SCIE DOI: 10.14744/scie.2018.44265
South. Clin. Ist. Euras. 2018;29(3):161-167

Original Article

Comparison of Early Postoperative Recovery after Desflurane or Sevoflurane Anesthesia

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ABSTRACT

Objective: The aim of this study was to compare the early postoperative recovery effects between patients who were given sevoflurane or desflurane before having lower abdominal surgery under general anesthesia.

Methods: Eighty patients aged between 18 and 75 years with an American Society of Anesthesiologists physical status classification of I or II who were scheduled for elective lower abdominal surgery were divided into 2 groups. Before the induction of anesthesia, heart rate (HR), blood pressure, and peripheral oxygen saturation (SpO_2) were measured, and neuromuscular monitoring was performed. Following the intravenous (IV) administration of 5 to 7 mg/kg thiopental and 1 mcg/kg fentanyl, 0.6 mg/kg rocuronium was used to facilitate endotracheal intubation. Maintenance of anesthesia was provided using 4% desflurane in Group I and 1.3% sevoflurane in Group II in a 50% oxygen-air mixture. During surgery, additional doses of 1 mcg/kg fentanyl were administered and the concentration of volatile anesthetics was adapted according to hemodynamic conditions. At the end of the operation, volatile agents were discontinued and 100% oxygen was administered to all patients. When the train-of-four stimulation value exceeded 85%, the patients were extubated and oxygen was provided via facemask. Perioperative axillary temperature, SpO_2, hemoglobin (Hb), arterial pressure, HR, and total opioid consumption were recorded. SpO_2 level, airway control value and modified Aldrete score were recorded at the 1st, 5th, 10th, 15th, 20th, 30th, 45th, and 60th minutes during the postoperative period. Pain evaluation was performed using a visual analog scale (VAS) of 1 to 10 at the same intervals.

Results: There were no significant differences between the 2 groups in terms of the duration of anesthesia and surgery, extubation time, change in axillary temperature, perioperative hemodynamic changes, airway control, or VAS scores. In Group I, the total opioid dose was significantly higher and the preoperative and postoperative Hb values were significantly lower ($p<0.01$). The modified Aldrete scores of Group I were significantly higher than those of Group II at 10 minutes and at later intervals ($p<0.002$). In Group I, the postoperative SpO_2 values were significantly higher than those seen in Group II ($p<0.05$ and above) at the 5th, 10th, 20th, 30th, and 45th minutes.

Conclusion: It was concluded that desflurane may be a better choice of anesthesia during lower abdominal surgery than sevoflurane for patients with the potential for respiratory complications.

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Submitted: 20.07.2018
Accepted: 25.07.2018

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Keywords: Desflurane; postoperative; recovery; sevoflurane.

INTRODUCTION

Postoperative complications, mainly hypoxia, are common in noncardiac surgeries, and may be long-lasting, leading to extended periods of hospitalization, increased costs, and greater rates of morbidity and mortality.[1,2]

Postoperative hypoxia may develop due to the deterioration of gas exchange in the lungs (atelectasis) or worsening of the respiratory mechanism (obstructive apnea). The patient's position on the operating table, or the anesthetic drugs or muscle relaxant used may be responsible for atelectasis, while obstructive apnea may be a result of the method of anesthesia used (general or regional) or the opioid used.[3,4]

All inhalation agents used during general anesthesia cause respiratory depression by decreasing tidal volume and minute ventilation, depending on the dose used. This negative effect on the respiratory system may also persist during the postoperative period.[5]

The purpose of this study was to compare the early postoperative effects of sevoflurane and desflurane in patients who underwent lower abdominal surgery under general anesthesia.

