EAS Journal of Anaesthesiology and Critical Care
Abbreviated Key Title: EAS J Anesthesiol Crit Care
ISSN: 2663-094X (Print) & ISSN: 2663-676X (Online)
Published By East African Scholars Publisher, Kenya

OPEN ACCESS

Volume-5 | Issue-5 | Sep-Oct-2023 | DOI: 10.36349/easjacc.2023.v05i05.004

Original Research Article

Monitored Anesthesia Care in Tympanoplasty a Comparative Study of Pentazocine Phenargan Combination versus Pentazocine Dexmedetomidine

Riyaz Ahmad[1*], Omais Ali[2], Fakhri Zehra[3]

[1]Anaesthetist in Directorate of Health Services, Kashmir, India
[2]Senior Resident in Department of Anaesthesiology, GMC Baramulla, Kashmir, India
[3]Post Graduate in Department of Microbiology, SKIMS, Soura, Kashmir, India

Article History
Received: 29.08.2023
Accepted: 05.10.2023
Published: 09.10.2023

Journal homepage:
https://www.easpublisher.com

Quick Response Code

Abstract: The objective of this study was to compare the effectiveness and safety of two different drug combinations used for monitored anesthesia care (MAC) in tympanoplasty procedures. The first combination consisted of pentazocine and phenergan, while the second combination included pentazocine and dexmedetomidine. A prospective, randomized controlled trial was conducted on patients scheduled for tympanoplasty surgery. A total of 100 patients were randomly assigned to either the pentazocine-phenergan group or the pentazocine-dexmedetomidine group. The primary outcome measured included the level of sedation achieved, pain scores during surgery, and the incidence of adverse events such as respiratory depression, nausea, vomiting, bradycardia and hypotention. The results showed that the pentazocine-dexmedetomidine combination achieved a higher sedation score and lower pain scores compared to the pentazocine-phenergan combination. Sedation score in Group PP mean RSS of 1.928571429, while Group PD had a higher mean RSS score of 3.142857143 also VAS scores in Group PP mean VAS sore of 4.542857143, and Group PD had mean VAS score of 3.285714286. However, higher incidences of adverse events were noted in Group PD compared with Group PP. In conclusion, this comparative study suggests that the pentazocine-dexmedetomidine combination may offer superior sedative effects and better analgesia compared to the pentazocine-phenergan combination during tympanoplasty with manageable adverse effects.

Keywords: Dexmedetomidine, Pentazocine, Tympanoplasty, Monitored anaesthesia care, Sedation, Analgesia.

INTRODUCTION

Tympanoplasty is a surgical procedure performed to repair a perforated eardrum or reconstruct the middle ear. It is a commonly performed surgery that requires adequate anesthesia to ensure patient comfort and safety. Monitored anesthesia care (MAC) is a widely used technique for providing anesthesia during tympanoplasty, as it allows for conscious sedation and analgesia while maintaining patient responsiveness. However, the choice of medications used in MAC can significantly impact the quality of anesthesia and patient outcomes.

One commonly used combination for MAC in tympanoplasty is pentazocine and phenergan. Pentazocine is an opioid analgesic that provides pain relief, while phenergan is an antihistamine with sedative properties. This combination has been traditionally used to achieve adequate sedation and analgesia during tympanoplasty procedures [1]. However, recent studies have suggested that an alternative combination of pentazocine and dexmedetomidine may offer superior outcomes in terms of patient comfort and safety.

Pentazocine is another opioid analgesic that has been shown to provide effective pain relief during surgical procedures [2]. Dexmedetomidine, on the other hand, is a selective alpha-2 adrenergic agonist that produces sedation and analgesia without causing significant respiratory depression [3]. This combination has gained attention in recent years due to its potential to provide better sedation and analgesia while minimizing adverse effects.

The purpose of this research paper was to compare the efficacy and safety of the pentazocine-phenergan combination versus the pentazocine-

***Corresponding Author:** Riyaz Ahmad
Anaesthetist in Directorate of Health Services, Kashmir, India

dexmedetomidine combination in MAC for tympanoplasty. By evaluating patient outcomes such as pain scores, sedation levels, and adverse events, our aim was to determine which combination offers superior anesthesia management during tympanoplasty.

