

## Comparison of ondansetron with combination of ondansetron and dexamethasone for prevention of nausea and vomiting

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### Abstract

The study has been planned to compare the antiemetic efficacy of ondansetron and dexamethasone combination with that of the single use of ondansetron to decrease the incidence of PONV.

The study was planned in the Department of Surgery in Lord Buddha Koshi Medical College and Hospital, Saharsa, From September 2014 to September 2015. The age group of the patients is ranges from 20 to 60 years. Total 100 patients were evaluated for the study. GROUP A: Patients received inj. droperidol 20 mg per kg or inj. And GROUP B: Patients received inj. metoclopramide 0.2 mg per kg.

We had conclude that combination of dexamethasone with ondansetron is quite effective in controlling PONV in patients. It also reduces incidence of nausea in first 24 hours post operatively and also frequency of giving rescue antiemetic is decreased.

**Keywords:** laparoscopic surgery, post-operative nausea and vomiting, PONV, ondansetron, dexamethasone

### Introduction

The Post-operative nausea and vomiting (PONV) is accountable for a conjoint impediment of surgery and anaesthesia. Even up till now it is uncommonly lethal, PONV is unpleasant and connected with patient nervousness, and misery with their pre-operative safeguard. Several of the patients have designated that prevention of PONV is of higher suffering than evading post-operative pain. PONV is also connected with delayed relief from the retrieval room and insistent hospital care and, therefore it results in the escalation in the health care costs. The PONV morbidity consists of the symptoms like wound dehiscence, dehydration, electrolyte disturbance, interference with nutrition and, more rarely, oesophageal rupture or aspiration pneumonitis.

It is significant that group of peoples responsible for the caring for surgical patients recognise PONV. There was a survey established in the year of 2000 revealed awareness breaches. There are only 60 per cent of ward nurses were giving correct responses for the survey <sup>[1]</sup>.

The usually managed emetogenic drugs in anaesthesia include nitrous oxide, physostigmine and opioids. The intravenous anaesthetic Propofol is presently the least emetogenic general anaesthetic. These treatments are supposed to stimulate the chemoreceptor trigger zone (CTZ). This zone is on the floor of the fourth ventricle and is effectually outside of the blood-brain barrier. This marks it enormously profound to toxin and pharmacological stimulation. There are plentiful neurotransmitters such as histamine, dopamine, serotonin, acetylcholine, and the more recently discovered neurokinin-1 (substance P) <sup>[2]</sup>. The severe environment of vomiting passageways are also not fully implicit but a number of pathophysiological mechanisms known to cause nausea or vomiting have been recognized. The foremost coordinator is the vomiting centre, a group of neurones situated in the medulla oblongata <sup>[3]</sup>.

Cholecystectomy is the surgical removal of the gallbladder. It

is a common treatment of symptomatic gallstones and other gallbladder conditions. Surgical options include the standard procedure, called laparoscopic cholecystectomy, and an older, more invasive procedure, called open cholecystectomy. The surgery can lead to post cholecystectomy syndrome, as well as more serious complications such as bile duct injury.

Laparoscopic cholecystectomy has now replaced open cholecystectomy as the first-choice of treatment for gallstones and inflammation of the gallbladder unless there are contraindications to the laparoscopic approach. This is because open surgery leaves the patient more prone to infection. Sometimes, a laparoscopic cholecystectomy will be converted to an open cholecystectomy for technical reasons or safety.

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Laparoscopic cholecystectomy requires several (usually 4) small incisions in the abdomen to allow the insertion of operating ports, small cylindrical tubes approximately 5 to 10 mm in diameter, through which surgical instruments and a video camera are placed into the abdominal cavity. The camera illuminates the surgical field and sends a magnified image from inside the body to a video monitor, giving the surgeon a close-up view of the organs and tissues. The surgeon watches the monitor and performs the operation by manipulating the

surgical instruments through the operating ports. Laparoscopic bile duct exploration (LBDE) is recommended in current treatment guidelines for the management of choledocholithiasis with gallbladder in situ. Failure of this technique is common as a consequence of large or impacted common bile duct (CBD) stones. A new technique, LABEL (Laser-Assisted Bile duct Exploration by Laparoendoscopy) has been developed to enhance LBDE in cases of impacted or large stones using holmium-laser increasing the feasibility of the trans cystic stone retrieval and reducing overall operative time in the treatment of choledocholithiasis [5].

