RESEARCH ARTICLE

Audit of Frequency and causes of 30-day readmission after head and neck surgery at Aga Khan Hospital Karachi: A Retrospective cross-sectional study

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Abstract

Objective: To assess the frequency and causes of unplanned readmissions and emergency department visits of patients having undergone head and neck surgeries within 30 days of the initial surgery.

Method: The cross-sectional, retrospective study was conducted at the Department of Otolaryngology and Head and Neck Surgery, Aga Khan University Hospital, Karachi, from January 2020 to June 2020 and comprised data from January 2017 to December 2019 of all patients who underwent head and neck surgery. Data was collected using a customised proforma and was analysed using SPSS 23.

Results: Against 1,094 admissions, there were 142(12.97%) readmissions. Of them, 7(4.9%) were excluded due to missing data. Among the remaining 135(95.1%) subjects, 86(64%) were male and 49(36%) were females. The overall mean age was 51.1± 15.634 years. Most of the patients 82(61%) were admitted to the emergency department, Oral carcinoma was the most common primary diagnosis 89(66%), and 82(61%) of the readmitted patients were admitted through ED. There were 28(21%) patients readmitted with haemorrhage, while 63(47%) required non-surgical treatment on readmission.

Conclusion: Total rate of unplanned readmission in head and neck surgeries within 30 days was 12.97%, with bleeding and infection being the most common causes of readmission.

Key Words: Patient readmissions, 30-day readmissions, Head and neck cancer, Head and neck surgery, Postoperative readmission.

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Introduction

Head and neck cancer accounts for more than 550,000 cases and 380,000 deaths annually.[1] The incidence of oral cavity and oropharyngeal cancer is significantly higher in South Asian subcontinent, especially Pakistan, and is also associated with significantly higher mortality compared to other regions, such as North America.[2]

Unplanned readmissions and emergency department (ED) utilisations are a significant burden on the economy. Studies have shown that most of the unplanned readmissions to hospitals are potentially avoidable, especially those during the initial 10-15 days.[3-5] Many factors leading to readmissions can be predicted beforehand based on a patient's general health.[6, 7]

Many of these factors predicting readmission are unique to otolaryngology patients.[7] Readmission after head and neck surgery is significantly higher compared to other otolaryngology procedures, and is also associated with significant mortality. The reported readmission after outpatient otolaryngology procedures is 2.01% and for head and neck cancer surgery it is 5.1%.[5,8] The risk factors associated with higher rates of readmission in head and neck cancer surgery are wound class (clean-contaminated), cancer, dyspnoea, etc.[5] Apart from healthcare costs, which, according to a recent analysis, $1.8 billion dollar annual cost associated with 30-day readmissions in Canada.[9] The potential toll on the patient's general wellbeing and anxiety levels is immeasurable with rates of 7.8% measured in otolaryngology patients in Germany.[10]

To our knowledge, no singular data has been reported from Pakistan on the rate of readmissions in tertiary care private hospitals. The current study was planned to fill the gap in literature by assessing the frequency and causes of unplanned readmissions and ED visits of patients having undergone head and neck surgeries within 30 days of the initial surgery.

Patients and Methods

The cross-sectional, retrospective study was conducted at

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the Department of Otolaryngology and Head and Neck Surgery, Aga Khan University Hospital (AKUH), Karachi, from January 2020 to June 2020 and comprised data from January 2017 to December 2019. The sample was raised using non-probability consecutive sampling technique. Data of all patients who underwent head and neck surgery and those who underwent surgical intervention with therapeutic intent was included. Patients were excluded in case of missing medical records or if they had been treated with a palliative intent.

The sample size was calculated with anticipated readmission frequency 9.37%[11], level of significance 5% and precision 5%. The sample size was inflated by 10%. Data was collected using a standardised proforma after approval from the institutional ethics review committee. The American Society of Anaesthesiologists (ASA) classification was used as a reliable measure of perioperative risk assessment.[12] The sample size was calculated using OpenEpi software 3.01[13]

Data was analysed using SPSS 23. Data was reported, as appropriate, as frequencies ad percentages, mean ± standard deviation or median with interquartile range (IQR).

