

A Study of Intra-Operative and Post-Operative Complications among Smokers under General Anesthesia: An Hospital Based Study

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Abstract

Background: The link between smoking and complications is well documented across surgical specialities. Hence; the present study was undertaken for assessing Intra-Operative and Post-Operative Complications among Smokers under General Anesthesia. **Subjects and Methods:** The present study was undertaken in the department of Anaesthesia, Government Medical College, Barmer, Rajasthan, India with aim of assessing Intra-Operative and Post-Operative Complications among Smokers under General Anesthesia. A total of 50 patients were enrolled in the present study. Ethical approval was obtained from institutional ethical committee and written consent was obtained from all the patients after explaining in detail the entire research protocol. Inclusion criteria for the present study included: 1) Current smokers, 2) Patients with current smoking habit from a minimum of 5 years, 3) Patients scheduled to undergo any surgical procedure under general anesthesia. Complete demographic details of all the patients were obtained. Incidence of both intra-operative and postoperative complications in all the patients was recorded. All the results were recorded in Microsoft excel sheet and were analyzed by SPSS software. **Results:** Intra-operative complications included need for ventilator, heart attack and requirement of intra-operative analgesia. Postoperative complications included impaired wound healing and nausea and vomiting. **Conclusion:** Smokers are subjects to significant chances of occurrence of intra-operative and postoperative complications.

Keywords: Anesthesia, Complications.

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Introduction

The link between smoking and postoperative complications is well documented across surgical specialities. Not only is there an increased mortality risk, but also other complications including pulmonary, respiratory, wound infections, delayed wound healing and reduced bone fusion. Smoking has been associated with increased length of time in intensive care, in recovery from surgery and on the ward. Despite this, a quarter of patients undergoing surgery continue to smoke up to, and after surgery, with advice on smoking cessation varying from surgeon to surgeon.^[1-3]

In the 20th century, smoking killed 100 million people worldwide; currently, 5.4 million deaths each year are related to smoking. Smoking is associated with chronic diseases, economic losses to society, and a substantial burden on the healthcare system.^[4] Hence; the present study was undertaken for assessing Intra-Operative and Post-Operative Complications among Smokers under General Anesthesia.

Subjects and Methods

The present study was undertaken in the department of

Anaesthesia, Government Medical College, Barmer, Rajasthan, India with aim of assessing Intra-Operative and Post-Operative Complications among Smokers under General Anesthesia. A total of 50 patients were enrolled in the present study. Ethical approval was obtained from institutional ethical committee and written consent was obtained from all the patients after explaining in detail the entire research protocol. Inclusion criteria for the present study included:

- Current smokers,
- Patients with current smoking habit from a minimum of 5 years,
- Patients scheduled to undergo any surgical procedure under general anesthesia

Complete demographic details of all the patients were obtained. Incidence of both intra-operative and postoperative complications in all the patients was recorded. All the results were recorded in Microsoft excel sheet and were analyzed by SPSS software.

Results

In the present study, a total of 50 patients were analyzed. Mean age of the patients of the present study was 28.6

years. 22 patients belonged to the age group of 30 to 50 years and more than 50 years. There were 46 males and 4 females. In the present study, intra-operative complications included need for ventilator, heart attack and requirement of intra-operative analgesia. Postoperative complications included impaired wound healing and nausea and vomiting.

Table 1: Demographic details

Parameter		Number of patients
Age group (years)	Less than 30	6
	30 to 50	22
	More than 50	22
Gender	Males	46
	Females	4

Table 2: Incidence of intra-operative complications

Intra-operative complications	Number of patients	Percentage of patients
Need for ventilator	1	2
Heart attack	1	2
Intra-operative analgesic requirement	2	4

Table 3: Incidence of post-operative complications

Post-operative complications	Number of patients	Percentage of patients
Impaired wound healing	2	4
Nausea & vomiting	3	6

Discussion

Graham- Garcia et al proposed that patients undergoing surgery may have increased motivation to stop smoking and may be more susceptible to advice about smoking cessation. With many hospitals becoming smoke- free environments and the availability of effective interventions to help people to stop smoking, the preoperative period is an ideal time to help smokers to quit before being admitted to hospital. Helping patients to stop smoking before surgery may also enhance their surgical outcome and thus help them to get the maximum benefit from their health- care.^[4-7]

The association between smoking and major adverse surgical events is biologically plausible. Nicotine induces hypertension and tachycardia through its effect on the sympathetic nervous system. In addition, carbon monoxide (the concentration of which also bears a dose–response relationship with amount smoked) substitutes oxygen in the molecule of hemoglobin, shifts the oxygen–hemoglobin dissociation curve to the left, and decreases oxygen availability to the tissues. The net effect of these interactions impairs oxygen delivery, leading to tissue ischemia.^[8-10]

In the present study, a total of 50 patients were analyzed. Mean age of the patients of the present study was 28.6 years. 22 patients belonged to the age group of 30 to 50 years and more than 50 years. There were 46 males and 4 females. In the present study, intra-operative complications included need for ventilator, heart attack and requirement of intra-operative analgesia. Postoperative complications included impaired wound healing and nausea and vomiting.

Theadom A et al established the effect of preoperative smoking cessation on the risk of postoperative complications, and to identify the effect of the timing of preoperative cessation. The Cochrane Library Database, PsycINFO, EMBASE, Medline, and CINAHL databases were searched, using the terms: “smoking”, “smoking-cessation”, “tobacco- use”, “tobacco- abstinence”, “cigarette”, “complication”, “postoperative- complication”, “preoperative”, “perioperative” and “surg”. Further articles were obtained from reference lists. The search was limited to articles on adults, written in English and published up to November 2005. Prospective cohort designs exploring the effects of preoperative smoking cessation on postoperative complications were included. Two reviewers independently scanned abstracts of relevant articles to determine eligibility. Lack of agreement was resolved through discussion and consensus. Twelve studies met the inclusion criteria. Methodological quality was assessed by both reviewers, exploring validation of smoking status, clear definition of the period of smoking cessation, control for confounding variables and length of follow- up. Only four of the studies specified the exact period of smoking cessation, with six studies specifying the length of the followup period. Five studies revealed a lower risk or incidence of postoperative complications in past smokers than current smokers or reported that there was no significant difference between past smokers and non-smokers. Longer periods of smoking cessation appear to be more effective in reducing the incidence/risk of postoperative complications; there was no increased risk in postoperative complications from short term cessation.^[11]

The association between smoking and major adverse surgical events is biologically plausible. Nicotine induces hypertension and tachycardia through its effect on the sympathetic nervous system. In addition, carbon monoxide (the concentration of which also bears a dose–response relationship with amount smoked) substitutes oxygen in the molecule of hemoglobin, shifts the oxygen–hemoglobin dissociation curve to the left, and decreases oxygen availability to the tissues. The net effect of these interactions impairs oxygen delivery, leading to tissue ischemia. Tobacco use damages cilia, increases mucus production, impairs clearing of secretions, and renders the bronchial tree irritable, leading to sputum retention, pneumonia, and respiratory failure. Cigarettes inhibit immune function, resulting in delayed wound healing and infection. Smokers have abnormal bone metabolism and may experience delayed fracture healing. Smoking has a direct effect on the central nervous system, affecting pain perception and opiate requirements.^[9-11]

Conclusion

From the above results, the authors conclude that smokers are subjects to significant chances of occurrence of intra-operative and postoperative complications. However; further studies are recommended.

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