The study has been planned to compare the antiemetic efficacy of ondansetron and dexamethasone combination with that of the single use of ondansetron to decrease the incidence of PONV.

**Methodology**

The study was planned in the Department of Surgery in in Lord Buddha Koshi Medical College and Hospital, Saharsa, From September 2014 to September 2015, The age group of the patients is ranges from 20 to 60 years. Total 100 patients were evaluated for the study. As per the classification of the American Society of Anaesthesiologists I and II physical conditions were enrolled on to the study. After taking informed written consent and approval of the Institutional Ethics Committee.

Following was the inclusion and Exclusion criteria of the study.

**Inclusion Criteria**

1. Age 20- 60 years
2. American Society of Anaesthesiologists I and II physical conditions patients

**Exclusion Criteria**

1. Patients who received antiemetics within 48 h before surgery
2. Patients at particular risk of heart conditions, such as congenital disease
3. Pregnant/lactating females.
4. Patients who were predisposed to low levels of potassium and magnesium in the blood
5. Patients on other medications that lead to QT prolongation
6. Patients with a history of recurrent vomiting in the postoperative period

On arrival to the operation theatre, routine monitoring devices were attached. Anesthesia was induced with propofol 5mg/kg. Tracheal intubation facilitated with atracurium 0.5mg/ kg. Maintenance of anesthesia was done by oxygen, nitrous oxide and halothane and ventilation controlled. 30-40 minutes before end of surgery, patients were given the prepared study drug according to their group allocation.

After extubation, based on the randomization table, patients receive intravenously either inj. droperidol 20 mg per kg or inj. metoclopramide 0.2 mg per kg.

- GROUP A: Patients received inj. droperidol 20 mg per kg or inj.
- GROUP B: Patients received inj. metoclopramide 0.2 mg per kg.

**Results & Discussion**

The data from the 50 patients were collected and present in the following tables.

**Table 1:** Comparison of gender between groups

	Group An=25	Group Bn=25
Male	24	28
Female	26	22
Total	50	50
Duration of Surgery (min)	48 ± 30	45 ±28
Duration of Anesthesia (min)	58 ± 25	60 ± 28

**Table 2:** Severity of Nausea

Duration	Group A	Group B
0 – 2 hrs	23	32
2 – 6 hrs	17	10
6 – 24 hrs	10	8
Total	50	50

**Table 3:** Post-Operative Nausea & Vomiting Score

	Group A	Group B
No Nausea & Vomiting	20	35
Episode of nausea	15	8
Episodes of retching & vomiting	15	7
Total	50	50

From the above data the combination of the Odensetron with Dexamethasone is found to be effective in the decreasing the post operative nausea and vomiting.

Gautam *et al.* [4] found that dexamethasone is less effective in preventing early vomiting when compared with dexamethasone in laparoscopic cholecystectomy cases. D'Souza *et al.* compared dexamethasone with ondansetron for the prevention of PONV after laparoscopic gynecologic surgery and found that dexamethasone decreased the incidence of PONV and use of single dose of dexamethasone was safe, had a lesser cost and could be alternative to single dose ondansetron in this patient population [5] Longer onset of action of dexamethasone may result in relative less effectiveness in preventing early PONV. Subramaniam *et al.* [6] found that ondansetron is more effective in preventing early PONV and dexamethasone is more effective in preventing late PONV after strabismus surgery. The difference in the findings of the above studies might be related to wide range of differences in sample sizes, patients qualities, type of surgical operations and anesthetic techniques, the waythat PONV was defined and studied, and mostimportant of all the dosage of the antiemetic drugsand the timing of their administration.

Our findings are comparable with the few of already reported findings. We had demonstrates dexamethasone in combination with ondansetron in comparison to ondansetron significantly decreases the incidence of nausea and vomiting.

**Conclusion**

We had conclude that combination of dexamethasone with ondansetron is quite effective in controlling PONV in patients. It also reduces incidence of nausea in first 24 hours post operatively and also frequency of giving rescue antiemetic is decreased. As the drug is freely available, economical and a

single dose is not associated with any side effects, this combination can be used safely

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