Results

Against 1,094 admissions, there were 142(12.97%)

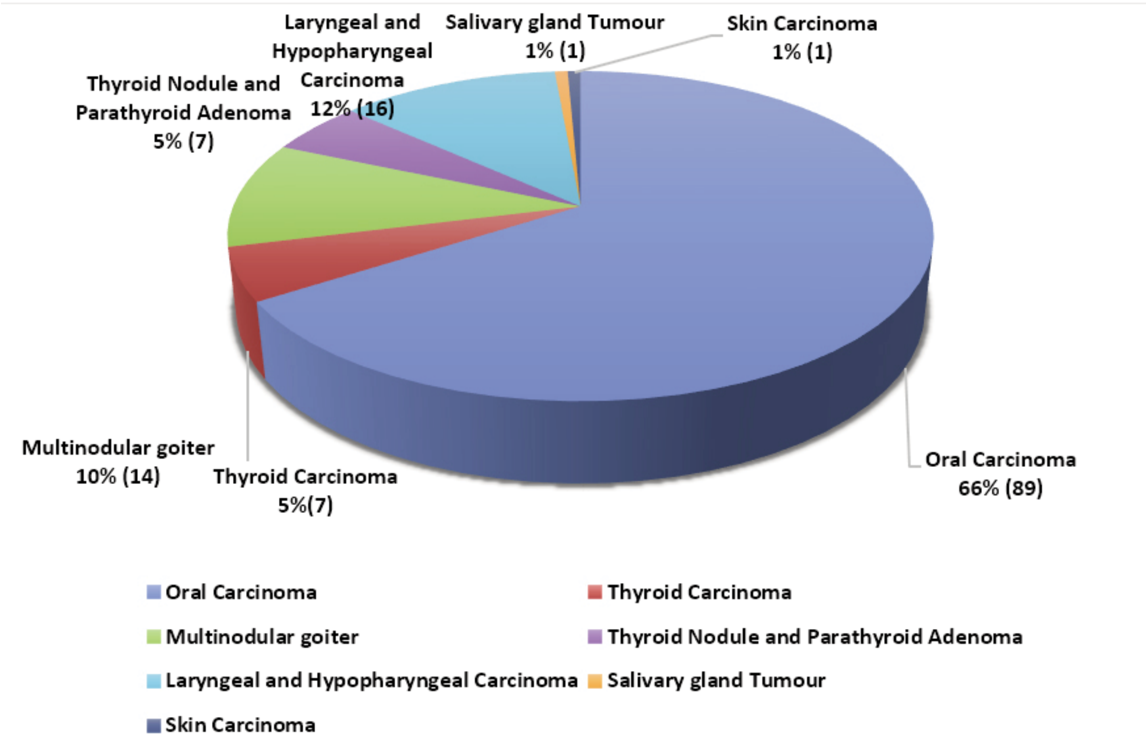

Figure: Initial diagnosis of the readmitted patients.

Table 1: Modes of management on the basis of diagnosis at readmission.

Diagnosis of Readmission (n)	Surgical Management (34)	Non-Surgical Management (63)	Observation (38)
Infection (27)	9	8	10
Bleeding (28)	2	14	12
Free flap failure (5)	5	0	0
Airway (16)	2	12	2
Pain (2)	0	0	2
Hypocalcaemia (11)	0	10	1
Abdominal complains (20)	8	9	3
Others (26)	8	10	8

Table-2: Comparative readmission data underlining global and national perspectives.