MATERIAL AND METHODS

After receiving the approval of the local ethics committee, 80 patients with an American Society of Anesthesiologists physical status classification of I or II who were aged between 18 and 75 years and were to undergo elective lower abdominal surgery were included in the study. Patients with anemia; cardiac, pulmonary, or neuromuscular disease; those who were obese (body mass index [BMI] >25 kg/m^2); smokers; and those who were to have thoracic or upper abdominal surgery were excluded from the study. The patients were allocated into 2 groups using a simple randomization method and premedication was not applied. Heart rate (HR) and noninvasive arterial blood pressure (BP) were measured, and peripheral oxygen saturation (SpO_2) was monitored in the DII derivation in the operating room. In addition, the neuromuscular junction of the adductor pollicis brevis muscle was monitored using the TOF-Watch SX (Organon International, Oss, Netherlands) in order to see that the effect of the pre-extubation muscle relaxant had completely receded and to avoid any development of postoperative hypoxia. Endotracheal intubation was performed 2 minutes after induction of anesthesia with thiopental (5–7 mg/kg IV), rocuronium (0.6 mg/kg IV), and fentanyl (1 mcg/kg IV).

To maintain anesthesia, a 50% oxygen-air mixture and 4% desflurane were used in Group I, and a 50% oxygen-air mixture and 1.3% sevoflurane were administered in Group II. When HR and BP values increased by 20% compared to baseline values, fentanyl (1 mcg/kg IV) was administered. When hemodynamic parameters decreased by 20%, the concentration of volatile gases was reduced by 0.5%.

The administration of inhalation gases was discontinued 5 minutes before surgery. Delivery of the air-oxygen mixture was maintained until the final skin suturing at the conclusion of the procedure, at which time inhalation of 100% oxygen was initiated. The muscle relaxant effect was reversed with atropine (0.05 mg/kg IV) and neostigmine (0.07 mg/kg IV). When the train-of-four measurement was ≥85%, the patients were extubated.

The recovery time was calculated and recorded from the moment of switching to 100% oxygen inhalation until eye opening with verbal stimulation, time until extubation, and response to verbal commands. Preoperative and postoperative axillary temperature, SpO_2, Hb, arterial pressure, HR, and total opioid dose were recorded. Oxygen delivery was initiated with a mask at a rate of 2 L/minute in the postoperative recovery room. From this point on, the SpO_2 level, airway control value, and modified Aldrete postanesthesia recovery score were recorded at the postoperative 1st, 5th, 10th, 15th, 20th, 30th, 45th, and 60th minutes. Pain was assessed at the same time intervals using a 10-cm visual analogue scale (VAS). Airway control was scored as 1: calm breathing, 2: mild (snoring), 3: moderate (deep snoring, obstruction may be relieved via airway or change in position), or 4: severe (obstruction requiring intubation).

The GraphPad Prism 7 program (GraphPad Software Inc., La Jolla, CA, USA) was used to perform the statistical analysis. Student's t-test was used for comparisons of descriptive variables between the 2 groups, as well as one-way analysis of variance with a Tukey post-test (mean, SD, minimum and maximum values). Statistical significance was evaluated as *p<0.05, **p<0.01, ***p<0.001, and ****p<0.0001.

RESULTS

No significant difference between the groups was observed in the comparison of descriptive statistical data (Table 1; p>0.05). In Group I, the youngest participant was 20 years old, while the oldest was 60 years old. The body weight of the patients ranged between 55 and 89 kg. In Group II, the age range of the participants was 19 to 69 years and the body weight varied between 45 and 95 kg.

Furthermore, no statistically significant differences were seen between the groups in terms of the duration of anes-

Table 1. Comparison of descriptive data (mean±SD)

	Group I (n=40)	Group II (n=40)	p
Age (years)	42.7±8.9	45.3±12.7	>0.05
Body weight (kg)	70.2±7.8	71±11.3	
Gender (% male/female)	35/65	25/75	
ASA physical status	1.5±0.5	1.6±0.5	

ASA: American Society of Anesthesiologists.

thesia or surgery, time until extubation, change in axillary temperature, preoperative SpO_2 value, or preoperative and postoperative BP and HR values. Use of a significantly larger total opioid dose was detected in the desflurane-treated group, while the preoperative and postoperative Hb values were significantly lower in that group (Table 2).

