To Compare the Efficacy of Ondansetron & Dexamethasone Alone and Ondansetron plus Dexamethasone in Combination for Prevention of Post-Operative Nausea and Vomiting In Laparoscopic Surgeries

Dr. Shakti Singh MD.FIPM1, Dr. Gunjan Agarwal MD2, Dr. Ghanshyam Das Singhal MS MCh3
1Assistant Professor Department Of Anaesthesiology, G.R. Medical College Gwalior Gwalior, India
2Associate Professor Department Of Pathology, GIPMER New Delhi, India
3Associate Professor Department Of Neurosurgery,GIPMER New Delhi, India

Abstract: Post-operative nausea and vomiting is one of the commonest & most unpleasant complaint following laparoscopic surgeries. It can lead to several emergencies like wound dehiscence, bleeding, aspiration of gastric contents, delayed hospital discharge, unexpected hospital admission and dissatisfaction among patients. This study is intended to compare the efficacy of ondansetron and dexamethasone alone and combinations of dexamethasone plus ondansetron in patients undergoing laparoscopic surgeries, with respect to nausea, vomiting and requirement of rescue anti-emetics. We studied 150 patients between age group of 20yr to 50yr of ASA I & II requiring general anesthesia for laparoscopic surgeries, in a randomized clinical trial. 50 patients received 4mg ondansetron, intravenously and another 50 patients received dexamethasone 8mg intravenously and 50 patients received 4mg ondansetron+8mg dexamethasone 10min before induction, post operatively patients were assessed at time interval of 0-6 hours and then at 6-24 hours for degree of nausea, vomiting and requirement of antiemetic drug. Vomiting occurring up to 0-6 hours was considered early vomiting and from 6-24 hour as delayed vomiting. Nausea was lower in the combination group OD (6%) when compared to group O of ondansetron (20%) and group D dexamethasone (12%). Incidence of vomiting was also less in combination group OD (4%) when compared to group O Ondansetron (12%) and group D dexamethasone (16%). The need for the antiemetic drug in groups O, D, and OD was 26, 20, and 6 respectively. The incidence of vomiting and failure in prophylaxis was observed in D-group during the first six hrs. The highest need for the anti-vomiting drug within the 6 to 24 hours of post operation was observed in group O compared to the group OD. We conclude that the combination therapy of ondansetron and dexamethasone provides adequate control of PONV, with delayed PONV being better controlled than early PONV (compare to ondansetron and dexamethasone alone) and the requirement of adjunct anti-emetics is dramatically reduced in first 24 hour.

Keywords: Post-operative, nausea, vomiting, ondansetron, dexamethasone.
More than one and half century ago John Snow described phenomenon of nausea and vomiting [2]. His was the first extensive description of the phenomenon which was published in 1948, within 18 months of introduction of anesthesia into Great Britain. He observed that vomiting was more likely to occur in patients who have “eaten recently”. In most cases the vomiting lasted only for a few minutes but in some it continued for hours and even days. He suspected that movement shortly after operation may have triggered the vomiting. Post-operative treatment included WINE (which he considered more beneficial than smelling salts!) and Battleys solution of opium. During era, reported incidence of PONV was as high as 75-80%. Seventy five years ago, Flagg [3] suggested the PONV may result from causes other than anesthesia. There are at least three kinds of vomiting, the first of which has been attributed to anesthetics such as ether, the second to reflex responses, and the last to opioids. Subsequent investigation unfolded a spectrum of non-anesthetics factors in the pathogenesis of PONV.

