



CODEN [USA]: IAJPBB

ISSN : 2349-7750

## INDO AMERICAN JOURNAL OF PHARMACEUTICAL SCIENCES

SJIF Impact Factor: 7.187

<http://doi.org/10.5281/zenodo.4318847>
Available online at: <http://www.iajps.com>

Research Article

### COMPARING EFFICACY OF METOCLOPRAMIDE AND DEXAMETHASONE WITH DEXAMETHASONE ALONE IN PREVENTING POSTOPERATIVE VOMITING

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**Article Received:** October 2020**Accepted:** November 2020**Published:** December 2020**Abstract:**

***Aim:** To determine the antiemetic efficacy of the combination of metoclopramide and dexamethasone compared to dexamethasone alone in the prevention of postoperative vomiting in patients undergoing elective abdominal surgery.*

***Study design:** Randomized controlled study*

***Place and Duration of Study:** In the Department of Anesthesia and Surgical Unit-II of Holy Family Hospital, Rawalpindi for one-year duration from October 2019 to October 2020.*

***Patients and Methods:** 120 adult ASA I and II patients undergoing elective surgical procedures were divided into groups A and B, by balloting. Patients were randomized into 2 groups, Group A (n=60) were given Dexamethasone 8mg I/V (2ml), Group B (n=60) were given a combination of metoclopramide 10 mg and dexamethasone 8 mg, 30 – 40 minutes before end of surgery. All patients were observed for 24 hours in the ward for postoperative nausea and vomiting (PONV) postoperatively*

***Results:** SPSS-18 was used for data analysis. There were many episodes of vomiting in the ward. Less than two episodes occurred in 74 (61.7%) cases, including 38.3% (23/60) in group A and 85% (51/60) in group B. 2 episodes of vomiting were observed in 31 (25, 8%) and more than 2 episodes of vomiting were reported in 15 (12.5%) cases. Fewer than two episodes of vomiting were significantly high in group B than in group A (85% vs. 38.3%, p = 0.005).*

***Conclusion:** A significant reduction in post-operative nausea and vomiting (PONV) was observed during the intraoperative use of dexamethasone and metoclopramide.*

***Key words:** metoclopramide, dexamethasone, postoperative nausea and vomiting*

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Please cite this article in press Ammara Masood et al, *Comparing Efficacy Of Metoclopramide And Dexamethasone With Dexamethasone Alone In Preventing Postoperative Vomiting*, Indo Am. J. P. Sci, 2020; 07(12).

**INTRODUCTION:**

Postoperative vomiting is troublesome and troublesome for the patient. It is an unpleasant experience that can sometimes lead to significant morbidity of dehydration, electrolyte imbalance, eating problems and vomiting aspiration. Extremely vomiting can lead to dehiscence of the abdomen, bleeding under the skin flaps, and loss of vitreous fluid following intraocular surgery. Rare complications include rupture of the esophagus, surgical emphysema, and bilateral pneumothorax. The main causes of postoperative nausea and vomiting include laryngeal stimulation, anesthetics, gastrointestinal distension, abdominal surgery, pain, and the use of postoperative opioids. In addition, hypoxia, hypotension, atrial stimulation, and psychological factors are also involved. The incidence of nausea and vomiting in the postoperative period is estimated at about 20–30%, with 70% in high-risk patients.

Metoclopramide is a benzamide used in the prevention and treatment of postoperative nausea and vomiting. It blocks the dopamine receptors in the chemoreceptor trigger zone (CTZ) and the vomiting center. Peripherally, it blocks the dopamine receptors in the gastrointestinal tract. Metoclopramide also increases the tone of the lower esophageal sphincter and improves gastric and small intestine motility. It has a short half-life and is given before or shortly after surgery to obtain a reliable anti-emetic effect in the early postoperative period. The most important side effects of metoclopramide are extrapyramidal reactions such as dystonia, hypotension, supraventricular tachycardia and bradycardia, which are also reported after intravenous administration. Dexamethasone is a synthetic steroid of the adrenal cortex. This agent has been evaluated and found to be effective in the treatment of PONV. The mechanism of its antiemetic effect is not well understood. The common theory is that corticosteroids exert their antiemetic effects through prostaglandin antagonism.