Table 2. Intergroup comparison of preoperative and postoperative values

	Group I	Group II	Mean difference	p
	Mean±SD	Mean±SD	Mean±SD	
Duration of anesthesia (min)	89.28±4.63	92.4±6.18	3.125±7.73	>0.05
Duration of surgery (min)	76.35±4.58	81.58±6.18	5.225±7.69	>0.05
Opioid dose (mcg)	111.3±3.09	94±4.39	17.25±5.38	<0.01
Time to eye opening upon verbal stimuli	5.80± 3.64	6.3± 5.19	0.76±0.57	>0.05
Compliance with verbal commands	7.23± 3.61	8.79±5.56	0.80± 0.61	>0.05
Length of time until extubation (min)	6.05±0.43	6.9±0.45	0.85±0.62	>0.05
Preoperative axillary temperature (°C)	36.57±0.05	36.43±0.04	0.12±0.04	>0.05
Postoperative axillary temperature (°C)	36.07±0.03	36.17±0.05	0.11±0.06	>0.05
Preoperative SpO_2 (%)	98.4±0.12	97.99±0.18	0.52±0.20	>0.05
Preoperative hemoglobin (% gr)	11.77±0.24	12.90±0.24	1.13±0.34	<0.01
Postoperative hemoglobin (% gr)	10.85±0.21	12.06±0.24	1.208±0.32	<0.001
Preoperative arterial blood pressure (mmHg)	107.2±2.76	104.5±2.21	2.65±3.53	>0.05
Postoperative arterial blood pressure (mmHg)	112.4±2.84	105.8±2.56	6.6±3.82	>0.05
Preoperative heart rate (bpm)	83.58±1.99	86.1±2.13	2.52±2.92	>0.05
Postoperative heart rate (bpm)	88.55±2.34	87.25±2.72	1.3±3.58	>0.05

SpO_2: Peripheral oxygen saturation; SD: Standard deviation.

Table 3. Intergroup comparison of Aldrete score (mean±SD)

Measurement intervals	Groups	Mean±SD Aldrete score	Mean±SD difference	p	Is it significant?
1st minute	Group I	7.42±0.13	0.15±0.24	0.5336	No
	Group II	7.27±0.19			
5th minute	Group I	8.47±0.16	0.17±0.26	0.5047	No
	Group II	8.3±0.21			
10th minute	Group I	9.42±0.10	0.55±0.17	0.002	Yes
	Group II	8.87±0.14			**
15th minute	Group I	9.8±0.07	0.5±0.13	0.0003	Yes
	Group II	9.3±0.11			***
20th minute	Group I	9.95±0.03	0.35±0.09	0.0001	Yes
	Group II	9.6±0.08			***
30th minute	Group I	9.97±0.02	0.3±0.08	0.0003	Yes
	Group II	9.67±0.07			***
45th minute	Group I	10±0	0.27±0.07	0.0002	Yes
	Group II	9.72±0.07			***
60th minute	Group I	10±0	0.22±0.07	0.0012	Yes
	Group II	9.77±0.07			**

SD: Standard deviation.

No statistically significant intergroup difference was found between the 1st and 5th minute Aldrete scores. However, the score was higher in the desflurane group compared with the sevoflurane group at 10 minutes and afterwards. The difference between the 2 groups was statistically significant (Table 3).

The postoperative SpO_2 values of Group I and Group II were similar at the 1st, 15th, and 60th minutes, and no signif-

Table 4. Intergroup comparison of postoperative peripheral oxygen saturation measurement (mean±SD)

Measurement intervals	Groups	Mean±SD SpO_2	Mean±SD difference	p	Is it significant?
1st minute	Group I	98.5±0.11	0.37±0.23	0.1067	No
	Group II	98.13±0.2			
5th minute	Group I	98.48±0.11	0.7±0.24	0.0049	Yes
	Group II	97.38±0.21			**
10th minute	Group I	98.7±0.11	0.55±0.22	0.0145	Yes
	Group II	98.15±0.19			*
15th minute	Group I	98.65±0.11	0.27±0.21	0.1995	No
	Group II	98.38±0.18			
20th minute	Group I	98.75±0.11	0.55±0.20	0.0091	Yes
	Group II	98.2±0.18			**
30th minute	Group I	98.83±0.10	0.77±0.21	0.0004	Yes
	Group II	98.05±0.18			***
45th minute	Group I	98.8±0.102	0.67±0.19	0.0008	Yes
	Group II	98.13±0.16			***
60th minute	Group I	98.85±0.10	0±0.14	>0.9999	No
	Group II	98.85±0.10			

SpO_2: Peripheral oxygen saturation; SD: Standard deviation.

