

A Comparison Of IV Ondansetron Vs IV Ondansetron And IV Dexamethasone In Preventing PONV In Patients Undergoing Laparoscopic Cholecystectomy.

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Abstract:

Background: Postoperative nausea and vomiting (PONV) are common complications after anaesthesia, particularly in laparoscopic surgeries like cholecystectomy due to the effects of anaesthesia itself, organ manipulation and surgical positioning. PONV causes delayed recovery, longer hospital-stay, and serious issues such as electrolyte imbalance, aspiration, and wound disruption. Prophylactic treatment with ondansetron and dexamethasone improves outcomes and enhances patient satisfaction. However, there is no standalone guideline/regimen that dictates which drugs are to be used for preventing PONV and this study may aid better clinical judgement for the same.

Aim: To compare ondansetron as a stand-alone drug vs a combination ondansetron and dexamethasone in preventing PONV in patients undergoing Laparoscopic cholecystectomy.

Methods: This study included patients undergoing elective laparoscopic cholecystectomy under general anaesthesia. After a written informed consent each patient was allotted into one of two groups. One group received only injection Ondansetron 4mg IV and the other group received both injections Ondansetron 4mg IV and Dexamethasone 8mg IV after induction of general anaesthesia. After patient extubation and shifting out of the OR, nausea and vomiting were assessed based on VAS Score of 0-10 at 0, 2, 3, 6, 12 and 24 hours.

Results: Of the two demographically similarly groups, the combination group showed a statistically significant reduction in both the Maximum VAS Score (mean 0.30 ± 0.47 vs. 1.35 ± 2.03 ; $p=0.030$) and the Total PONV Burden ($p=0.033$). This benefit was further confirmed by a Median Maximum VAS Score of 0.0 in the combination group and the achievement of a 0.0% incidence of vomiting vs a 15% incidence in the monotherapy group.

Conclusion: The prophylactic use of intravenous Ondansetron and Dexamethasone combination therapy is more effective than Ondansetron monotherapy for preventing and reducing the severity of PONV following laparoscopic cholecystectomy.

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I. Objectives:

To compare IV Ondansetron vs IV Ondansetron and IV Dexamethasone in preventing post operative nausea and vomiting in patients undergoing laparoscopic cholecystectomy.

II. Background:

Postoperative Nausea and Vomiting (PONV) is a frequent and unpleasant complication following surgery, with high incidence after procedures like **Laparoscopic Cholecystectomy**. PONV can lead to serious issues, including dehydration, aspiration, and delayed hospital discharge, making prophylactic management essential for better patient outcomes and reduced healthcare costs. The study aims to compare the effectiveness of **Ondansetron** alone (a 5-HT₃ receptor antagonist) versus a **combination of Ondansetron and Dexamethasone** (a corticosteroid) in preventing PONV in this high-risk surgical patient group.

III. Methods:

Following ethical approval and informed consent, 40 patients undergoing laparoscopic cholecystectomy **were randomly divided** into two groups of 20: Group A **received 4mg IV Ondansetron** and Group B **received 4mg IV Ondansetron plus 8mg IV Dexamethasone** immediately after induction of general anesthesia. All patients **followed** NPO guidelines and **received** a standardized anesthesia regimen including Midazolam, Fentanyl, Propofol, and Vecuronium, with maintenance via a 50:50 air/oxygen mixture. Post-surgery, neuromuscular blockade **was reversed**, extubation done and patients **were monitored** for 24 hours in the recovery room. The primary outcome, **nausea and vomiting, was assessed** using a **VAS score (0-10)** - mild (0 to 3), moderate (4 to 6) and severe (7 to 10) at set intervals of 0, 2, 3, 6, 12, and 24 hours post-extubation.

IV. Results:

In the two demographically comparable groups, **Group O** (IV Ondansetron alone) and **Group O+D** (IV Ondansetron and IV Dexamethasone), postoperative nausea and vomiting (PONV), measured by the Visual Analogue Scale (VAS), were significantly lower in Group O+D at **2 hours** ($p=0.04$) (mean pain score of Group O 1.20 ± 2.57 vs Group O+D 0.15 ± 0.37), and **3 hours** ($p=0.03$) (mean score in Group O was 0.85 ± 1.73 vs Group O+D -0.00 ± 0.00), indicating **superior analgesic efficacy** of the combination therapy during the early recovery period. While the incidence of vomiting was low overall, Group O+D reported **zero episodes** (100% of patients) compared to 10.0% of patients in Group O who experienced one or two episodes, though this difference was not statistically significant ($p=0.35$).