There has been a general trend towards a decrease in the incidence and intensity of the problem because of a change in anesthesia practice from opioid and deep ether anesthesia to non-opioid or supplemented opioids to lighter and non-ether anesthesia, use of less emetic anesthetic agents, improved pre and post-operative medication, refinement of operative techniques and identification of patient predictive factors. However in spite of these advances, nausea and vomiting still occurs with unacceptable frequency in association with surgery and anesthesia. It has been described as “a big little problem [4].” Persistence nausea vomiting can have serious medical consequences to the patient as well as financial implication in delayed discharge from the hospital. Now a number of acceptable surgical procedures has increased in the field of ambulatory anesthesia, the need to find more effective alternatives to the options available, has become more urgent. The potential cost saving by performing these procedures on an ambulatory basis may be neglected by an unanticipated postoperative admission for intractable nausea. In addition, although intractable nausea is distressing possibly dehydrating and not easily manageable at home, the expense of a hospital stays is disproportionate to the actual morbidity of nausea for most healthy outpatients. Thus the therapy of last resort hospitalization is ultimately unsatisfactory for the patient, the anesthesiologist and the surgeon. Even lesser degree of post-operative nausea and vomiting are often perceived as failure of therapy, rather than as unavoidable consequences of the perioperative experience. In most instances the latter is in fact the case because of imperfect treatment options available till date. When queried about previous anesthetic experiences many patients are heard to lament about the distressing nausea after a prior procedure and begged to be spared of that experience again [5]. Previous pharmacological efforts to diminish the incidence or reduce the risk of emesis have included administering antihistaminics, anticholinergics, and dopamine antagonists. Physical maneuvers have included imposing various “Nothing per os[4]”. Regimens, pre-anesthetic suctioning of gastric contents, application of cricoid pressure, avoiding inflation of the stomach during ventilation by mask and ingestion of antacid solutions. None of the above, alone or in combination have been entirely successful in mitigating the distressing occurrence of emesis and its potential sequel.

AIMS
- To analyse the efficacy of ondansetron alone
- To analyse the efficacy of dexamethasone alone
- To analyse the efficacy of ondansetron plus dexamethasone in combination.
- To compare the efficacy for prevention of post-operative nausea and vomiting in laparoscopic surgeries.

OBJECTIVES
- To observe the incidence of nausea and vomiting in post-operative period.
- To observe and compare requirement of rescue antiemetic in study groups.

MATERIALS AND METHODS
Source of Data
One hundred fifty of physical status ASA I and ASA II who will be undergoing laparoscopic surgery were included in the study. Patients will be randomized by computer generated blocks. Randomization will be done under three groups as under:

Group O (n=50) – receiving ondansetron alone
Group D (n=50) – receiving dexamethasone alone
Group OD (n=50) – receiving dexamethasone and ondansetron in combination

Method of data collection
- Duration of study: one year.
- Sample size: Minimum of 150 cases 50 in each arm

Inclusion Criteria
- Patients aged between 20 – 50 yrs
- Physical status ASA I and II
- Scheduled for elective laparoscopic surgeries e.g. laparoscopic cholecystectomy, laparoscopic sterilization etc.

Exclusion Criteria
- Patient’s refusal for the study.

- Patients with physical status of ASA III and IV
- Patients who received opioids, NSAIDS or antiemetic agents 24 hrs prior to surgery
- Patients under ASA I and II but with history of
  - Motion sickness or migraine
  - Alcohol, drug abuse or smoking
  - Patient in which laparoscopy is converted to laparotomy.
  - Pregnant or lactating female
  - Patient on chronic steroid therapy.

Methods
Preoperative evaluation
Preoperative visit was conducted on the previous day of surgery. Detailed history and present complaints were noted. General and systemic examination of cardio vascular, respiratory and central nervous system were done. Routine laboratory investigations like hemoglobin level, total count and differential count, routine urine, blood urea nitrogen and serum creatinine, bleeding and clotting time, ECG were done.

Preoperative order
Patients were advised to remain nil orally after midnight. On the operation day intravenous cannulation with 18G catheter was established.

Study medication Ondansetron 4mg to group O, Dexamethasone 8mg to group D and both Ondansetron plus dexamethasone to group OD was administered to patients 10 min before induction of anesthesia.