Table 5. Intergroup comparison of airway control (mean±SD)

Measurement intervals	Groups	Mean±SD obstruction	Mean±SD difference	p	Is it significant?
1st minute	Group I	1.17±0.08	0.1±0.12	0.4201	No
	Group II	1.27±0.09			
5th minute	Group I	1.02±0.02	0.07±0.06	0.2515	No
	Group II	1.1±0.06			
10th minute	Group I	1±0	0±0.04	>0.9999	No
	Group II	1±0.03			
15th minute	Group I	1±0	0.02±0.02	0.3204	No
	Group II	0.97±0.02			
20th minute	Group I	1±0	0.02±0.02	0.3204	No
	Group II	0.97±0.02			
30th minute	Group I	1±0	0.02±0.02	0.3204	No
	Group II	0.97±0.02			
45th minute	Group I	1±0	0.02±0.02	0.3204	No
	Group II	0.97±0.02			
60th minute	Group I	1±0	0.02±0.02	0.3204	No
	Group II	0.97±0.02			

SD: Standard deviation.

Table 6. Intergroup comparison of visual analogue scale score (mean±SD)

Measurement intervals	Groups	Mean±SD VAS	Mean±SD difference	p	Is it significant?
1st minute	Group I	1.97±0.24	0.2±0.34	0.5532	No
	Group II	1.77±0.23			
5th minute	Group I	2.52±0.29	0.37±0.37	0.3156	No
	Group II	2.15±0.23			
10th minute	Group I	2.87±0.31	0.52±0.36	0.154	No
	Group II	2.35±0.19			
15th minute	Group I	2.62±0.19	0.35±0.31	0.2662	No
	Group II	2.97±0.25			
20th minute	Group I	2.7±0.18	0.47±0.26	0.0751	No
	Group II	3.17±0.20			
30th minute	Group I	2.7±0.17	0.52±0.28	0.0678	No
	Group II	3.22±0.23			
45th minute	Group I	2.85±0.33	0.52±0.34	0.152	No
	Group II	2.33±0.21			
60th minute	Group I	2.7±0.17	0.46±0.25	0.0748	No
	Group II	3.16±0.21			

VAS: Visual analogue scale; SD: Standard deviation.

icant difference was found. However, at the postoperative 5th, 10th, 20th, 30th, and 45th minutes, the SpO_2 value was statistically significantly higher in the desflurane-treated group (Table 4).

No statistically significant difference was found between the groups in airway control or VAS values (Tables 5, 6).

DISCUSSION

Abdominal and thoracic surgery include the risk of early postoperative complications. These patients may also have respiratory insufficiency requiring endotracheal intubation and respiratory support.[6] The presence of comorbid conditions and diseases, such as smoking, advanced age, obesity, and chronic obstructive pulmonary disease, increases the risk of postoperative respiratory insufficiency.[7] Non-elderly patients with a BMI <25 kg/m^2, who had no pulmonary disease or smoking history, and had normal biochemical values who underwent only lower abdominal surgery were included in this study of the early-term postoperative effects of desflurane and sevoflurane.

Hypoxia most often develops during the postoperative period due to atelectasis. Both general anesthesia and the administration of a muscle relaxant reduce muscle tonus and functional residual capacity, which may lead to atelectasis as a complication of endotracheal intubation, especially in the left lung.[8] The anesthetic medication used may be responsible for postoperative respiratory failure during surgery.[9]

In our study, no significant difference was observed in the duration of surgery or anesthesia between the 2 groups. In the desflurane-treated group, the total opioid dose was significantly larger than that of the other group; however, the oxygen saturation values were significantly higher in the early recovery period in that group. According to a study by Duggan et al.,[10] 0.9% of their patients experienced respiratory distress during the postoperative period that required intervention.

