

COMPARATIVE ANALYSIS OF EFFICACY OF TWO ANAESTHETIC DRUGS FOR AMBULATORY SURGICAL PROCEDURES

Anshu SS Kotia¹, Abhinav Bishnoi², Pooja Chaudhary³, Mona Bana⁴

¹Associate Professor, Department of Anaesthesia, Jaipur National University Institute for Medical Sciences & Research Centre, Jaipur, Rajasthan, India

^{2,3}Assistant Professor, Department of Anaesthesia, Jaipur National University Institute for Medical Sciences & Research Centre, Jaipur, Rajasthan, India.

⁴Head Anaesthesia & Director Neuro Anesthesia, Eternal Hospital, Jaipur, Rajasthan, India.

Received : 02/06/2023
Received in revised form : 19/06/2023
Accepted : 14/07/2023

Keywords:
Ambulatory Surgery, Anaesthesia, Sevoflurane.

Corresponding Author:
Dr. Anshu SS Kotia,
Email: anshusskotia@gmail.com.

DOI: 10.47009/jamp.2023.5.4.199

Source of Support: Nil,
Conflict of Interest: None declared

Int J Acad Med Pharm
2023; 5 (4); 992-994



Abstract

Background: Ambulatory anaesthesia is a widely used anaesthetic procedure at present. This is because of the availability of improved minimally invasive surgical techniques and addition of new short acting and rapidly metabolizing anaesthetic agents. **Materials and Methods:** The study was conducted in the Department of Anaesthesia of the Jaipur National University Institute for Medical Sciences & Research Centre, Jaipur, Rajasthan, India. For the study we selected 60 patients belonging to American Society of Anaesthesiologists physical status I and II scheduled for surgical procedures at General Surgery department. The patients were randomly grouped into two groups with 30 patients in each group, Group 1 and Group 2. Group 1 patients received Sevoflurane for maintenance of anaesthesia whereas Group 2 received Desflurane for maintenance of anaesthesia. **Results:** A total of 60 patients were included in the study. Mean age of patients in Group 1 was 42.5 years and in Group 2 was 46.0 years. Number of male patients in Group 1 was 20 and in Group 2 were 16. Mean weight of patients in Group 1 was 73.5 kg and in Group 2 was 64.0 kg. The mean height of patients in Group 1 was 166.5 cm and in Group 2 was 159.4 cm. Total recovery time in Group 1 was 45.3 min and in Group 2 was 35.5 min. Time for opening eyes postoperatively was 10.5 min and 4.4 min. Time taken to respond to verbal commands was 11.78 min and 6.28 min. **Conclusion:** Sevoflurane and Desflurane are efficacious in ambulatory surgical procedures. Desflurane seems better than Sevoflurane in term of reduced recovery time and opening of eye time and verbal response time.

INTRODUCTION

Now a days ambulatory anesthesia is commonly used anesthetic procedure due to availability of improved minimally invasive surgical techniques and rapidly metabolizing anesthetic agents.^[1] Highly critical patients and major surgical procedures can now be performed more safely because of the precision in monitoring and advanced surgical techniques. To make surgery more successful it is necessary that both the procedure and the patient are appropriate for ambulatory anesthesia.^[2] Ambulatory surgeries are not advisable in case of emergency or unplanned hospital surgeries. Thus, patients intending to undergo an ambulatory operation should consider the numerous potential risks involved. The choice of anesthetic method is depending on patient factors, the anticipated degree of pain, and possible complications.^[3] Desflurane and sevoflurane are the two most commonly administered inhaled anesthetics for outpatient surgeries due to low

incidence of untoward effects. Both of these agents have been safely used for anesthesia maintenance using a laryngeal mask airway (LMA).^[4] The current study was planned to assess the efficacy of two anesthetic agents for ambulatory surgical procedures.

MATERIALS AND METHODS

The study was conducted in the Department of Anaesthesia of Jaipur National University Institute for Medical Sciences & Research Centre. The ethical clearance for the study was obtained from the ethical board of the institute prior to commencement of the study. Total 60 patients belonging to ASAP status I and II scheduled for surgical procedures at General Surgery department. The patients were randomly grouped into two groups with 30 patients in each group, Group 1 and Group 2. Group 1 patients received Sevoflurane for maintenance of anesthesia whereas Group 2 received Desflurane for maintenance of anesthesia. The anesthesia was

induced for each patient according to the standardized guidelines. During the maintenance of anesthesia and during postoperative period, we studied the occurrence of cough, hiccups, breath holding and larygospasm. Another external anaesthetist, who was unaware of the inhalational agent used, assessed the time taken from switching off of the vaporizer to eye opening, time to obey verbal commands (tongue protrusion), time to sit with support, time to shift out of the recovery room and orientation in time, place and person.

RESULTS

A total of 60 patients were included in the study. Mean age of patients in Group 1 was 42.5 years and in Group 2 was 46.0 years. Number of male patients in Group 1 was 20 and in Group 2 were 16. Mean weight of patients in Group 1 was 73.5 kg and in Group 2 was 64.0 kg.(Table-1) The mean height of patients in Group 1 was 166.5 cm and in Group 2 was 159.4 cm. Total recovery time in Group 1 was 45.3 min and in Group 2 was 35.5 min. Time for opening eyes postoperatively was 10.5 min and 4.4 min. Time taken to respond to verbal commands was 11.78 min and 6.28 min. (Fig.1).