Sr. No.	Author	Year	Institute, Country	Rate of Readmission	Top 2 causes for Readmission
1	Andrés M.Bur et.al[5]	2016	University of Pennsylvania,Philadelphia, USA	380(5.1%)	Infection Haemorrhage
2	Evan M. Graboyes[7]	2018	Medical University of South Carolina,South Carolina, USA	93(7.3%)	Wound Dehiscence Infection
3	Vincent Wu et.al[9]	2018	Queen's Cancer Research Institute, Queen's University, Canada	120(9.37%)	Infection Pain
5	Alexander N. Goel[10]	2019	David Geffen School of Medicine University of California,California, USA	1724(10.2%)	Haemorrhage Infection
6	Current Study	2022	Aga Khan University Hospital,Karachi, Pakistan	142(12.97%)	Haemorrhage Infection

readmissions. Of them, 7(4.9%) were excluded due to missing data. Among the remaining 135(95.1%) subjects, 86(64%) were male and 49(36%) were females. The overall mean age was 51.1± 15.634 years. Most of the patients 82(61%) were admitted through ED, while 53(39%) underwent admissions via outpatient clinics. Oral carcinoma was the most common primary diagnosis 89(66%), while 28(20%) patients had undergone thyroid surgeries (Figure). Overall, 79(60%) patients were categorised as ASA-II, followed by ASA-III 43(32%), ASA-I 10(7%) and ASA-IV 3(2%).

Of the total, 104(77%) patients had clean-contaminated primary surgical wounds compared to clean surgery in 31(23%).

Mean duration of stay during primary surgery was 4.67 ± 1.37 days, while mean duration of stay during readmission was 2.02 ± 0.6 days. The mean time from primary surgery to readmission was 12.56 ± 3.69 days. On readmission, the largest representation was of bleeding 28(20.7%), while 27(20%) patients came with infected surgical wounds, 16(11.8%) with airway issues, 20(14.8%) with abdominal complains, 11(8.1%) with hypocalcaemia and 5(3.7%) with flap failures whereas 26(19.3%) non-specific readmissions were seen which included wound dehiscence and subsequent closures and exacerbations of medical conditions. Amongst the readmitted patients, 38(28%) were observed during readmission, 63(47%) were managed with non-surgical means in addition to observation, and 34(25%) underwent surgical intervention either under local or general anaesthesia (Table 1).

Discussion

In the current study, the rate of readmission at a tertiary care centre was 12.97% which is comparable to studies conducted elsewhere in the world[5,7,9,10] (Table 2).

Bleeding represented the largest subset of readmitted patients though infection followed in close. In a study, surgical site infections had a 19.4% representation[7] compared to 20% in the current study. Ancillary niches of postoperative complications were also explored in the current study. The second most common surgical intervention (23.5%) was required in patients with abdominal complications, including gastrostomy tube dislodgement, pneumo-peritoneum or tube blockage. The largest subset of surgically managed patients were that of infected wounds with dehiscence needing debridement This comprised 6.6% of the entire population and 26.4% of the surgically intervened patients.

With institutional guideline of no or single dose of perioperative antibiotics in clean surgeries as opposed to three-day regime of postoperative antibiotics in clean-contaminated surgeries, the readmission rate in the current study was higher amongst the clean-contaminated category. Amongst the infected category, 92% of the patients were with clean-contaminated primary wounds, with clean surgeries having only 1.4% of the total readmitted pool presenting with infection. The results provide invaluable insight into the category of wound and incidence of readmission. The clean-contaminated surgery pool with infection had an overall infection rate of 18.5% considering the entire cohort with an infection rate of 20%. This number is particularly high considering the global landscape. Elbur et al. reported an overall infection rate of 9% and in a study evaluating factors affecting readmission, surgical site infection rate in free flaps was 45.2% compared to 9.9% in pedicled flap.[14,15] The current study had a large subset of oral cavity cancer patients 89(66%) and an infection rate comparable to Osborn et al.[15]

The current study has limitations that include the lack of causality. Besides, it was a single-centre study done in the private sector and no representation from the public sector.

Despite the limitations, however, the study paves the way for future prospective studies that may evaluate modifiable and non-modifiable factors impacting readmission.

Conclusion

Total rate of unplanned readmission in head and neck surgeries within 30 days was 12.97%, with bleeding and infection being the most common causes of readmission. Clean-contaminated wounds require more attention perioperatively to improve rates of readmission, and ED services need to be well-equipped to handle postoperative bleeds and infections to improve patient care quality.

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