The effects of volatile anesthetics may affect respiratory function during the postoperative period. It has been established that, among these anesthetics, desflurane and sevoflurane have a low blood-gas partition coefficient that allows for early recovery from anesthesia.[11] This study also examined the effects of the blood-gas partition coefficient of these anesthetic drugs on early postoperative recovery. The postoperative SpO_2 values of our patients were similar at the 1st, 15th, and 60th minutes, and there was no significant difference between the 2 groups. However, at the postoperative 5th, 10th, 20th, 30th, and 45th minutes, the SpO_2 values were greater in the desflurane- treated group and a statistically significant difference was observed between the groups.

Desflurane induces transient hypertension and tachycardia by stimulating the sympathetic nervous system, especially at concentrations above 5% to 6%.[12] In this study, additional opioid doses were administered based on an increase in BP and HR, and the total opioid dose was determined to be greater in the desflurane group.

Postoperative airway obstruction can lead to a deterioration of the ventilation-perfusion ratio, and eventually, to hypoxia.[13] We found no difference in the postoperative airway control values between the 2 groups in this study.

Many studies have shown that recovery is faster after desflurane anesthesia when compared with sevoflurane.[14,–17] For example, Chen et al.[15] found that the postanesthesia recovery of patients who had been given desflurane was faster.

It has also been stated that desflurane has other advantages compared to sevoflurane in terms of early recovery. Recovery time from the termination of anesthesia to the opening of eyes, tracheal extubation, response to verbal commands, and orientation was shorter in the desflurane group. In our study, there was no difference between the desflurane and sevoflurane groups in terms of extubation time, time until eye opening with verbal stimuli, or compliance with verbal commands.

In another study, Song et al.[18] compared sevoflurane, desflurane, and propofol anesthesia, and found no difference between the desflurane and sevoflurane groups in terms of the time until extubation, recovery, and orientation, consistent with our study. However, delayed extubation and recovery were detected in the propofol group.

McKay et al.[19] compared the effects of desflurane and sevoflurane on the return of airway reflexes during the early postoperative period, and a quicker return was detected in the desflurane group. This has been attributed to the lower resolution of desflurane in blood and tissues. It was noted that the early return of postoperative airway reflexes is especially important in patients with a high risk of pulmonary aspiration.

White et al.[20] compared desflurane and sevoflurane in laparoscopic gynecological day-case interventions, and demonstrated that the intraoperative hemodynamic parameters were similar in both groups. Desflurane patients had a faster recovery after anesthesia, though there was no significant difference between the 2 groups in terms of discharge.

Dupont et al.[21] compared desflurane, sevoflurane, and isoflurane anesthesia in 1000 patients undergoing pulmonary surgery. Comparable arterial pressure, HR, and oxygenation values were observed with all 3 agents over the course of the period of anesthesia. Eger et al.[22] also found no significant difference in vital findings either during or after anesthesia when comparing sevoflurane and desflurane groups. Similarly, in our study, the hemodynamic parameters were comparable between groups and did not exceed 20% above baseline levels.

When we compared recovery parameters, we did not find any significant difference in the 1st and 5th minute modified Aldrete scores of the 2 groups. However, the scores at 10 minutes were higher in the desflurane group than in the sevoflurane group, and the difference was statistically significant. Desflurane appears to provide a faster recovery than sevoflurane.

CONCLUSION

The administration of desflurane or sevoflurane with opioid support has a similar effect in terms of perioperative hemodynamic control. We observed no significant differences in extubation time, time until eye opening, response to verbal commands, axillary temperature change, preoperative SpO_2 value, airway control, or VAS value. Desflurane did, however, provide a somewhat faster recovery. Lower levels of SpO_2 in the postoperative period in patients who received sevoflurane anesthesia suggest that the respiratory depressant effect is greater. Therefore, particularly for patients with a high risk of postoperative hypoxia, desflurane may be preferable to sevoflurane in lower abdominal surgery.

Ethics Committee Approval

Approved by the local ethics committee.

Informed Consent

Retrospective study.

Peer-review

Internally peer-reviewed.