V. Discussion:

The results suggest that the addition of **IV Dexamethasone** to IV Ondansetron significantly enhances control over early postoperative pain following laparoscopic cholecystectomy, a key finding evidenced by the statistically lower VAS scores at 2 and 3 hours. This superior analgesic benefit, coupled with the trend toward a lower incidence of vomiting (100% emesis-free rate in the combination group), supports the use of this dual-therapy regimen. These findings underscore that the combination therapy offers a favorable profile for optimizing early postoperative comfort and recovery.

VI. Conclusion:

The combination regimen has a statistically significant reduction in analgesia and completely prevented vomiting in all patients, suggesting an enhanced prophylactic benefit against PONV. This suggests adding IV Dexamethasone into routine antiemetic protocols for laparoscopic abdominal surgeries to achieve superior pain and emesis prevention.

References:

- [1]. Dhawale RN, More S, Chauhan S, Tarkase AS, Deshmukh S. Comparison Of Ondansetron And Combination Of Ondansetron And Dexamethasone On Preventing PONV In Patients Undergoing Surgery Under General Anaesthesia. *Medpulse Int J Anesthesiol*. 2020 Apr;14(1):32-6. Doi:10.26611/10151418.
- [2]. Revathy AM, Vasantha OT, Rudra Mol R. Comparison Of Ondansetron Versus Dexamethasone For Preventing Postoperative Nausea And Vomiting In Patients Undergoing Laparoscopic Cholecystectomy: An Observational Study. *Int J Health Sci Res*. 2024 Jan;14(1):291-7. Doi:10.52403/ijhsr.20240137.
- [3]. Chattopadhyay S, Biswas A, Ferdows SS, Bhownik DK, Dey S, Biswas B. Comparison Of Ondansetron, Dexamethasone And Ondansetron Plus Dexamethasone ForThe Prevention Of Postoperative Nausea And Vomiting After Laparoscopic Cholecystectomy. *Indian J Clin Anaesth*. 2016;3(3):459-63. Doi:10.5958/2394-4994.2016.00078.0.
- [4]. Qasemi F, Aini T, Ali W, Dost W, Rasully MQ, Anwari M, Dost W, Zaheer R, Dost R, Talpur AS. The Effectiveness Of Ondansetron And Dexamethasone In Preventing Postoperative Nausea And Vomiting After Laparoscopic Cholecystectomy. *Cureus*. 2023 Apr 11;15(4):E37419. Doi:10.7759/Cureus.37419.
- [5]. Kalasree M, Vasantha Kumar K, Hari Baskar V, Nagaraj P, Manoharan A, Prabhu T. A Comparative Study OfThe Efficacy Of Ondansetron, Dexamethasone, And Ondansetron–Dexamethasone Combination For Postoperative Nausea And Vomiting Prophylaxis In Patients Undergoing Laparoscopic Surgeries. *Eur J Cardiovasc Med*. 2024 Nov;14(6):54–59.
- [6]. Shamseer L, Moher D, Clarke M, Ghera D, Liberati A, Petticrew M, Et Al. Preferred Reporting Items For Systematic Review And Meta-Analysis Protocols (PRISMA-P) 2015: Elaboration And Explanation. *BMJ*. 2015;349:G7647. Doi:10.1136/Bmj.G7647.
- [7]. Chilkoti GT, Nandan J, Saxena AK, Seth V, Kaur N, Maurya P. Low-Dose Ondansetron With Dexamethasone For Prophylaxis Of Postoperative Nausea And Vomiting Following Laparoscopic Cholecystectomy—A Randomized Double-Blind Study. *J Anaesthesiol Clin Pharmacol*. 2025 Jan–Mar;41(1):84–89. Doi:10.4103/Joacp.Joacp_357_23.
- [8]. Alghanem SM, Massad IM, Rashed EM, Abu-Ali HM, Daradkeh SS. Optimization Of Anesthesia Antiemetic Measures Versus Combination Therapy Using Dexamethasone Or Ondansetron ForThe Prevention Of Postoperative Nausea And Vomiting. *Surg Endosc*. 2010 Feb;24(2):353-8. Doi:10.1007/S00464-009-0570-1.
- [9]. Brull Richard, Macfarlane Alan J.R., Chan Vincent W.S. Spinal, Epidural And Caudal Anesthesia. In: *Miller's Anesthesia*. 9th Ed. Philadelphia, PA: Elsevier; 2020. P. 1421–5.
- [10]. Coventry DM. Local Anaesthetic Techniques. In: *Smith And Aitkenhead's Textbook Of Anaesthesia*. 6th Ed. Churchill Livingstone Elsevier; 2013. P. 522-9.