



## COMPARISON OF ONDANSETRON WITH DEXAMETHASONE AND ONDANSETRON IN PREVENTION OF POSTOPERATIVE NAUSEA VOMITING IN LAPAROSCOPIC ABDOMINAL SURGERY

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**ABSTRACT** Post operative nausea and vomiting can be distressing and prevent early discharge in today's era of day care laparoscopic surgeries. Complications related to vomiting can cause increased hospitalisation and increased overall cost of healthcare. Combination of Ondansetron and Dexamethasone was compared with Ondansetron in patients undergoing laparoscopic cholecystectomy. Combination therapy was noted to be superior to mono therapy.

**KEYWORDS :** Post operative nausea vomiting, Ondansetron, Dexamethasone

### INTRODUCTION

Incidence of PONV was reported between 30 -80% depending on type of surgery and associated risk factors [1,9]. There are multiple factors responsible for the occurrence of PONV; these are duration of surgery, the type of drugs used during anesthesia, age, sex and smoking habit. [1,9] It decreases patient comfort and satisfaction and may cause prolonged hospital admission, delayed recovery, delayed return to work and overall expensive treatment. Many complex procedures are now a days carried out on day care basis, laparoscopy is one of them, done under general anaesthesia.

A multimodal approach to PONV has been advocated in recent guidelines and literature. According to the Consensus Guidelines for the Management of PONV, a combination of antiemetic medications suggested as the most suitable regimen for patients with moderate to high risk of PONV.[8]

### AIMS AND OBJECTIVES

To evaluate the efficacy of Ondansetron and combination of Ondansetron with Dexamethasone for prevention of postoperative nausea and vomiting in patients undergoing laparoscopic abdominal surgery.

### MATERIALS AND METHODS

After obtaining institutional ethical committee approval and taking written informed consent 60 patients aged 18-65 years of ASA grade I and II scheduled to undergo laparoscopic abdominal surgery under GA were selected. All patients completed the study.

ASA grade III & IV, pregnant lactating women, smokers, those with past history of PONV or motion sickness, and those who received antiemetics in 48 hours pre op were excluded. Preoperative assessment of the patient including history, general examination, systemic examination with all required investigations were done a day before the procedure.

According to the types of antiemetic drug injected, patients were randomly divided into two groups of 30 patients each based on computer generated random numbers Group O: received Inj. Ondansetron 4mg IV & Inj. NS 2ml Group O+D: received Inj. Ondansetron 4mg and Inj. Dexamethasone 8mg IV. After arrival in OT, an intravenous line with proper size was secured and intravenous fluid started. In the operative room monitors were attached and basal vitals pulse rate, systolic and diastolic blood pressure, spO<sub>2</sub> and ETCO<sub>2</sub> were noted. All patients were premedicated with Inj. Glycopyrrrolate 4 µg/kg and Inj. Fentanyl 2 µg/kg IV

Patients were pre-oxygenated for 3-5 min with 100% oxygen with Bains circuit. Induction was done with Inj. Propofol 2.5-3.5 mg/kg IV and Inj. Succinylcholine 2mg/kg IV was given to facilitate intubation. Patients were intubated with appropriately sized cuffed endotracheal tube. Patients were maintained on 100% O<sub>2</sub> mixture with Sevoflurane traces 1.5 – 2% and Inj. Atracurium 0.5mg/kg loading dose followed by 1/4th of loading dose intermittently given IV.

Ventilation parameters were adjusted to maintain ETCO<sub>2</sub> 30-35 mmHg. Ryles tube inserted as per surgeon's requirement. Creation of pneumoperitoneum was allowed to maintain intra-abdominal pressure 10 -12 mmHg. After the completion of surgery, neuromuscular blockade was reversed with Inj. Glycopyrrrolate 8 µg/kg and Inj. Neostigmine 50 µg/kg. After thorough Oral and Endotracheal suction, extubation was done. After extubation, the incidence of nausea and vomiting was recorded at 0, 6, 12 and 24 hours postoperatively using Apfel score and Koivuranta score.

Adverse effects like headache, myalgia, dizziness, constipation, extrapyramidal manifestations were also recorded. Complete response: No incidence of PONV and no need to administer antiemetic during study period. Rescue antiemetic: Inj. Metoclopramide 0.1 - 0.2 mg/kg given to patient having vomiting postoperatively.

### OBSERVATION AND RESULTS

The average age of patients in group O is 39.47±9.20 and group O+D is 39.97±7.61. The average duration of surgery in group O is 66.83±5.90 min and group O+D is 68.4±5.96 min.

