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Anaesthetic and Surgical Complications in Patients of Head and Neck Malignancies in Peri-Operative Period: A Retrospective Study.

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Abstract

Background: This study aims to assess anaesthetic and surgical complications in patients of head and neck malignancies in the ENT department.

Material and methods: This retrospective study includes total number of patients who underwent surgery and diagnostic procedures for maxillo-facial, oro-nasal and laryngeal malignancies in ENT operation theatre in 2019.

Observations: The patients age range was 3 years to 79 years majority between 51-60 years (32.20%), were males (71.18%) belonging to ASA grade II (72.88%). Anaesthetic complications intra-operatively were 15.25%, most common was hypotension (10.17%) following blood loss. Morbidity following surgery was 20.33%. There was no mortality in any patient in peri-operative period.

Conclusion: Complications following surgery and anaesthesia were minimal in patients of head and neck malignancies which were treated and managed effectively.

Keywords: Anaesthetic complications, Surgical complications, Head and neck malignancies

Introduction

Head and neck malignancies constitute malignancies of thyroid, salivary gland, aero-digestive tract and larynx. Head and neck cancer constitutes 3% of total malignancies in United States, with approximately 53,000 Americans developing head and neck malignancy annually and 10,800 dying from the disease [1]. Anaesthesia for these patients is challenging due to airway difficulties, multiple co-morbid medical disease, long surgical duration and post-operative intensive care management. There are various intra-operative and post-operative difficulties in patient management which affect the outcome following anaesthesia and surgery. There is scarcity of literature regarding anaesthetic and surgical complications in patients of head and neck malignancies. Hence, this retrospective study evaluates the anaesthetic and surgical complications in these patients in peri-operative period.

Material and Methods

This retrospective study includes total number of patients who underwent surgery and diagnostic procedures for maxillo-facial, oro-nasal and laryngeal malignancies in ENT operation theatre from Jan 2019 –

Dec 2019 in a Tertiary care hospital. The patients' age range was 3 years to 79 years, of either sex, ASA grade I-III and with or without co-morbidities. It assessed anaesthetic complications, morbidity and mortality in patients of malignancy in ENT department. Surgical procedures included were excision of tumour with neck dissection with/without flap, direct laryngoscopy with biopsy and diagnostic endoscopy with biopsy. Patients who underwent excision of tumour with neck dissection with/without flap and direct laryngoscopy with biopsy received general anaesthesia, diagnostic endoscopy with biopsy patients received regional blocks like glossopharyngeal nerve block, superior laryngeal nerve block and recurrent laryngeal nerve block along with local 10% spray. Anaesthetic complications like bronchospasm, laryngospasm, airway trauma, failed intubation, desaturation, hypotension, hypertension, nerve palsy, delayed recovery were noted and treated accordingly. Post-operative complications causing morbidity like aspiration pneumonia, ventilatory support, deep venous thrombosis, incisional pain, nausea and vomiting, delayed naso-gastric feeding, bleeding from surgical site, re-exploration, graft rejection and nerve palsy were noted and treated. Patients were followed till discharge post- surgery and procedure.

Statistical analysis: Data were collected, tabulated, analysed using SPSS computer software version 20.0. Numerical variables were presented as percentage.

Observations

Table 1: Total patients underwent various surgical procedures in ENT OT in 2019 were 1596.

Surgery	Number	Percentage(%)
Major	475	29.76%
Minor	1121	70.24%
Total	1596	

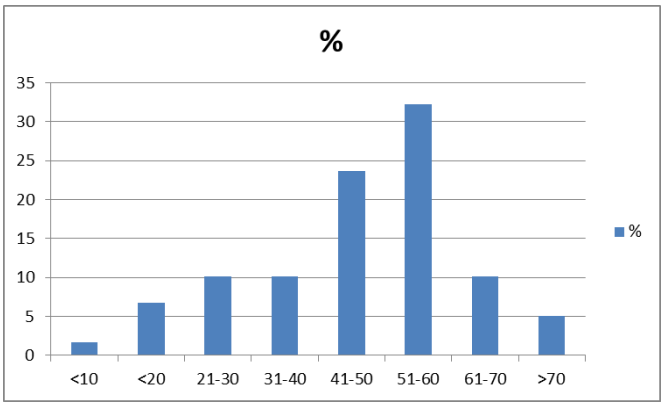
Total patients of malignancy (operated/ procedure) were 59 which constitute 12.42% of total major patients operated in ENT OT. The duration of surgery/procedure (MIN- MAX) - 20 min – 9 hours. Surgical procedures – excision of tumour with neck dissection with/without flap, direct laryngoscopy with biopsy and diagnostic endoscopy with biopsy.

Table 2: Diagnosis of Patients

Diagnosis of malignancy	Number of patients	Percentage (%)
Larynx	12	20.33
Buccal mucosa	10	16.94
Nasal malignancy	10	16.94
Parotid gland	09	15.25
Tongue	06	10.16
Thyroid	04	6.78
Maxilla	02	3.38
Alveolus	02	3.38
Hard palate	02	3.38
Lip	01	1.69
Tonsillar fossa	01	1.69
Total	59	

Most common malignancy operated were laryngeal followed by buccal and nasal malignancy.