**PATIENTS AND METHODS:**

The study was conducted in the Department of Anesthesia and Surgical Unit-II of Holy Family Hospital, Rawalpindi for one-year duration from October 2019 to October 2020. Both men and women, aged 18–60 years, patients with ASA I and II admitted for elective abdominal surgery were selected. Patients with the following conditions were excluded: History of motion sickness or post-operative vomiting, diabetes mellitus, steroid consumption, allergy to study drugs, presence of extrapyramidal motor disease, and alcohol or drug abuse were randomly

assigned by randomized randomization to either group.

**GROUP A:** Patients received 8 mg injection of dexamethasone.

**GROUP B:** Patients received a combination of 8 mg of dexamethasone and 10 mg of metoclopramide.

Medicines prepared by the nurse were administered by an anesthesiologist who was unaware of the medicine being administered, and the doctor responsible for assessing the effects of the medicine was also not available to the group.

An intravenous access was established on the day of the procedure. Baseline records of non-invasive blood pressure, heart rate, and oxygen saturation were recorded.

Anesthesia was induced with sodium thiopentone 5 mg / kg and nalbuphine 0.2 mg / kg. Tracheal intubation was facilitated with atracurium 0.5 mg / kg. Anesthesia was maintained with oxygen, nitrous oxide, and isoflurane, and ventilation was monitored. 30-40 minutes before the end of the operation, the patients were administered the prepared study medication according to the group allocation. At the end of the operation, 75 mg of Diclofenac was injected intramuscularly for post-operative anesthesia. Reversal of neuromuscular blockade was performed with neostigmine and atropine, and extubation was performed in the lateral position.

The antiemetic efficacy of the drug was assessed based on the number of vomiting episodes occurring within 24 hours after surgery. The assessment was considered mild: 2 episodes of vomiting. Efficacy was assessed as positive when there were mild episodes of vomiting (less than 2 per 24 hours).

**RESULTS:**

The statistical package for social sciences (SPSS18) was used to analyze the data. The frequency and percentage were calculated for categorical variables such as age groups, gender, vomiting episodes, and antiemetic drug efficacy. The mean and standard deviation were calculated, as well as the median of IQR for quantitative variables such as age and weight. The non-parametric Mann Whitney test was used to compare the median difference between the groups by age and weight. Chi-square test was used to compare drug efficacy between groups. The number of vomiting episodes less than two in 24 hours was found in 74 (61.7%) cases, including 38.3% (23/60) in group B and 85% (51/60) in group A. 2 episodes of vomiting were observed in 31 (25.8%), 7 patients (11.7%) in

arm A and 24 patients (40%) in arm B, and more than 2 episodes of vomiting were observed in 15 (12.5%) cases, including two patients (3.3%) in group A and 13

patients (21.7%) in group B. Less than two episodes of vomiting were significantly high in group A than in group B (85% vs 38.3%  $p = 0.005$ ).

Table 1: Comparison of episodes of vomiting in 24 hours between groups

Episodes of Vomiting n=60	Group A	Group B in 24 Hours n=60	Total n=120
< 2 Episodes	51(85%)	23(38.3%)	74(61.7%)
2 Episodes	7(11.7%)	24(40%)	31(25.8%)
>2 Episodes	2(3.3%)	13(21.7%)	15(12.5%)

Pearson Chi-Square= 27.98;  $df= 2$ ,  $p=0.005$

Table 2: Comparison of gender between groups

Gender	Group A n=60	Group B n=60	Total n=120
MALE	9(15%)	12(20%)	21(17%)
FEMALE	51(85%)	46(80%)	99(82.5%)
P VALUE			0.47

## DISCUSSION:

The "vomiting center" is a poorly defined area in the lateral reticular system of the medulla. The gag reflex is integrated into the core following administration of carefully selected visceral and somatic components over time. In addition to irritants in the digestive tract itself, vomiting can be caused by nerve signals originating in the brain outside the vomiting center, such as the vestibular apparatus, cerebellum, single tract nucleus, higher control centers, and no single antiemetic has proven to be a universal solution. For postoperative nausea and vomiting. Due to the saturation effect and safety, large doses of a single drug are not possible, so it is recommended to combine antiemetics.

