



Anaesthesiology

AN OBSERVATIONAL STUDY ON THE INCIDENCE OF GENERAL ANESTHESIA RELATED POST OPERATIVE COMPLICATIONS IN POST ANESTHESIA CARE UNIT (PACU)

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ABSTRACT **Background:** Post-operative care is the management of a patient after surgery. This includes care given in the surgical suite room and in the post Anaesthesia care unit (PACU) during the immediate post-operative period. Postoperative complications can also occur due to the anaesthetic technique and medications. The main problems with general anaesthesia are postoperative nausea and vomiting (PONV), Surgical site pain, Sore throat, hypoxia, hypotension, dental injury, fatigue and unsteadiness, damage to peripheral nerves due to positioning and subacute thrombosis. **Methods:** This observational study was performed in 156 patients who underwent treatments under general anaesthesia. Patients were observed for 6 hours in PACU after general anaesthesia and vitals and the complications were monitored. **Results:** In this study mild to moderate complications were reported. The results showed that for laparoscopic and non laparoscopic surgeries, the factors pain ($p=0.001$) and sore throat ($p=0.016$) are significant. PONV also showed a mild significance in both laparoscopic and non laparoscopic surgeries ($p=0.052$). **Conclusions:** From this study on 156 patients who underwent for general anaesthesia, based on the results from this study we concluded that minor complications like pain, sore throat, PONV are most commonly occurring in patients. There is a relation between sore throat and pain in both laparoscopic and non laparoscopic surgeries. PONV also shows significance in both laparoscopic and non laparoscopic surgeries.

KEYWORDS : General anaesthesia, post anaesthesia care unit, pain, sore throat.

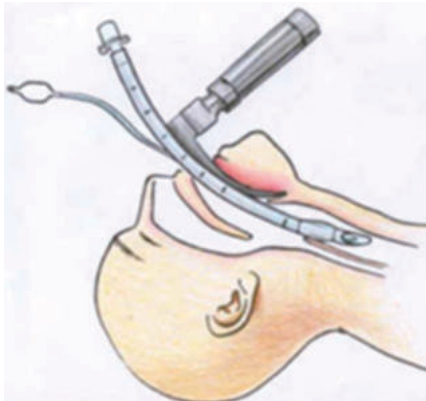
INTRODUCTION

In order to characterize the unconscious state brought on by the inhalation of ether, the term "Anaesthesia" was first coined by the ancient Greek surgeon Dioscorides and revived by Dr Oliver Wendell Holmes^{1,2}. General anaesthesia is a reversible unconsciousness that makes it possible for patients to undergo surgery in a kind and secure way^{3,4}.

General anaesthesia has mainly four stages,

1. Stage of analgesia
2. Stage of delirium
3. Stage of surgical sedation
4. Stage of medullary paralysis

Endotracheal intubation is a process in which the patient's airway is secured by putting an endotracheal tube through the mouth or nose into the lungs. The effect of general anaesthesia may prevent a patient from breathing normally. Therefore, an anaesthesiologist might intubate a patient to guarantee that the body receives essential oxygen while the patient is unconscious.



Endotracheal Intubation

General anaesthesia has some complications, despite becoming more and more safe, over the past five decades, there has been a considerable drop in anaesthesia-related mortality^{3,4}. General anaesthesia-related morbidity can range from short-term issues that have no lasting effects on long-term issues that leave patients permanently disabled⁵. A

number of factors like the patient's comorbidities, as well as their preoperative management, surgical stress reaction, organ dysfunction postoperative, pain, poor nutrition and sleeping disturbance, have been proposed as contributing in relation to surgical morbidity and hospital stay duration. Postoperative problems may also be impacted by the anaesthetic method and drugs taken. Common problems include sore throats, nausea, and vomiting, headaches, sleepiness and unsteadiness in addition to tooth damage, damage to peripheral nerves and subacute thrombosis⁶. In order to prevent any consequences from the surgical anaesthetic act, a post anaesthesia care unit (PACU) is a space created to accept patients in the immediate aftermath of surgery⁷.

