

Common postoperative complications after general anesthesia in oral and maxillofacial surgery

ABSTRACT

Aim and Objectives: Anesthesia is Greek word meaning loss of sensation, and involves painful invasive procedure to be performed with little distress and no pain to the patient. Postoperative anesthetic complications are very common and duration of surgery is frequently cited as major risk factor for postoperative complications. The recognition and treatment of these complications are important when providing good quality care. The purpose of this study was to evaluate mild, moderate, and severe postoperative complications in patients undergoing maxillofacial surgery under general anesthesia and also determine the safety of general anesthesia in healthy and patients with comorbidities.

Subjects and Methods: This prospective study was conducted in the oral and maxillofacial surgery department. Two hundred and twenty patients who were operated under general anesthesia were taken in study. All relevant past medical and dental records were noted and were supported by preformulated questionnaire and was filled preoperatively and after surgery to 12 weeks.

Results: Mild-to-moderate and severe complications were noted. Females showed more complications than males. Most common complications were sore throat, dysphagia, nausea, vomiting, pain, swelling in normal patients, and in patients with comorbidities delayed wound healing, hypertension, and infection were also seen.

Conclusion: The use of General Anesthesia is considered safe but it has few risks associated with it and past medical conditions should be evaluated preoperatively.

Keywords: American Society of Anesthesiologist, general anesthesia, headache, maxillofacial surgery, sore throat

INTRODUCTION

General anesthesia is overall safe and those with significant health conditions also can undergo procedures under general, but it can have countless minor and major complications. The incidence of postoperative complications depends on several factors, some of which are related to surgical procedures. The risk factors or complications depend on the type of procedures, general physical health rather than the type of anesthesia. People having serious medical conditions such as smoking, high blood pressure, obesity, diabetes, stroke, seizures, obstructive sleep apnea, any condition involving kidney, lung and heart disease, drug allergies, anticoagulants, and history of allergy to GA, poor nutrition can be aggravating factors for anesthesia.^[1]

The frequency of postoperative complication is varied in literature. Nowadays due to the discovery of modern anesthetic techniques and sophisticated monitoring equipment, safe anesthetic agents, have markedly reduced anesthetic risks. However, there is decline in morbidity and

PARVEEN AKHTER LONE, NISAR AHMED WANI, QURRAT UL AIN, ABHA HEER, RANJNA DEVI, SHIVANI MAHAJAN

Department of Oral and Maxillofacial Surgery, Indira Gandhi Government Dental College, Jammu, Jammu and Kashmir, India


Address for correspondence: Dr. Parveen Akhter Lone, Department of Oral and Maxillofacial Surgery Indira Gandhi Government Dental College, Jammu, Jammu and Kashmir, India. E-mail: parveenlone@gmail.com

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mortality rates, the incidence of minor and more common complications has not changed significantly. Common side effects include vomiting, dry mouth, sore throat, nausea, muscle aches, itching, shivering, sleep, mild hoarseness, mild dysphagia drowsiness, dental damage, peripheral nerve injury, and superficial thrombosis.^[2-5]

The American Society of Anesthesiologist (ASA) classification describes the fitness of patients undergoing surgery and anesthesia in a very simple way. Classification is developed for tabulation and collection of statistical data and risk for intra and postoperative complication is assessed on a scale from one to five. This method is easy way to determine the collection and tabulation of data:

1. Healthy person under the age of 65 years
2. Healthy over the age of 65 years or person with mild systemic disease
3. person with severe, nonlife threatening systemic disease
4. Person with severe systemic disease that constantly threatens life
5. Moribund patient, who is not expected live more than 24 h without operation.

Literature has reported that prolonged surgery carries a high risk of complication rate than expected.^[6,7] The association between long operations and morbidity is hard to untangle because the duration of surgery is often proportional to the complexity of procedure. Many researchers believe that prolonged surgery carry a higher than expected complication rate, however evidence to this is lacking as often long operations are complex and complication with many other variables affecting patients outcome. For example, in number of studies vascular surgeries increased mortality was associated with the duration of surgery but these patients often had to undergo other procedures such as renal or mesenteric revascularization, which correlated with increased mortality.^[5,8]

Very few studies are reported in literature regarding common postoperative complications in maxillofacial surgery patients after general anesthesia in healthy and co-morbid patient.