Antiemetics are not routinely used by anesthetists, although studies have shown that the incidence of PONV is reduced from 82% to 42% after dexamethasone injection within 10 hours after surgery. Anesthesiologists focus primarily on the technique of anesthesia with minimal emetic potential and on the administration of various antiemetics or combinations thereof. In our study, we compared dexamethasone in one group with a combination of dexamethasone and metoclopramide in another group to assess postoperative vomiting. Metoclopramide has been shown to be an effective and safe drug in both the prevention and treatment of postoperative nausea and vomiting. Dexamethasone is a glucocorticoid which, by an unknown mechanism, produces a potent anti-

emetic effect. It may act through prostaglandin antagonism, inhibition of serotonin in the gastrointestinal tract and release of endorphins.

Dexamethasone has also been used in combination with metoclopramide and other antiemetics with beneficial effects. The timing of antiemetic administration also affects the outcome of treatment, and dexamethasone has been found to be most effective when administered during induction of anesthesia. However, it is suggested that for surgery that lasts longer than 2 hours, it would be wiser to administer the agent at the end of the operation. All patients in this study were anesthetized with a standard anesthetic technique. The duration of anesthesia was similar in both groups. Therefore, it was likely that the difference in the incidence of PONV between the two groups was due to the combination of dexamethasone and metoclopramide rather than to dexamethasone alone.

Although long-term administration of corticosteroids is associated with side effects, short-term (24-48 hours), even with high doses of corticosteroids, side effects were rare. As injections of dexamethasone and metoclopramide are widely available, economical, and single doses do not have any significant adverse effects, they should be used more frequently in patients undergoing elective general surgery.

## CONCLUSION:

This study found that the intraoperative combination of dexamethasone and metoclopramide significantly reduces the incidence of postoperative nausea and vomiting in patients undergoing elective general surgery. Since the drug is widely available, economical, and a single dose is not associated with any side effects, this combination can be safely used.