MATERIALS AND METHODS

Study Design: This research paper aims to compare the efficacy and safety of the pentazocine-phenergan combination with the pentazocine-dexmedetomidine combination in monitored anesthesia care during tympanoplasty. The study design is a prospective, randomized, double-blind clinical trial.

Study Participants: A total of 100 adult patients, ASA I, aged 18-50 years, scheduled for tympanoplasty under monitored anesthesia care, will be included in this study. Patients with a history of allergy to any study medications, contraindications to the use of dexmedetomidine, pentazocine or phenergan, or those who refuse to participate will be excluded.

Randomization and Blinding: Patients were randomly assigned to one of the two study groups using a computer-generated randomization sequence. The allocation was concealed in opaque, sealed envelopes until the start of the surgery. Both the patients and the anesthesiologist were blinded to the group assignment.

Anesthesia Protocol: All patients received standard preoperative fasting instructions. On the day of surgery, an intravenous line was established, and standard monitoring including electrocardiography, non-invasive blood pressure, and pulse oximetry were initiated. All the patients received dexamethasone 6mg before the surgery.

Group PP: Pentazocine-Phenergan Combination: Patients in this group received intravenous pentazocine (0.5 mg/kg) and phenergan (0.5 mg/kg) 10 minutes before the surgery. The dose was adjusted based on the patient's weight and normal saline infusion was started intraoperatively.

Group PD: Pentazocine-Dexmedetomidine Combination: Patients in this group received intravenous pentazocine (0.5 mg/kg) and dexmedetomidine (1 mcg/kg) 10 minutes before the surgery with subsequent infusion of dexmedetomidine (0.3 mcg/kg/hr) the doses were adjusted based on the patient's weight.

All patients received local anesthesia with 2% lignocaine with adrenaline (1:200,000) infiltration at the surgical site. Additional propofol boluses were used as rescue hypnotics if patients got agitated intraoperatively. Oxygen supplementation was provided via a nasal cannula at a flow rate of 2 L/min.

Outcome Measures: The primary outcome measured included level of sedation achieved during the surgery, assessed using the Ramsay Sedation Scale. Secondary outcome included intraoperative pain scores using a visual analog scale adverse events nausea and vomiting, hemodynamic stability, Bradycardia, oversedation RSS>4.

Statistical Analysis: Data was analyzed using appropriate statistical tests, including independent t-tests, chi-square tests, and Mann-Whitney U tests. A p-value of less than 0.05 was considered statistically significant.

Ethical Considerations: This study was conducted in accordance with the principles outlined in the Declaration of Helsinki.

RESULTS

Two groups were comparable in terms of demographics and baseline vitals (Table-1). The results of the data analysis show that Group PP had mean RSS of 1.928571429, while Group PD had higher mean RSS score of 3.142857143.the p-value for the comparison between the two groups is less than 0.0001. This suggested that the difference in RSS scores between Group PP and Group PD is statistically significant. Overall, these results indicated that Group PD had significantly higher sedation score over Group PP (Figure-2).

Furthermore data revealed that Group PP had mean VAS sore of 4.542857143, while Group PD had mean VAS score of 3.285714286. The calculated p-value for the comparison between the two groups is $p < 0.0001$. Indicating patients had better analgesia in Group PD compared to Group PP (Figure-1).

The data comparison between Group PP and Group also revealed the following results regarding adverse events Group PD had higher incidence of adverse events compared to Group PP in terms of bradycardia, hypotension, and RSS>4. On the other hand, Group PP had a higher incidence of nausea and vomiting compared to Group PD (Figure-3).

Table-1: Baseline Parameters

	GROUP-PP	GROUP -PD	P-VALUE
AGE	37±8	36±7	0.4077
WEIGHT	60.4±7.2	59.3±6.4	0.2549
PRE OP SYS	110±9	111±2	0.2794
PRE OP DBP	66±7	67±8	0.348
PRE OP HR	72±8	73±4	0.2649
PRE OP SPO2	98±2	98±1	1