SUBJECTS AND METHODS

This prospective study was conducted in oral and maxillofacial surgery (OMFS) department and was supported by pre-formulated questionnaire after approval from the institutional ethical committee. Sample size consisted of two hundred and twenty patients who were operated under general anesthesia. Patients with mental retardation were excluded from the study. Age ranges from 30 years to 69 years. Various variables such as age, gender type of disease, other

systemic problems, laboratory and radiographic parameters, preoperative intraoperative, (type and duration of surgery), and postoperative were recorded. ASA scoring system to define anesthetic risk was used. Postoperative complications were recorded and divided:

1. Complications directly related to surgical procedure (surgical complications)
2. Complications related to general anesthesia.

The questionnaire included inquiries about past medical problems, bleeding, pain and swelling, sore throat, dysphagia, nausea, vomiting, headache, difficulty in sleep, inability to do physical activity, hypotension, fever, any respiratory problems, muscle aches, hypertension, and was filled preoperatively and after surgery to 12 weeks.

RESULTS

UNDER ASA:

(ASA1) 57.7% were healthy patients with no systemic disease, (ASA11) 1 0.4% ASA11 having mild systemic disease (ASA 111) person with severe, nonlife threatening systemic disease. About 41.8% were having cardiovascular diseases, respiratory diseases, diabetes, epilepsy, hypothyroidism, arthritis, etc., (complications due to comorbidities).

Female and male ratio 123 were male and 97 were female [Table 1].

Type of surgery trauma 51.36%, maxillofacial pathologies 31.3%, TMJ surgeries 8.18%, resection and reconstruction 4.09%, and others 5%.

Table 1: Patient variables

Characteristic	n (%)
Gender	
Male	123 (55.9)
Female	97 (44)
ASA status	
ASA I	127 (57.7)
ASA II	1 (0.4)
ASA III	92 (41.8)
Procedures done	
Trauma	113 (51.36)
Maxillofacial pathologies	69 (31.3)
TMJ surgeries	18 (8.18)
Resection and reconstruction	9 (4.09)
Others	11 (5)
Duration of surgery	
60-120 min	111 (50.45)
120-180 min	67 (30.45)
>3 h	22 (10)

ASA: American Society of Anesthesiologists, TMJ: Temporomandibular joint

Time duration varied from 1 h to 3 h and more than 3 h. About 50.45% of patients were operated in 60–120 min, 30.45% were operated in 120–180 h and 10% more than 3 h [Table 1].

Fourteen percent of cases were hypertensive, 22.8% diabetics, 50% were both diabetic and hypertensive, 4.34% with thyroid disease, 3.26% CVS problems, 5.43% with respiratory diseases, and 35% of patients were either alcoholic or smokers [Table 2].

Postoperative complications

About 81% of patients showed sore throat and dysphagia, nausea in 67% and vomiting in 41%, headache in 33%, fever in 17%, hypertension in 7%, hypotension in 29%, myalgias in 21%, bleeding in 3%, trauma to teeth and other oral structures in 2%, sleep disturbance and related behavioral problems in 31% and paraesthesia in 21%, and wound infection in 5% [Table 3].

Paresthesia, bleeding, swelling, wound infection trauma to teeth, and other structures were due to surgical procedure. Sleep disturbance, nightmare, hypotension, myalgias, hypotension, sore throat, and dysphagia were found due to both GA and surgery whereas respiratory difficulty, micturition problems, hypertension, and nausea and vomiting were due to general anesthesia.

DISCUSSION

Postoperative complications after general anesthesia varies from mild distress to long-term sequel to death or permanent disability. Many factors contribute to postoperative morbidity and length of hospital stay complication. Minor morbidity such as nausea, vomiting, sore throat myalgia's, pain, headache decrease the function and have significant impact on recovery, thereby slowing the normal daily routine activities.^[1]

Sore throat and inability to eat was the first major complaint in the present study (81%) irrespective of age or sex similar to the studies reported (14%–64%) in previous

Table 2: Systemic diseases

Systemic diseases	n (%)
Hypertension	13 (14)
Diabetes	21 (22.8)
Hypertension + diabetes	46 (50)
Thyroid disease	4 (4.34)
Respiratory diseases	5 (5.43)
CVS problems	3 (3.26)
Smokers and alcoholics	79 (35)
Others	-

CVS: Cardiovascular

studies,^[1,9,10] which improved by 3–7th day postoperatively. It may be due to traumatic intubation by multiple attempt trials and throat packing and may be improved by less aggressive suctioning technique, gentle manipulation of throat tissues.