Authorship Contributions

Concept: Ö.S.; Design: Ö.S.; Data collection &/or processing: Ö.S.; Analysis and/or interpretation: Ö.S.; Literature search: Ö.S., E.B.; Writing: Ö.S.; Critical review: E.B.

Conflict of Interest

None declared.

REFERENCES

1. Köksal N. Ozlu T, Metintaş M, Karadağ M, Kaya A. Preoperative evoluation. In: Respiratory system and Diseases. 1st ed. Istanbul; Medical Publishing; 2010. p. 2543–55.
2. Sun Z, Sessler DI, Dalton JE, Devereaux PJ, Shahinyan A, Naylor AJ, et al. Postoperative Hypoxemia Is Common and Persistent: A Prospective Blinded Observational Study. Anesth Analg 2015;121:709–15. [CrossRef]
3. Xue FS, Huang YG, Tong SY, Liu QH, Liao X, An G, et al. A comparative study of early postoperative hypoxemia in infants, children, and adults undergoing elective plastic surgery. Anesth Analg 1996;83:709–15. [CrossRef]
4. Kurth DC. Postoperative arterial oxygen saturation: what to expect. Anesth Analg 1995;80:1–3. [CrossRef]
5. Saraswat V. Effects of anaesthesia techniques and drugs on pulmonary function. Indian J Anaesth 2015; 59: 557–64. [CrossRef]
6. Squadrone V, Coha M, Cerutti E, Schellino MM, Biolino P, Occella P, et al; Piedmont Intensive Care Units Network (PICUN). Continuous positive airway pressure for treatment of postoperative hypox-

emia: a randomized controlled trial. JAMA 2005;293:589–95.
7. Arozullah AM, Daley J, Henderson WG, Khuri SF. Multifactorial risk index for predicting postoperative respiratory failure in men after major noncardiac surgery. The National Veterans Administration Surgical Quality Improvement Program. Ann Surg 2000;232:242–53.
8. Hedenstierna G, Edmark L. Mechanisms of atelectasis in the perioperative period. Best Pract Res Clin Anesthesiol 2010;24:157–69.
9. Warner DO. Preventing postoperative pulmonary complications: the role of the anesthesiologist. Anesthesiology 2000;92:1467–72.
10. Duggan M, Kavanagh BP. Pulmonary atelectasis: a pathogenic perioperative entity. Anesthesiology 2005;102:838–54. [CrossRef]
11. Mashour GA, Forman SA, Campagna JA. Mechanisms of general anesthesia: from molecules to mind. Best Pract Res Clin Anaesthesiol 2005;19: 349–64. [CrossRef]
12. Ebert TJ, Muzi M. Sympathetic hyperactivity during desflurane anesthesia in healthy volunteers. A comparison with isoflurane. Anesthesiology 1993;79:444–53. [CrossRef]
13. Rock P, Rich PB. Postoperative pulmonary complications. Curr Opin Anesthesiol 2003;16:123–31. [CrossRef]
14. Eshima RW, Maurer A, King T, Lin BK, Heavner JE, Bogetz MS, et al. A comparison of airway responses during desflurane and sevoflurane administration via a laryngeal mask airway for maintenance of anesthesia. Anesth Analg 2003;96:701–5.
15. Chen X, Zhao M, White PF, Li S, Tang J, Wender RH, et al. The recovery of cognitive function after general anesthesia in elderly patients: a comparison of desflurane and sevoflurane. Anesth Analg 2001;93:1489–94. [CrossRef]
16. Mahmoud NA, Rose DJ, Laurence AS. Desflurane or sevoflurane for gynaecological day-case anaesthesia with spontaneous respiration? Anaesthesia 2001;56:171–4. [CrossRef]
17. De Baerdemaeker LE, Struys MM, Jacobs S, Den Blauwen NM, Bossuyt GR, Pattyn P, et al. Optimization of desflurane administration in morbidly obese patients: a comparison with sevoflurane using an 'inhalation bolus' technique. Br J Anaesth 2003;91:638–50. [CrossRef]
18. Song D, Joshi GP, White PF. Fast-track eligibility after ambulatory anesthesia: a comparison of desflurane, sevoflurane, and propofol. Anesth Analg 1998;86:267–73. [CrossRef]
19. McKay RE, Large MJ, Balea MC, McKay WR. Airway Reflexes Return More Rapidly After Desflurane Anesthesia than after sevoflurane anesthesia. Anesth Analg 2005;100:697–700. [CrossRef]
20. White PF, Tang J, Wender RH, Yumul R, Stokes OJ, Sloninsky A, et al. Desflurane versus sevoflurane for maintenance of outpatient anesthesia: the effect on early versus late recovery and perioperative coughing. Anesth Analg 2009;109:387–93. [CrossRef]
21. Dupont J, Tavernier B, Ghosez Y, Durinck L, Thevenot A, Moktadir-Chalons N, et al. Recovery after anaesthesia for pulmonary surgery: desflurane, sevoflurane and isoflurane. Br J Anaesth 1999;82:355–9.
22. Eger EI 2nd, Bowland T, Ionescu P, Laster MJ, Fang Z, Gong D, et al. Recovery and kinetic characteristics of desflurane and sevoflurane in volunteers after 8-h exposure, including kinetics of degradation products. Anesthesiology 1997;87:517–26. [CrossRef]