AIMS AND OBJECTIVES

AIMS:

To determine the postoperative complications of general anaesthesia like postoperative nausea and vomiting (PONV), hypotension (BP less than 90/60mmHg), Sore throat and pain (VAS more than or equal to 4) in PACU.

OBJECTIVES:

This study aims to observe postoperative complications of general anaesthesia that arise in the post anaesthesia recovery room for patients who underwent treatments under general anaesthesia.

METHODOLOGY

After getting institutional ethics committee approval and informed consent from the patient, the male and female patients who fulfilled the eligibility criteria under general anaesthesia and who were admitted to the post anaesthetic care unit were enrolled in this study and observed.

Study Design: An observational study.

Sample Size: 156 Participants

Formula:

$$n = z^2 P(1-P) / d^2$$

n = Required sample size

z = Confidence level at 95% (stand. value 1.96)

p = Estimated prevalence 4.25

d = margin error at 10% (0.1)

Subject Selection:

The patients in whom procedures were performed under general anaesthesia.

Inclusion Criteria:

- Patients above age of 18 Years
- ASA physical status I-III
- Elective and emergencies cases
- Both male and female patients

Exclusion Criteria:

- Patients less than 18 years of age.
- Patients undergoing surgeries under spinal anaesthesia and peripheral nerve blocks.
- ASA physical status above III

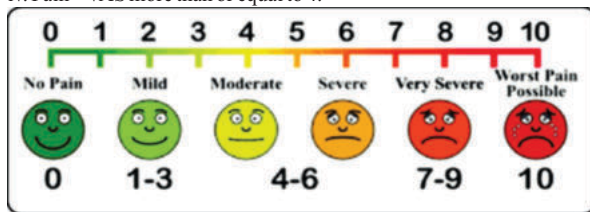
Study Procedure:

When the patient is shifted to the operation theatre for surgery under general anaesthesia, the first step is to pre-oxygenate the patient for 3 minutes.

Once the preoxygenation is completed, the patient is pre-medicated with Injection glycopyrrolate 0.01mg/kg, Midazolam 0.05 mg/kg IV and fentanyl 2mcg/kg IV. After Premedicating the patients, induction is accomplished with injection propofol 2mg/kg IV. After the Patient becomes apnoeic, the next aim is to secure the airway with an endotracheal tube. muscle paralysis are maintained with muscle relaxants -Atracurium 0.05 mg/kg or vecuronium 1 mg/kg and maintenance with volatile agents sevoflurane or isoflurane. After the completion of surgery, Patient is reversed with neostigmine 0.05 mg/kg and glycopyrrolate 0.01 mg/kg. After extubation, patient is shifted to PACU for further monitoring postoperative complications.

Complications observed in PACU are,

- Postoperative nausea and vomiting
- Hypotension – Blood pressure is less than 90/60mmHg or more than or equal to 20% of baseline.
- Sore throat
- Pain – VAS more than or equal to 4.



Visual Analog scoring (VAS)

Ethics

All the procedures followed in this study were in accordance with the ethical standards of the institutional ethical committee and with the Helsinki Declaration of 1975 that was revised in 2013.

RESULTS

Table:1 Frequency Of PONV

PONV	FREQUENCY	PERCENTAGE
ABSENT	134	85.9
PRESENT	22	14.1
TOTAL	156	100

Table 1 :shows that 134 patents don't have PONV with a percentage of 85.9% and 22 have incidence of PONV with a percent of 14.1%.

Table: 2 Frequency For HYPOTENSION

HYPOTENSION	FRQUENCY	PERCENTAGE
ABSENT	152	97.4
PRESENT	4	2.6
TOTAL	156	100

Table (2) shows out of 156 patients,152 did not have hypotension with a percent of 97.4% and 4 patients were hypotensive with a percent of 2.6%.

