

# Comparative Study of Intravenous Ondansetron Vs Dexamethasone in Prevention of Post Operative Nausea and Vomiting for Patients Undergoing General Anesthesia

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**Abstract:** ***Background:** Post operative Nausea and Vomiting (PONV) is the second most common complaint in the post - operative period after pain with a relatively high incidence after general anaesthesia up to 80% when no anti emetics is used. This study is intended to compare the effect of intravenous ondansetron vs dexamethasone in preventing PONV in patients undergoing general anaesthesia. To determine the effect of prophylactic intravenous ondansetron vs dexamethasone in preventing PONV in patients undergoing general anaesthesia. To assess the requirement of rescue antiemetics in postoperative period. **Objective:** The objective of the study is to find out the better drug in preventing postoperative nausea and vomiting*

**Keywords:** Ondansetron, Dexamethasone, Postoperative nausea and vomiting

## 1. Introduction

Following the inception of General anaesthesia in the first half of the nineteenth century the phenomenon of postoperative nausea and vomiting (PONV) has challenged postoperative care. John Snow in the 1840s recognized and pioneered the management of this entity. Despite the advances in surgical technique and anaesthetic technique the incidence of PONV has remained high. The incidence of PONV has been higher for General Anaesthesia. Unresolved PONV may result in prolonged post anaesthesia care unit stay and unanticipated hospital re - admission that result in a significant increase in overall health care cost. PONV is influenced by numerous factors, which may be patient related, surgery related, and anaesthesia related factors. Different antiemetic a combination of the same and even acupuncture has been in use to treat this distressing problem. Guidelines have been published in order to better define and manage this condition. The 2014 guidelines published by Gan et al. include risk scoring systems for PONV; recommendations on new antiemetic changes in recommendations from previous guidelines based on new published information on efficacy and risk of antiemetic drugs; recommendation on a new antiemetic combination strategy and a multimodal prevention approach to prevent PONV and implementation of PONV prevention and treatment strategies in the clinical setting. A wide variety of prophylactic antiemetic regimens have been used for the prevention of PONV. Many of the traditional antiemetic produce undesirable side effects and have limited efficacy. Therefore, the search for more ideal compounds has continued. Ondansetron is considered as the "gold standard" of treatment when compared with the other antiemetic. The combination of ondansetron and dexamethasone has been

found to be highly effective in the reduction of PONV.

## 2. Methodology

### Type of Study

It is a prospective observational study conducted in a tertiary care centre.

### Sample size:

A total of 60 patients undergoing elective surgery under general anaesthesia were included in the study.

### Selection criteria:

Patients under ASA grade I/II patients within the age group of 18 to 60 years scheduled to under general anaesthesia were included in the study.

Pregnant and lactating patients, Patient with hypersensitivity to ondansetron and dexamethasone, Patients with history of motion sickness, Patients on steroid therapy, antiemetics or on treatment with other medication known to produce nausea and vomiting were excluded from the study

### Data Collection Procedures

Total number of patients involved – 60 have been divided into two groups Patients Group A - Ondansetron (4mg IV) Group B - Dexamethasone (4mg IV). Patient will be premedication with T. Pantoprazole 40mg 2 hours before surgery and T. Metaclopramide 10mg on the night before surgery and 2 hours before surgery. All monitors connected after shifting the patient to operation theatre. Patients in group A receives Ondansetron 4mg IV and group B dexamethasone 4mg IV before induction of anaesthesia. Then patient is induced after preoxygenation with Inj.