#### REFERENCES:

1. Regasa, Teshome, Zemedu Aweke, Derartu Neme, Sleshi Hailu, Bedru Jemal, and Semang Mekonen. "Comparison of prophylactic dexamethasone, metoclopramide, and combination of dexamethasone and metoclopramide for prevention of post-operative nausea and vomiting for major gynaecological surgery in Hawassa university compressive specialized hospital, Ethiopia, 2019." *International Journal of Surgery Open* 27 (2020): 18-24.
2. Al-Radeef, Mohanad Y., Sattar J. Abood, Waleed K. Abdulsahib, and Salah O. Hamad. "Comparing the Effect of Dexamethasone, Normal Saline, and Metoclopramide on Prevention of Postoperative Nausea, Vomiting and Pain in Patient Undergoing Laparoscopic Cholecystectomy or Open Appendectomy: A Randomized Clinical Trial." *Open Access Macedonian Journal of Medical Sciences* 8, no. B (2020): 139-144.
3. Teshome, Diriba, Efrem Fenta, and Sileshi Hailu. "Preoperative prevention and postoperative management of nausea and vomiting in resource limited setting: A systematic review." *International Journal of Surgery Open* (2020).
4. Srivastava, Vinit Kumar, Saima Khan, Sanjay Agrawal, Sweta Anil Deshmukh, Pooja Shree, and Partha Pratim Misra. "Comparison of palonosetron-dexamethasone and ondansetron-dexamethasone for prevention of postoperative nausea and vomiting in middle ear surgery: a randomized clinical trial." *Brazilian Journal of Anesthesiology (English Edition)* 70, no. 5 (2020): 477-483.
5. QURBAN, FAIQA, S. Y. E. D. IMRAN-UL-HASSAN, and SALMAN ATHAR QURESHI. "Compare the Efficacy of Odansetron versus Prochlorperazine for Preventing Nausea and Vomiting after Laparoscopic Cholecystectomy." *Age (years)* 39, no. 11.74: 40-10.
6. Fonseca, Neuber Martins, Ludmila Ribeiro Pedrosa, Natália Melo, and Ricardo de Ávila Oliveira. "Effect of palonosetron, ondansetron and dexamethasone in the prevention of postoperative nausea and vomiting in video cholecystectomy with total venous anesthesia with propofol-remifentanyl-randomized clinical trial." *Brazilian Journal of Anesthesiology (English Edition)* 70, no. 5 (2020): 464-470.
7. Naeem, Zaina, Ingrid L. Chen, Aurora D. Pryor, Salvatore Docimo, Tong J. Gan, and Konstantinos Spaniolas. "Antiemetic Prophylaxis and Anesthetic Approaches to Reduce Postoperative Nausea and Vomiting in Bariatric Surgery Patients: a Systematic Review." *Obesity Surgery* (2020): 1-13.
8. Miranda, Luiz Eduardo, Luiz de França Maia e Silva, Ana Carolina Brainer de Siqueira, Ana Clara Miranda, Bianca Rodrigues Castelo Branco Rocha, Ian Victor Paiva de Lima, Victor Soares Gomes da Silva, Diego Laurentino de Lima, and Holmes Naspollini. "Effect of acupuncture on the prevention of nausea and vomiting after laparoscopic cholecystectomy: a randomized clinical trial." *Brazilian Journal of Anesthesiology (English Edition)* 70, no. 5 (2020): 520-526.
9. Tilahun Bantie, Abere, Wosenyeleh Admasu, Sintayehu Mulugeta, Abera Regassa Bacha, and Desalegn Getnet Demsie. "Effectiveness of Propofol versus Dexamethasone for Prevention of Postoperative Nausea and Vomiting in Ear, Nose, and Throat Surgery in Tikur Anbessa Specialized Hospital and Yekatit 12th Hospital, Addis Ababa, Ethiopia." *Anesthesiology research and practice* 2020 (2020).
10. Besra, Kartik Chandra, Azizul Haque, and Usha Suwalka. "Comparative Study of Palonosetron versus Ondansetron-Dexamethasone Combination for Prevention of Post-Operative Nausea and Vomiting in Patient Posted for Laparoscopic Cholecystectomy under General Anaesthesia."
11. adane Aytolign, Habtu, Yonas Addisu Nigatu, Zewuditu abdissa Denu, and Nurhussien rizik Arefayine. "Incidence of post-operative nausea and vomiting and its associated factors following pediatric ophthalmic surgery at university hospital, 2019." *International Journal of Surgery Open* (2020).
12. Kepekci, Ali Bestemi, Bugra Subasi, Ahmet Hamdi Kepekci, and Aziz Yarbil. "Comparison of the effects of low dose methylprednisolone and metoclopramide on nausea and vomiting and respiratory complications after adenotonsillectomy in children." *Anaesthesia, Pain & Intensive Care* 24, no. 5 (2020): 544-551.
13. Elvir-Lazo, Ofelia Loani, Paul F. White, Roy Yumul, and Hillenn Cruz Eng. "Management

strategies for the treatment and prevention of postoperative/postdischarge nausea and vomiting: an updated review." *F1000Research* 9 (2020).

14. Tan, Hon Sen, and Ashraf S. Habib. "The optimum management of nausea and vomiting during and after cesarean delivery." *Best Practice & Research Clinical Anaesthesiology* (2020).
15. Besir, Ahmet, and Ersagun Tugcugil. "Comparison of different end-tidal carbon dioxide levels in preventing postoperative nausea and vomiting in gynaecological patients undergoing laparoscopic surgery." *Journal of Obstetrics and Gynaecology* (2020): 1-8.