Desfluran ya da Sevofluran Anestezisinden Sonra Erken Ameliyat Sonrası Derlenmenin Karşılaştırılması

Amaç: Bu çalışmanın amacı, genel anestezi altında alt karın cerrahisi geçirecek olan hastalarda sevofluran ve desfluran kullanımının ameliyat sonrası erken dönem etkilerinin karşılaştırılmasıdır.

Gereç ve Yöntem: Elektif alt batın cerrahisi geçirecek 18-75 yaş arası ASA fizik durumu I ya da II olan 80 hasta seçilerek iki gruba ayrıldı. Anestezi indüksiyonundan önce kalp hızı, kan basıncı, periferik oksijen satürasyonu ölçüldü ve nöromusküler monitörizasyon uygulandı.Tiyopental 5-7 mgr/kg ve fentanil 1 µgr/kg iv uygulanmasının ardından rokuronyum 0.6 mg/kg iv uygulanarak endotrakeal entübasyon gerçekleştirildi. Anestezi idamesi Grup I'de %4 desfluran Grup II'de %3 sevofluran %50 oksijen-hava karışımı ile sağlandı. Cerrahi sırasında hemodinamik değişikliklere göre fentanil 1 µgr ve volatil anesteziklerin konsantrasyonları değiştirilerek uygulandı. Cerrahinin sonunda volatil anestezikler kesilerek bütün hastalara %100 oksijen solutuldu. TOF %85 değerine ulaşınca hastalar ekstübe edildi ve yüz maskesi ile oksijen verildi. Peroperatif aksiller ısı, SpO_2 ,hemoglobin (Hb), arteriyel basınç, kalp hızı ve total opioid tüketimi kaydedildi. Postoperatif dönemde 1., 5., 10., 15., 20., 30., 45., 60. dakikalarda SpO_2 değerleri, havayolu kontrol ve modifiye Aldrete derlenme skorları kaydedildi. Ağrı değerlendirilmesi vizüel analog skala (VAS) ile 1-10 arası olacak şekilde aynı zaman aralıklarında değerlendirildi.

Bulgular: Gruplar arasında tanımlayıcı değerler, anestezi süreleri, cerrahi süreleri, ekstübasyon süreleri, aksiller ısı, ameliyat öncesi SpO_2, ameliyat öncesi ve sonrası hemodinamik değerler havayolu kontrol skoru ve VAS değerleri arasında anlamlı fark tespit edilmedi. Grup I'de toplam opioid dozunun anlamlı olarak daha yüksek, ameliyat öncesi Hb ve ameliyat sonrası Hb değerlerinin ise anlamlı olarak daha düşük olduğu gözlendi ($p<0.01$).

Sonuç: Genel anestezi uygulamalarında desfluranın özellikle ameliyat sonrası komplikasyon riski yüksek olan hastalarda sevoflurana tercih edilebilir.

Anahtar Sözcükler: Ameliyat sonrası; derlenme; desfluran, sevofluran.