Volume 10 Issue 11, November 2021

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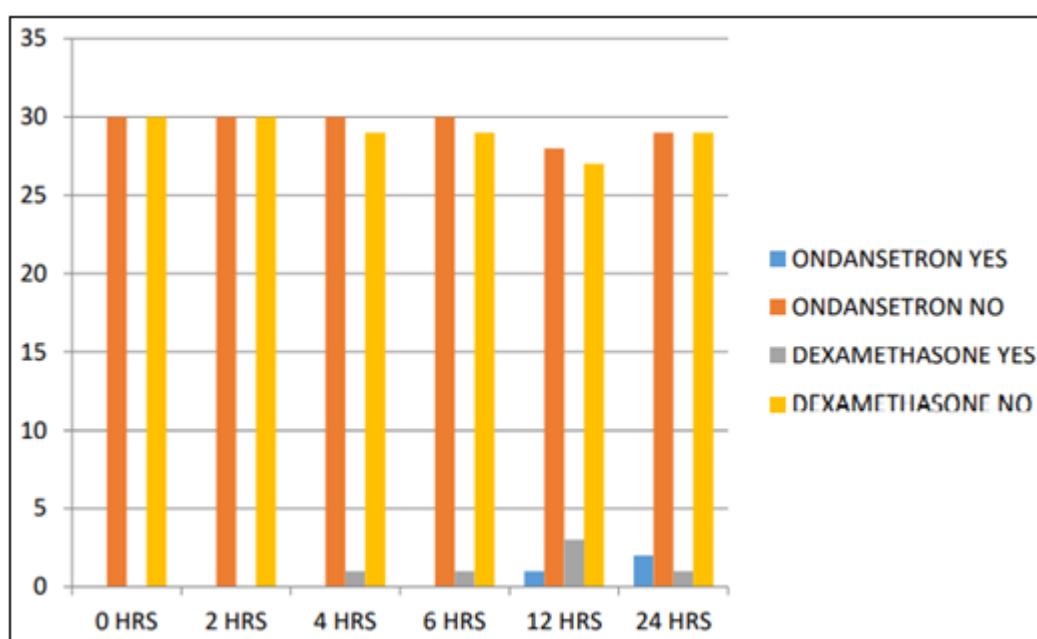
Midazolam 1mg IV Ing. Glycopyrrolate 0.2mg, Inj. Fentanyl 2mcg/kg, Inj. Propofol 2mg/kg, Inj. Atracurium 0.5mg/kg and depth of anaesthesia is maintained with isoflurane and intermittent bolus of Inj. Atracurium. After the procedure the reversal will be achieved by administering Inj. Neostigmine 0.05mg/kg and Inj. Glycopyrrolate 0.01mg/kg. then patient will be extubated and shifted to the recovery room for post operative monitoring. Then patient will be assessed for complaining of nausea and vomiting immediately after extubation, 2 hours, 4 hours, 6 hours, 12 hours and 24 hours.

### 3. Observation and Result

In this study the patients have been grouped into two categories. Category A - 30 patients were given with ondansetron 4mg intravenously and category B - 30 patients were given with dexamethasone 4mg IV. The effect of ondansetron and dexamethasone was studied in the groups using a preformed questionnaire. The results are analysed as follows

**Table 1:** Comparison of Side Effect – Nausea

|               |     | Nausea |       |       |       |        |        |
|---------------|-----|--------|-------|-------|-------|--------|--------|
|               |     | 0 HRS  | 2 HRS | 4 HRS | 6 HRS | 12 HRS | 24 HRS |
| ONDANSETRON   | Yes | 0      | 0     | 0     | 0     | 2      | 1      |
|               | No  | 30     | 30    | 30    | 30    | 28     | 29     |
| DEXAMETHASONE | Yes | 0      | 0     | 1     | 1     | 1      | 3      |
|               | No  | 30     | 30    | 29    | 29    | 29     | 28     |



**Figure 1:** Comparison of Side Effect – Nausea

### Vomiting

**Table 2:** Comparison of Side Effect – Vomiting

|               |     | 0 HRS | 2 HRS | 4 HRS | 6 HRS | 12 HRS | 24 HRS |
|---------------|-----|-------|-------|-------|-------|--------|--------|
| ONDANSETRON   | Yes | 0     | 0     | 0     | 0     | 1      | 2      |
|               | No  | 30    | 30    | 30    | 30    | 28     | 29     |
| DEXAMETHASONE | Yes | 0     | 0     | 1     | 1     | 3      | 1      |
|               | No  | 30    | 30    | 29    | 29    | 27     | 29     |