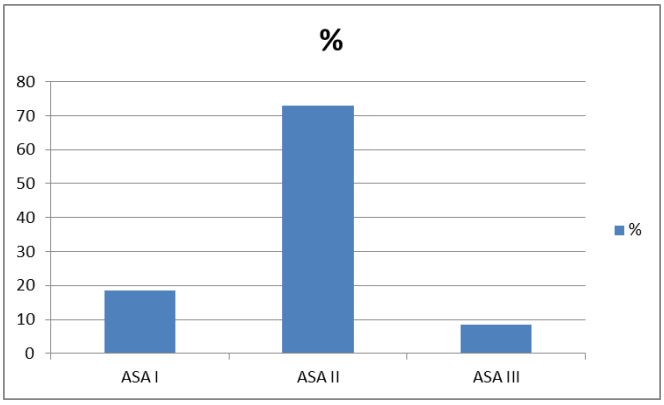
Graph1: Age-Wise Distribution



The patients' age range (min-max) was 3 years to 79 years, most common were in the age range of 51-60

years (32.20%). Majority of the patients were males-42(71.18%) with male:female ratio of 2.47:1.

Graph 2: ASA Status of Patients



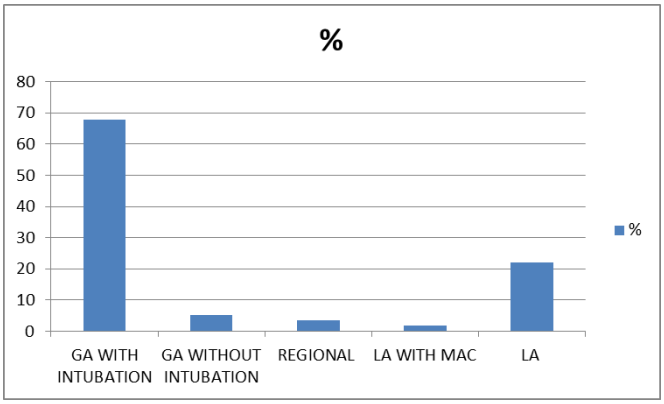
Majority of patients were from ASA II (72.88%).

Table 3: CO- Morbidities in Patients

Co- morbidity	Number of patients	Percentage (%)
Hypertension	22 (controlled-19)	37.29
Respiratory disease (PTB, COPD -5, BR. ASTHMA)	09	15.25
Cardiac disease (IHD-7, CCF(t/t)-01, VALVULAR DS-01)	09	15.25
Diabetes mellitus	04	6.78
Seizure disorder	01	1.69
Total	45	

Hypertension (37.29%) was the most common co-morbidity seen in the study group.

Graph 3: Showing Type of Anaesthesia



40 patients (67.79%) received general anaesthesia, 3 patients (5.084%) received general anesthesia without intubation, 2 patients (3.39%) received regional blocks, 13 patients (22.03%) received local anaesthesia and one patient (1.69%) was done under LA with MAC .

Table 4: Anaesthetic Complications

Complications	Number of patients	Percentage (%)
Bronchospasm	01	1.69%
Laryngospasm	0	
Airway trauma(Lip, Pharyngeal injury)	03	5.08%
Failed intubation	0	
Hypoxia (Desaturation)	0	
Hypotension	06 * (Blood loss)	10.17%
Nerve palsy	0	
Re-intubation	0	
Delayed recovery	0	
TOTAL	09	15.25%

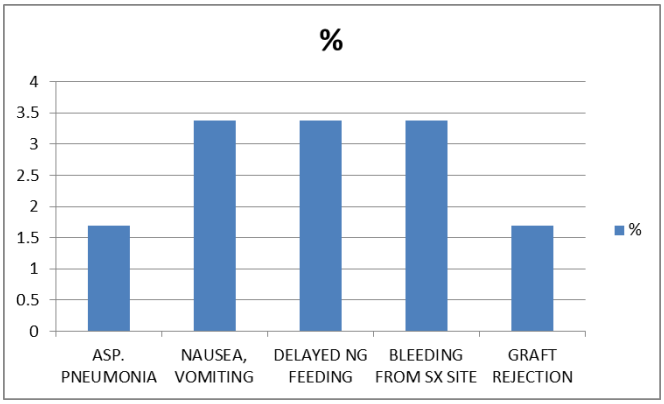
Most common intra-operative complication was hypotension following blood loss (15.25%). From total operated patients, 47 patients (79.66%) were shifted to ward and 12 patients (20.34%) were shifted to SICU.

