The Relationship of The Cigarette Smoking Habit to The Carbonmonoxide Concentration in The Expirium and The Perioperative Respiratory Complications

Seyda Efsun Ozgunay¹, Derya Karasu¹, Seyhan Dulger², Canan Yilmaz¹, Zeynep Tabur¹

¹University of Health Sciences Bursa Yuksek Ihtisas Training and Education Hospital, Dept. of Anaesthesiology & Intensive Care, Bursa,Turkey
²University of Health Sciences Bursa Yuksek Ihtisas Training and Education Hospital, Dept .of Chest diseases, Bursa, Turkey

Background:

The aim of this study was to investigate the effects of the preoperative status of cigarette smoking on the carbonmonoxide level in the expirium (COexp) and on the perioperative respiratory complications in patients undergoing elective laparoscopic cholecystectomy.

Methods:

This study included a total of 152 patients, consisting of smokers (Group S) and nonsmokers (Group NS) treated with laparoscopic cholecystectomy under general anaesthesia. Group S patients completed the Fagerström Test for Nicotine Dependence (FTND); and the preoperative COexp levels were determined by means of the piCO+ Smokerlyzer within the 12 hours before surgery. Respiratory complications were recorded during induction, intropoperatively, during extubation, and at the recovery room. Peripheral oxygen saturation, hypoxia bronchospasm, and the need to administer bronchodilator preoperatively; as well as incidences of apnea, headache, coughing, and the modified aldrete score at the recovery room were all recorded.

Results:

Compared with Group NS, records were made in Group S of statistically significant higher incidences of hypoxia at the stage of anaesthesia induction, of bronchospasm intraoperatively, of the need for intraoperative bronchodilator, and of bronchospasm at extubation. Logistic regression analyses showed that increases in preoperative COexp levels were associated with incidences of hypoxia during induction, and of intraoperative bronchospams, as well as of bronchospams at extubation (p=0.037, p=0.026, p=0.031, respectively). The higher the number of cigarettes that were smoked during the 12 hours before surgery, the higher the incidence of hypoxia that was recorded at the recovery room (p=0.026).

Conclusions:

This study shows that patients who smoke and who have higher levels of COexp demonstrate significantly higher incidences of hypoxia during the induction of anaesthesia, and of bronchospasm both during operations and at extubation. It was concluded that smoking within 12 hours of surgery increases the incidence of respiratory complications before and during operations, and at the recovery room. In addition, that preoperatively the estimated COexp may be indicative of the potential risks of perioperative respiratory complications.

Table I: Comparisons between Group S and Group NS of the durations of operation, anaesthesia and recovery [Mean±SD]

	Group S (n=75)	Group NS (n=77)	p
Operation duration (min)	70.57±32.98	62.93±25.80	0.13
Anaesthesia duration (min)	84.42±34.32	73.49±27.30	0.03*
Time taken for recovery (min)	22.61± 12.08	18.38± 6.74	0.009*
MAS 5 th min	7.21± 1.73	8.90±1.05	<0.001**
MAS 10 th min	9.09± 1.05	9.69±0.59	<0.001**
MAS 15 th min	9.82± 0.45	9.97± 0.23	0.02*

MAS: Modified Aldrete Score *p<0.05, **p<0.001

Table II: Comparison of the patients in Groups S and NS on the perioperative incidences of respiratory complications (n, %)

Stages of the surgery	Recorded complications	Group S (n=75)	Group NS (n=77)	p
Preoperative	Hypoxia	9 (12)	5 (6.5)	0.24
Induction	Hypoxia	14 (18.7)	4 (5.2)	0.01*
Intraoperative	Hypoxia	4 (5.3)	2 (2.6)	0.38
	Bronchospasm	6 (8)	0 (0)	0.01*
	Bronchodilator need	7 (9.3)	1 (1.3)	0.02*
Extubation	Bronchospasm	4 (5.3)	0 (0)	0.04*
	Bronchodilator need	1 (1.3)	0 (0)	0.30
Recovery room	Hypoxia	27 (36)	6 (7.8)	<0.001**
	Apnea	5 (6.7)	0 (0)	0.02*
	Sore throat	16 (21.3)	9 (11.7)	0.09
	Headache	10 (13.3)	4 (5.2)	0.08
	Coughing	31 (41.3)	5 (6.5)	<0.001**
	Bronchospasm	1 (1.3)	0 (0)	0.30

*p<0.05, **p<0.001

Keywords: Smoking, Coexp, Perioperative respiratory complications, Laparoscopic cholecystectomy

References:

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