The second-most common postoperative complication in OMFS patients in the present study under general anesthesia was nausea 67% and vomiting. About 41% of cases similar to studies by Silva *et al.*^[11] who reported nausea and vomiting (most frequent) complication after OMFS procedures under GA. Meanwhile, the present study noticed the incidence of nausea and vomiting more in females (69%) than males (31%) same reported by Chye *et al.*^[12]

Postsurgical pain and swelling varying from mild-to-moderate 49% and moderate--to-severe in 6% was the third-most common complaint by the patient noticed from day one to day five which gradually reduced much higher than the study by.^[13,14]

Psychological changes in different forms were reported in literature in different studies^[15] such as nightmares, sleeping difficulties, crying, in initial days postoperatively and may be due to pain, and hospital environment, however, it improved and regained physical activity after the patient was discharged. In the present study behavioral changes were noticed in 31% of cases. The females reported more myalgia, headache behavioral symptoms such as difficulty to sleep, nightmares, mood swings, crying and needed more reassurances, and emotional support more than males It may be due to the fact that women express their discomfort more socially than males who tend to underreport or hide their feelings. Behavioral symptoms were seen more in smokers and alcoholic than nonsmokers and nom alcoholics. It may be due to smoke and alcohol cravings.

Previous studies^[16] have reported minor postoperative complication such as bleeding, wound infections, and paraesthesia in (54%) of cases, in contrast to the present study which showed mild-to-moderate bleeding in only 2%, paraesthesia in 7%, and wound infection in 11% and postoperatively after major surgeries.

Studies by Morrow *et al.*^[17,18] have also reported the temperature elevation in fever in 45% of cases. This may be due to longer duration of preoperative fasting, and inability to eat and drink postoperatively leading to dehydration. Literature has reported strong association between dehydration and fever^[19,20] similarly fever was reported in 17% of cases in the present study.

Table 3: Postoperative complications

Complications	Percentage	Complications	Sex male/female
Sore throat and dysphagia	81	GA and surgical	Both
Vomiting	41	GA	
Nausea	67	Female	69
		Male	31
Pain and swelling	54	Surgical	Both
Moderate	49		
Severe	6		
Headache	33	GA	
		Female	67
		Male	33
Fever		Surgical	
Hypertension	17	Both	
Hypotension	29		
Myalgia	21	Both (female)	79
Bleeding	2	Surgical	Both
Trauma to teeth and other oral structures	2	Surgical	-
Respiratory difficulty	1	GA	-
Micturition problems	2	GA	Male
Cardiovascular problems	Nil		
Behavioural problems sleep disturbance and nightmares	31	Both	
		Female	59
		Male	41
Paraesthesia	7	Surgical	Both
Wound infection	11	Surgical	Both

GA: General anesthesia

Circulatory complications

General anesthesia may cause cardiovascular changes ranging from hypovolemia, hypotension, hypertension, heart failure, and cardiac arrest in patients having underlying reasons. Postoperative hypotension can occur due to a variety of factors such as reduced cardiac output, hypovolemia, and vasodilatation reduced myocardial contractility, and cardiac arrhythmias^[1,21] Gwinnut^[22] Stated that hypovolemia because of postoperative bleeding or fluid loss most common cause of hypotension after GA. Intraoperative blood loss being more obvious can be treated during surgery but postoperative blood loss may go unnoticed. Hypotension was seen in 29% of cases in the present study which got corrected by continuing I. V fluids in addition to oral feeding. Hypertension is most commonly seen in already hypertensive patients and can be aggravated by hypoxemia, hypercapnia, pain, and anxiety.^[9,10,23] In the present study, hypertension was seen in patients in 14% who were already hypertensive (due to comorbidities).

CONCLUSION

The present study reported high incidence of minor postoperative problems than major complication. General anesthesia is a safe way of ensuring safety and comfort during surgery but still, there can be complications that

have to be recognized. Minor-to-moderate complaints are common in the first few days and subside later on. In patients with comorbidities, it is important to assess preoperative medical comorbidities carefully to prevent postoperative complications.

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Conflicts of interest

There are no conflicts of interest.

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