Table 5: Morbidity Following Anaesthesia And Surgery

Morbidity	Number of patients	Percentage (%)
Aspiration pneumonia	01	1.69%
Ventilatory support	0	
Deep venous thrombosis	0	
Incisional pain	05	8.47%
Nausea, Vomiting	02	3.38%
Delayed nasogastric feeding	02	3.38%
Bleeding from surgical site	01	3.38%
Re-exploration	0	

Graft rejection	01	1.69%
Nerve palsy	0	
TOTAL	12	20.33%

Graph 4: Showing Morbidity Following Anaesthesia and Surgery



Discussion

The annual incidence of head and neck cancers worldwide is more than 650,000 cases around 3,30,000 deaths per year [2]. Male to female ratio ranges from 2:2 to 4:1 [2]. In our study, Majority of patients were above 40 years (42 patients, 71.18%), from age group 51 – 60 years (19 patients, 32.20%). Majority patients were males (71.18%) with male:female ratio of 2.47:1. Most common malignancy operated in ENT operation theatre were larynx (20.33%) and buccal mucosa (16.94%). Hypertension was (37.29%) most common associated medical disease. In a study of Myles PS [3], 22.7% females and 16.6% males had hypertension which was most common associated co-morbidity. Most of our study subjects received general anaesthesia (67.79%). Anaesthetic complications were minimal – bronchospasm (1.69%) requiring endotracheal intubation with bronchodialator treatment and lip and pharyngeal injury (5.09%).Significant blood loss causing hypotension was seen in 6 patients (10.17%) as the malignancies are highly vascular due to neo-vascularization and in Indian patients there is associated nutritional anemia with less safety margin. Timely blood and blood product availability from our blood bank lead to better patient outcome. Patients were shifted to SICU for hemodynamic monitoring and post-operative management. Morbidity was minimal and seen in 20.33% of patients. Aspiration pneumonia was seen in 1.69% patient who was known case of COAD. Incisional pain was seen in 8.47% patients which was effectively treated with multi-modal analgesia along with PC analgesia. Graft rejection occurred in 1.69% patient for which re-grafting was done by plastic surgeon, thereafter recovery of patient was uneventful.

Approximately 4-20% of cancer patients experience DVT, rate highest in initial period of diagnosis and post- surgery due to immobility in post-operative period. The annual incidence of VTE is 0.5% as compared to 0.1 % of general population [4]. In our study no patient had DVT in post-operative period as we had used intermittent Pneumatic compression DVT machine and LMWH prophylactically. No mortality was noted in immediate post-operative period, patients were followed till discharge from hospital. Patients were discharged– 10-18 days post-surgery/procedure. Hence, multidisciplinary approach along with sophisticated anaesthesia technique with well-equipped High-end Anaesthesia machines, advanced airway gadgets like C- MAC Video-laryngoscope, Bronchoflex and invasive hemodynamic monitoring like IBP, CVP, BIS monitoring have made anaesthesia safer. Surgical intensive care unit with DVT prophylaxis, ABG analysis, warmer and ventilators lead to smooth post-operative recovery especially in our patients of major long duration malignancy surgery. In a study conducted by Brindle GF, Soliman MG [5], they observed that 43% patients had muscular pain, 28.2% patients had sore throat, 17% patients had headache, 15.5% patients had

nausea and 8% patients had vomiting, 15.8% patients had cough. They concluded that the post-anaesthetic complications in surgical out patients are frequent but of mild recovery. In a study conducted by Myles PS, Hunt JO et al [3], they observed that nausea and vomiting was present in 29.6% females and 14.2% males, sore throat in 15.7% females and 11.4% males, dental damage in 0.17% males, upper airway problem in 0.53% females and 0.74% males, respiratory problems in 2.9% females and 2.7% males, myocardial infarction in 0.11% females and 0.13% males, post-operative complications in 49.1% females and 34.3% males. In a study by Chung F [6], 26.9% patients had incisional pain, 11.6% patients had headache, 11.5% had drowsiness, 7.1% had nausea and vomiting after ambulatory anaesthesia. In a study conducted by Van Wijk MGF et al [7], 31% patients had nausea and vomiting, 38% patients had sore throat following GA, 41% patients had cold, 17.1% patients had shivering, 22% patients had headache and 7.7% had difficulty in breathing. In a study conducted by Dodds CP et al [8], 25.5% patients had sore throat, 9.1% had shivering, 18.2% had headache, 14.9% had muscle weakness and 31.0% had vomiting. They concluded that post-operative sequelae following anaesthesia were minor. In a study conducted by Burrow BJ [9], 32.5% patients had sore throat, 11.5% had shivering, 13.7% had cold, 34.5% had headache, 35.5% had vomiting. In a study conducted by T. Peterson MD et al [10], 11.5% patients receiving general anaesthesia developed post-operative pulmonary complications as compared to 3.6% patients receiving regional anaesthesia who underwent orthopaedic surgery. Overall they noted that total 4.1% patients one or more post-operative pulmonary complications.

Conclusion

Based on various findings from our study, we can conclude that with meticulous pre-operative evaluation, systematic anaesthesia technique with strict hemodynamic monitoring and intense post-operative management, complications following surgery and anaesthesia were minimal in patients of head and neck malignancy.

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