Table: 3 Cross Tabulation Between LAP/NON LAP Surgeries And Sore Throat

TYPE OF SURGERY	SORE THROAT				TOTAL
	NO	NILD	MODERATE	SEVERE	
LAPAROSCOPIC	18	20	4	8	50
NON LAPAROSCOPIC	36	60	7	3	106
TOTAL	54	80	11	11	156

This implies that 32 patients had sore throat in laparoscopic surgeries out of 50 (64%) and 70 patients had in non laparoscopic surgeries out of 106(66%).

Table 4 : CHI-SQUARE Test For Sore Throat

	VALUE	DF	ASYMPTOTIC SIGNIFICANCE
PEARSON CHI-SQUARE	10.318 ^a	3	0.016
LIKELIHOOD RATIO	9.675	3	0.022
NUMBER OF VALID CASES	156		

The p value in above table4 shows that there is relationship between both lap/non lap surgeries and sore throat (p value is 0.016).

4 : Cross Tabulation Between Sex And Pain

SEX	PAIN			TOTAL
	NO PAIN	MILD	MODERATE	
FEMALE	43	48	15	106
MALE	29	12	9	50
TOTAL	72	60	24	156

It implies that females have a higher incidence of pain compared to makes in the postoperative period

Table 4a : CHI-SQUARE Test

	VALUE	DF	ASYMPTOTIC SIGNIFICANCE
PEARSON CHI-SQUARE	8.414 ^a	6	0.209
LIKELIHOOD RATIO	10.250	6	0.115
NUMBER OF VALID CASES	156		

Table(4a) shows that there is correlation between sex pain. The p value is 0.209 which is greater than 0.05.

DISCUSSION

The study is based on the incidence of postoperative complications of general anaesthesia in the post-anaesthesia care unit in 156 patients. The result is based on the descriptive statistics, frequency, and chi square test. The objective of this study is to observe the different complications of general anaesthesia. 3 main complications like PONV, pain, sore throat are taken for cross tabulation and also these complications were cross-tabulated in laparoscopic and non-laparoscopic surgeries based on Chi Square tests. In laparoscopic and non laparoscopic surgeries, sore throat (p=0.016) and pain (p<0.001) shows significant, p value is < 0.05. PONV shows mild to moderate significance (p=0.052). We observed that the other factors sex and age have not much significant with PONV, pain and sore throat (p>0.05).

Although tachycardia and hypertension in PACU are uncommon, Rose DK et al discovered that they are linked to a higher likelihood of unexpected ICU admission and death unrelated to anaesthetic administration.

PONV ranked third in terms of frequency of complications (14.58%). By giving patients a series of questions to rank their post-operative concerns, Macario A et al. developed their own perspective on the issue and discovered that PONV is one of the main complaints from the patients' point of view.

According to Koivuranta M et al research's, PONV can be predicted with some degree of accuracy if the patient is female, undergoing a gynecological operation that takes longer than 60 minutes, has a background of motion sickness, is not a smoking person, and has experienced post surgery sickness in the past. Christian CA et al. in their thorough study went into great detail about this issue and offered numerous solutions. However, various therapies should only be used on high-risk individuals, and the PONV problem still remains troublesome and complicated.

Studies by Morrow et al. have also documented an increase in fever temperature in 45% of patients. This may be because preoperative fasting last longer and patients are unable to eat or drink after surgery, which causes dehydration. Fever was also noted in 17% of cases in the current study, and literature has shown a strong correlation between

dehydration and fever.

CONCLUSION

From this study on 156 patients underwent for general anesthesia, based on the result from this study we concluded that minor complications like pain, sore throat, PONV are occurring in patients. There is relation between sore throat and pain in laparoscopic and non laparoscopic surgeries. PONV also shows significant in laparoscopic and non laparoscopic surgeries. There is no significance of PONV, sore throat with respect to sex and age groups, but pain is more in the female sex compared to males.

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