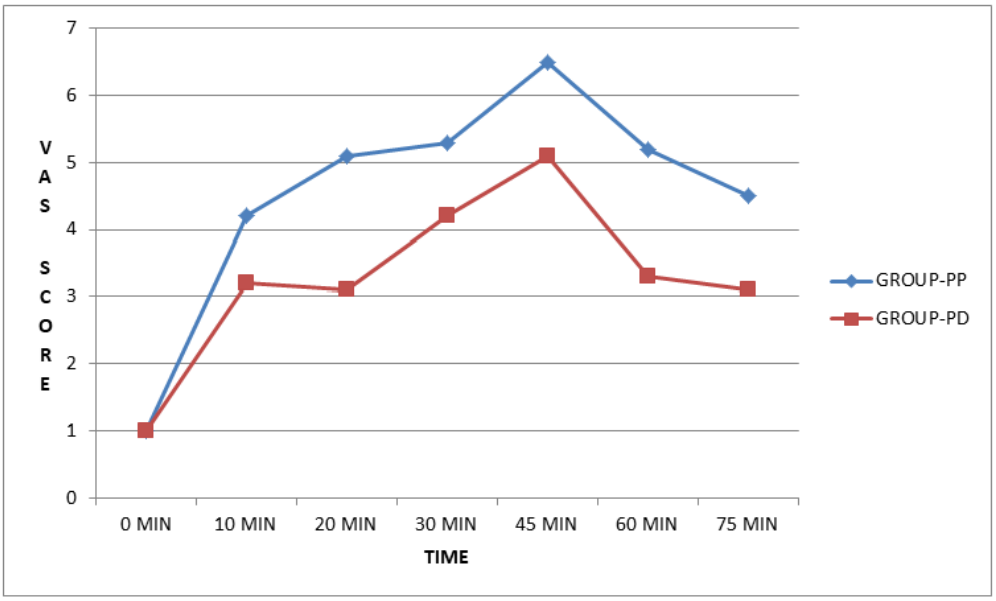

Figure 1: Vas Sore

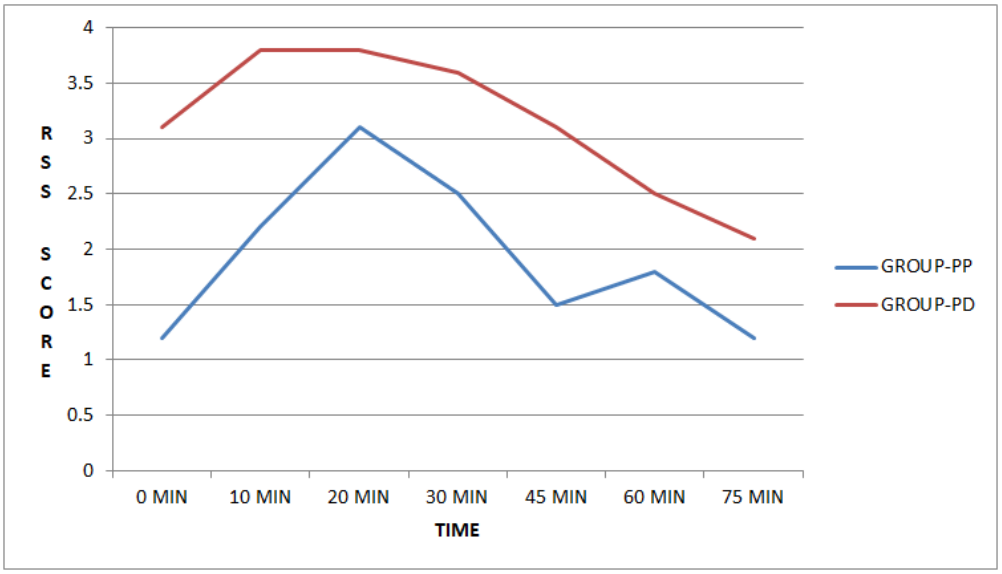

Figure 2-Sedation score

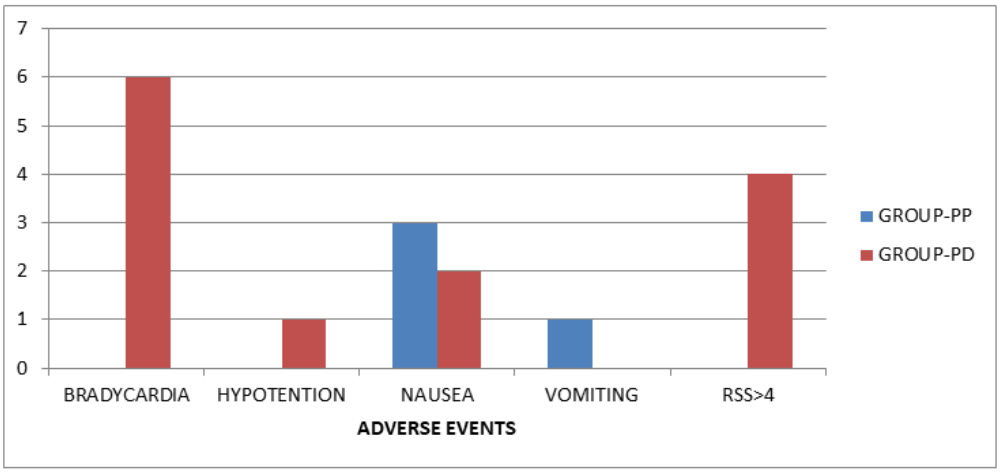

Figure-3: Adverse Events

DISCUSSION

Dexmedetomidine is a selective alpha2 agonist with analgesic and sedative properties [4]. These effects of dexmedetomidine make it suitable for sedation and analgesia during the whole perioperative period. Its use as a premedication, as an anesthetic adjunct for general and regional anesthesia and as a postoperative analgesic and sedative are similar to those of the benzodiazepines. Pentazocine is the first synthetic agonist-antagonist which was used as an analgesic. It has weak μ antagonist and higher agonistic actions [5]. However, high dose of Pentazocine can cause high blood pressure during surgery due to sympathetic stimulation. Vomiting occurs less frequently; sweating and lightheadedness are the other side effects [6]. In the present study, we compared pantazocine-phenargen and Dexmedetomidine-Pentazocine for MAC. We assessed the patients in terms of Ramsay sedation scores, intraoperative visual analogue score and adverse events intraoperatively.

Results from data analysis of current study showed that Group PP had RSS score of 1.928571429, while Group PD had a higher RSS score of 3.142857143 with statistically significant p-value less than 0.0001. In study of Memon *et al*., [7] they found Intravenous Dexmedetomidine is an excellent drug for surgeries like Tympanoplasty done under monitored anesthesia care. It not only improves intraoperative anaesthesia but also postoperative analgesia and thereby, improving the outcome of surgery. Parikh. DA *et al*., [8] compared dexmedetomidine as a sole agent against the traditional midazolam fentanyl combination in patients for Tympanoplasty under MAC and found qualitatively better sedation profile with dexmedetomidine.

