated costs. Reducing length of stay was particularly timely to reserve tertiary hospital resources during the pandemic and limit risk of transmission.**

References

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