Table 1: Clinical observations of group 1(Sevoflurane)and group 2(Desflurane)

| Parameter | Group-1 | Group-2 |
|---------------------------------------|---------|---------|
| No. of subjects | 30 | 30 |
| Mean age (years) | 42.5 | 46 |
| No. of male patients | 20 | 16 |
| Mean weight (kg) | 73.5 | 64.0 |
| Mean height (cm) | 166.5 | 159.4 |
| Total Recovery Time (min) | 45.3 | 35.5 |
| Post operative Eye-opening time (min) | 10.5 | 4.4 |
| Response of verbal instructions (min) | 11.78 | 6.28 |

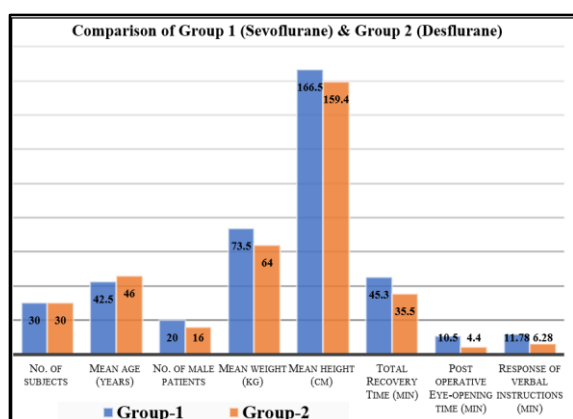


Figure 1: Comparison of Sevoflurane & Desflurane Drug patients groups

terms of time to discharge from an ambulatory surgery unit.^[7,8] They

found that the recovery indices and psychomotor function are marginally but not significantly better with sevoflurane than desflurane Nathanson MH et al.^[7] found the use of desflurane led to a more rapid emergence and shorter time to extubation compared to sevoflurane among 42 healthy, unpremedicated women undergoing laparoscopic sterilization procedures. Dogru K et al.^[8] also reported that early recovery was assessed in the surgical suite by measuring the time to 50% decline of end-tidal volatile concentration of desflurane or sevoflurane; time to extubation, eye opening, orientation, and a modified Aldrete Scale (MAS) score >8; and time to discharge from the postanesthesia recovery room.

DISCUSSION

In this study we compared efficacy of Sevoflurane with Desflurane for general anesthesia in ambulatory surgical procedures. In our study we found that Sevoflurane was found more efficient compared to Desflurane and had less post-operative recovery time which was in an agreement with Kotwani MB et al.^[5] reported among 60 children age <6 yrs comparison of Sevoflurane & Desflurane that desflurane provides faster emergence and recovery in comparison to sevoflurane when used for the maintenance of anesthesia through SGA in children. There were no respiratory adverse events in either group during maintenance. Time to awakening and time to removal of SGA were shorter with desflurane than sevoflurane. While Tarazi EM et al⁶ observed that if we used as part of a balanced anesthetic technique in

CONCLUSION

Sevoflurane and Desflurane are efficacious in ambulatory surgical procedures. Desflurane seems better than Sevoflurane in term of reduced recovery time and opening of eye time and verbal response time.

REFERENCES

- Gupta A, Stierer T, Zuckerman R, Sakima N, Parker SD, Fleisher LA. Comparison of recovery profile after ambulatory anesthesia with propofol, isoflurane, sevoflurane and desflurane: A systematic review. *Anesth Analg.* 2004; 98: 632–41.
- Eriksson LI. The effects of residual neuromuscular blockade and volatile anesthetics on control of ventilation. *Anesth Analg.* 1999; 89: 243–51.
- Strum EM, Szenohradzki J, Kaufman WA, Anthonie GJ, Manz IL, Lumb PD. Emergence and recovery characteristics

- of desflurane versus sevoflurane in morbidly obese adult surgical patients: a prospective, randomized study. *Anesth Analg*. 2004; 99(6):1848–53.
4. 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) 109:387–93.10.1213.
 5. Kotwani MB, Malde AD. Comparison of maintenance, emergence and recovery characteristics of sevoflurane and desflurane in pediatric ambulatory surgery. *J Anaesthesiol Clin Pharmacol* [serial online] 2017 [cited 2018 Jul 3];33:503-8
 6. Tarazi EM, Philip BK. A comparison of recovery after sevoflurane or desflurane in ambulatory anesthesia. *J Clin Anesth*. 1998 Jun;10(4):272-7.
 7. Nathanson MH, Fredman B, Smith I, White PF. Sevoflurane versus desflurane for outpatient anesthesia: a comparison of maintenance and recovery profiles. *Anesth Analg*. 1995 Dec;81(6):1186-90.
 8. Dogru K, Yildiz K, Madenoglu H, Boyaci A. Early Recovery Properties of Sevoflurane and Desflurane in Patients Undergoing Total Hip Replacement Surgery. *Current Therapeutic Research, Clinical and Experimental*. 2003;64(5):301-309. doi:10.1016/S0011-393X(03)00086-9.