However Nii, Kouhei *et al*., [9] have pointed out inadequate analgesia and insufficient immobilization using dexmedetomidine alone or with pentazocine phenargen combination during routine day care procedures requiring monitored anesthesia care.

Furthermore results of the data analysis show that Group PP had VAS sore of 4.542857143, while Group PD had VAS score of 3.285714286. The calculated p-value for the comparison between the two groups is $p < 0.0001$. This indicates that there was better analgesia in Group PD and Group PP. Mahmoud Hassan Mohamed *et al*., [10] who compared I.V. Dexmedetomidine and Nalbuphine with Midazolam and Nalbuphine in ear surgeries under MAC. Srinivasa Rao Nallam *et al*., [11] Compared I.V. (Dexmedetomidine and Nalbuphine) with (Propofol and Nalbuphine) in patients undergoing middle ear surgeries. He also observed that Dexmedetomidine with Nalbuphine provides better sedation and analgesia in his study.

Adverse events between two groups reveal that Group PD had a higher incidence of adverse events compared to Group PP in terms of bradycardia, hypotension, and RSS>4. On the other hand, Group PP had a higher incidence of nausea and vomiting compared to Group PD.

CONCLUSION

In conclusion, this comparative study demonstrates that pantazocine-dexmedetomidine (Group PD) provides superior sedation and analgesia compared to pantazocine-phenargen (Group PP) in tympanoplasty patients. However, the higher incidence of adverse events associated with Group PD should be carefully considered.

Financial Disclosure: None to declare.

Conflict of Interest: No

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Cite this article: Riyaz Ahmad, Omais Ali, Fakhri Zehra (2023). Monitored Anesthesia Care in Tympanoplasty a Comparative Study of Pentazocine Phenargan Combination versus Pentazocine Dexmedetomidine. *EAS J Anesthesiol Crit Care, 5*(5), 92-96.