Anesthesia
Pre-operative monitoring
- Noninvasive blood pressure
- Three lead ECG
- Oxygen saturation with pulse oximeter
- Pulse/ Heart rate

Anesthesia technique for laparoscopic surgery
Patient was premedicated with inj. Glycopyrrolate 0.2mg + 1mg midazolam+Fentanyl 2µg/kg and induced by inj. propofol 2 to 2.5 mg/kg. Tracheal intubation was facilitated by inj. vecuronium 0.1mg/kg. Baseline NG tube was placed for emptying the gastric contents. Anesthesia was maintained by N₂O + O₂ + Isoflurane /sevoflurane (0.6 to 0.8 %). Intermittent doses of vecuronium were given during anesthesia to maintain adequate muscle relaxation. Intra operative monitoring HR, BP, SpO₂, ECG, EtCO2 and urine output was carried out. During laparoscopic surgery abdomen was insufflated with CO₂ at a pressure of 8 to 12 mm Hg. On the completion of operation the abdomen was deflated by the surgeon. At the end of surgery the patient was extubated by reversing the patient with 0.05 mg/kg Neostigmine and 0.2 mg Glycopyrrolate. Duration of anesthesia was noted. In the post-operative period patients vitals was monitored. All post-operative cases were followed up at 0 to 6 hrs, 6 to 24hrs for post-operative nausea and vomiting.

Assessment
The episodes of vomiting and nausea were recorded in number of patients from 0 to 6 hrs, 6 to 24hrs for post-operative nausea and vomiting.

Requirement of anti-emetic drug in number of patients were recorded from0 to 6 hrs, 6 to 24hrs in postoperative period.

Statistical Analysis
Incidence of nausea, vomiting and number of patients needing rescue antiemetic were compared using ‘Chi Square’ test.

‘p-Value’ of <0.05 was considered significant.
‘p-Value’ of >0.05 was considered insignificant.

OBSERVATIONS AND RESULTS

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Group O (mean±SD)</th>
<th>Group D (mean±SD)</th>
<th>Group OD (mean±SD)</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of Patients</td>
<td>50</td>
<td>50</td>
<td>50</td>
<td>0.81, NS</td>
</tr>
<tr>
<td>Age</td>
<td>40.65 ± 9.0</td>
<td>40.06 ± 8.2</td>
<td>41.18 ± 7.51</td>
<td>41.18 ± 7.51</td>
</tr>
</tbody>
</table>

Table no.1 shows mean age in group O 40.65±9.0, group D 40.06±8.2 and group OD 41.18±7.51.
Table-2: Distribution of the patients according to their Gender

<table>
<thead>
<tr>
<th>Gender</th>
<th>Group O</th>
<th>Group D</th>
<th>Group OD</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No.</td>
<td>%</td>
<td>No.</td>
<td>%</td>
</tr>
<tr>
<td>Female</td>
<td>33</td>
<td>66.00</td>
<td>28</td>
<td>56.00</td>
</tr>
<tr>
<td>Male</td>
<td>17</td>
<td>34.00</td>
<td>22</td>
<td>44.00</td>
</tr>
<tr>
<td>Total</td>
<td>50</td>
<td>100.00</td>
<td>50</td>
<td>100.00</td>
</tr>
</tbody>
</table>

Table no. 2 shows Sex distribution in each group. In group ‘O’ 33 i.e. 66% were females and 17 i.e. 34% were males. In group ‘D’, 28 i.e. 56% were female and 22 i.e. 44% were males. In group OD 32 i.e. 64% were female and 18 i.e. 36% were males.

Table-3: Incidence of Nausea in Three Groups in 0-6 hours and 6-24 hours

<table>
<thead>
<tr>
<th>Time Interval</th>
<th>Group O (N=50)</th>
<th>Group D (N=50)</th>
<th>Group OD (N=50)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No.</td>
<td>%</td>
<td>No.</td>
</tr>
<tr>
<td>0-6 hours</td>
<td>2</td>
<td>4.00</td>
<td>4</td>
</tr>
<tr>
<td>6-24 hours</td>
<td>8</td>
<td>16.00</td>
<td>2</td>
</tr>
<tr>
<td>Total</td>
<td>10</td>
<td>20.00</td>
<td>6</td>
</tr>
</tbody>
</table>
Table 3 shows the incidence of nausea in group O is 2 i.e. 4%, group D is 4 i.e. 8% and OD is 1 i.e. 2% within the first 0-6 hrs. The incidence of nausea in group O is significant higher then group OD (p<0.05) within 6-24hrs but no such difference is present between D and OD group(p>0.05).