In early postoperative period (06 hrs) we observed significantly higher incidence of nausea and vomiting in group O. 70% patients in group O had nausea and vomiting while in group O+D 27% patients had nausea and vomiting (p value <0.01) which is statistically significant. In 6-12 hrs postoperative period 4(13.33%) patients in group O had nausea and vomiting while only 2(6.66%) patient in group O+D had nausea and vomiting, (p value 0.3) this is statistically non significant. In 12-24 hrs postoperative period only 1(3.33%) patient in group O had nausea and vomiting. Complete response was observed in other group. So we observed that group O had significantly higher incidence of PONV in first six postoperative hours. After six hours there is no statistically significant difference in incidence of PONV in any of two groups. Requirement of rescue treatment was more in group O in first six hrs postoperatively.

### DISCUSSION

Incidence of Postoperative nausea and vomiting (PONV) after any surgery is reported approximately 20-30%. [9] Laparoscopic cholecystectomy increases PONV incidence to 50%. In recent era laparoscopic surgeries are performed as day care surgery. PONV is distressing for patients which prevents early discharge. So an effective prophylactic drug therapy to control PONV is demand of this era. Nausea and vomiting are one of the most common adverse effects that occurs after laparoscopic surgery under general anaesthesia. Advances in the field of anaesthesia with better techniques as well as the development of newer anti-emetics and shorter acting anaesthetic drugs has decreased the overall incidence of PONV in the first 24 hours to around 30%. [3,4]

The complex mechanisms present in nausea include the CNS, the

endocrine system, the autonomic nervous system, psychological states, and gastric dysrhythmias. The stimuli from the viscera and chemoreceptor trigger zone are mediated by dopamine vestibular system are mediated by histamine serotonin and from the acetylcholine. The current recommended pharmacological treatment for vomiting and nausea is based on the ability of the drug to block these receptor sites.

Vomiting following surgery can result in dehydration and electrolyte imbalance. Surgical wound dehiscence, esophageal tear, esophageal rupture, aspiration of vomitus, and other complications that are associated with retching and vomiting following surgery may be rare but can result in delay in discharge from the postoperative care unit, cause an increase unanticipated hospital admission in out-patients and also significantly increase overall costs of health care.

The goal of prophylaxis is to decrease the incidence of nausea and vomiting that follows surgery and thereby reduce the distress caused as well as the cost of health care. Although there are certain risk factors for PONV that have strong evidence[5], no single predictor is used to clinically decide on the need for antiemetic prophylaxis. There are 2 risk scores that are commonly used in adults, the Apfel score and Koivuranta score. Koivuranta et al. developed a scoring system that consisted of 5 predictors of PONV – Female sex, non-smoking status, history of motion sickness or PONV in the past, the use of opioids postoperatively and the duration of surgery more than 60 minutes. As per the Apfel simplified score, 4 risk factors were taken into consideration - Nonsmoking status, the female sex, history of motion sickness/ PONV and the use of postoperative opioids.

Ondansetron is generally considered as the gold standard in treating PONV. The efficacy of ondansetron in reducing PONV was proven with different anaesthetic agents as well. [2] However a meta-analysis done by Tramer et al highlighted some of the limitations of monotherapy for the management of PONV. With this in mind, literature emerged about the use of combination therapy of ondansetron and dexamethasone for PONV prophylaxis and treatment.

In a study published in 2008 by Banoet al, one hundred patients undergoing laparoscopic cholecystectomy were randomly allocated either to ondansetron alone or ondansetron plus dexamethasone. The authors concluded that combination of ondansetron plus dexamethasone was better than dexamethasone alone in preventing postoperative nausea and vomiting. [6] This was also confirmed by Ahsan et al in an RCT published in 2014. One hundred patients that underwent laparoscopic cholecystectomy were randomly assigned to receive ondansetron or ondansetron plus dexamethasone. The authors observed that the combination of dexamethasone and ondansetron was superior to ondansetron alone. [7] Kumar et al compared a combination of ondansetron plus dexamethasone (4mg plus 8mg) vs either drug alone in the same dose and placebo in patients undergoing laparoscopic cholecystectomy and found that the incidence was 85% in the placebo group 30% in dexamethasone group, 35% in ondansetron group and only 10% in the combination group which was statistically significant.

#### LIMITATION OF STUDY

This study did not include placebo group.

#### CONCLUSION

Ondansetron(4mg) and Dexamethasone(8mg) combination is superior to Ondansetron(4mg) monotherapy for prevention of early onset PONV prophylaxis in patients undergoing laparoscopic surgeries.

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