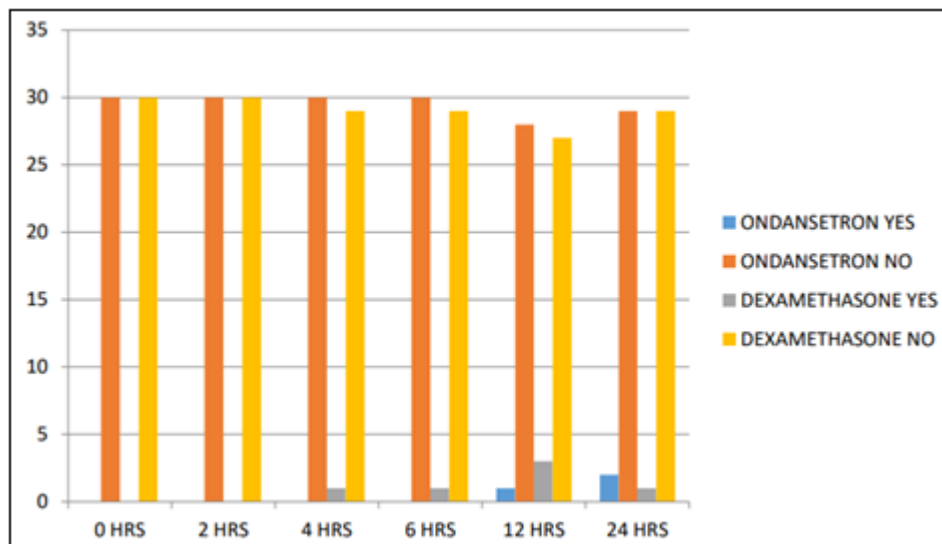


Figure 2: Comparison of Side Effect - Vomiting

#### 4. Discussion

The problem of postoperative nausea and vomiting has troubled surgeon and anaesthetist alike since the advent of general anaesthesia in the early 1800s. With the advent of modern anaesthetic agents such as sevoflurane and desflurane; newer surgical techniques such as laparoscopy and robotic surgery and newer antiemetic, this wheel unfortunately needs to be re - invented and the question re - answered.<sup>86 8 866</sup>. Ondansetron has generally been considered as the gold standard in preventing and managing PONV. We wanted to compare ondansetron vs dexamethasone for prevention of PONV. The patients with history of motion sickness are thought to have a well - developed reflex arc for vomiting and are more prone to develop PONV. Therefore they were excluded. Safety of drugs under study is not clearly established in pregnancy and lactation. Hence these patients were also excluded. The patients who received antiemetic or drugs with 82 emetic effects, 48 hours before surgery were also excluded, as they would have interfered with the actions of the study drugs. Patients with known hypersensitivity to, ondansetron or dexamethasone were also excluded due to obvious reasons. The anesthetic procedure, except for the test drug, was similar in all the three groups. Discussion 25 Even though a wide variety of doses of study drugs have been described in literature and various dose finding studies suggesting the optimal doses as 0.15 mg/kg of dexamethasone, 0.1 mg/kg of ondansetron, we followed the 2014 consensus guideline for PONV and used 4 mg ondansetron, 4 mg dexamethasone. The baseline demographic data were comparable except for these distribution. The percentage of females was more in the ondansetron with dexamethasone group. This may be explained by the fact that this is an interim analysis of the data and may equalize once the sample size is reached. Our study has shown that the incidence of PONV between the two drugs regimens is similar during the 1st 12 hours with no statistical difference. The use of rescue antiemetic was also similar between the two groups. There was no adverse event or drug side effect documented in either group. The sub group analysis shows similar incidence at 0 - 2 hours, 2 - 6 hours and 6 - 24 hours confirming that the faster onset of IV dexamethasone offers

similar duration of antiemetic action of ondansetron.

Our results show good agreement with the consensus guidelines that ondansetron is an alternative to dexamethasone. The BMI of patients in our study is lower than most western populations so we could not find a correlation between obesity and PONV. We agree with the statement in the recommendation that a major problem is the lack of compliance among anesthetist to follow the PONV guidelines. In our study we could not find any association between PONV and the dose of opioids. Similarly we could not find the association between PONV and postoperative pain.

#### 5. Conclusion

Intravenous Ondansetron is better than intravenous dexamethasone in preventing post operative nausea and vomiting in patient undergoing General anaesthesia

#### 6. Acknowledgement

The authors are thankful to the patients and technical staff without whom this publication would not be possible.

#### 7. Source of Funding

Nil

#### 8. Conflict of Interest

None declared

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