Table-4: Incidence of Vomiting in Three Groups in 0-6 hours and 6-24 hours

<table>
<thead>
<tr>
<th>Time Interval</th>
<th>Group O (N=50)</th>
<th>Group D (N=50)</th>
<th>Group OD (N=50)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-6 hours</td>
<td>No. 2</td>
<td>% 4.00</td>
<td>No. 6</td>
</tr>
<tr>
<td>6-24 hours</td>
<td>No. 4</td>
<td>% 8.00</td>
<td>No. 2</td>
</tr>
<tr>
<td>Total</td>
<td>No. 6</td>
<td>% 12.00</td>
<td>No. 8</td>
</tr>
</tbody>
</table>

Statistical Analysis Table

<table>
<thead>
<tr>
<th>In 0-6 hours</th>
<th>Group</th>
<th>P value</th>
<th>Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group O Vs. Group D</td>
<td>0.26</td>
<td>Not significant</td>
<td></td>
</tr>
<tr>
<td>Group O Vs. Group OD</td>
<td>0.23</td>
<td>Not significant</td>
<td></td>
</tr>
<tr>
<td>Group D Vs. Group OD</td>
<td>0.01*</td>
<td>Significant</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>In 6-24 hours</th>
<th>Group</th>
<th>P value</th>
<th>Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group O Vs. Group D</td>
<td>0.60</td>
<td>Not significant</td>
<td></td>
</tr>
<tr>
<td>Group O Vs. Group OD</td>
<td>0.40</td>
<td>Not significant</td>
<td></td>
</tr>
<tr>
<td>Group D Vs. Group OD</td>
<td>1.00</td>
<td>Not significant</td>
<td></td>
</tr>
</tbody>
</table>

* Significant (p value < 0.05)
Table 4 shows the incidence of vomiting in group O is 2 i.e. 4%, group D is 6 i.e. 12% and OD is 0 i.e. 0% within the first 0-6 hrs.

The incidence of vomiting in group O is 4 i.e. 8%, group D is 2 i.e. 4% and group OD is 2 i.e. 4% within 6-24 hrs.

The incidence of vomiting in group D is significant higher then group OD (p<0.05) within 0-6hrs but no such difference is present between O and OD group (p>0.05)

Table 5: Incidence of PONV in Three Groups in 0-6 hours and 6-24 hours

<table>
<thead>
<tr>
<th>Time Interval</th>
<th>Group O (N=50)</th>
<th>Group D (N=50)</th>
<th>Group OD (N=50)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No.</td>
<td>%</td>
<td>No.</td>
</tr>
<tr>
<td>0-6 hours</td>
<td>4</td>
<td>8.00</td>
<td>10</td>
</tr>
<tr>
<td>6-24 hours</td>
<td>12</td>
<td>24.00</td>
<td>4</td>
</tr>
<tr>
<td>Total</td>
<td>16</td>
<td>32.00</td>
<td>14</td>
</tr>
</tbody>
</table>

Statistical Analysis Table

<table>
<thead>
<tr>
<th>Group</th>
<th>P value</th>
<th>Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>In 0-6 hours</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Group O Vs. Group D</td>
<td>0.08</td>
<td>Not significant</td>
</tr>
<tr>
<td>Group O Vs. Group OD</td>
<td>0.19</td>
<td>Not significant</td>
</tr>
<tr>
<td>Group D Vs. Group OD</td>
<td>0.003*</td>
<td>Significant</td>
</tr>
<tr>
<td>In 6-24 hours</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Group O Vs. Group D</td>
<td>0.09</td>
<td>Not significant</td>
</tr>
<tr>
<td>Group O Vs. Group OD</td>
<td>0.025*</td>
<td>Significant</td>
</tr>
<tr>
<td>Group D Vs. Group OD</td>
<td>0.7</td>
<td>Not significant</td>
</tr>
</tbody>
</table>

* Significant (p value < 0.05)
Table 5 shows the incidence of PONV in group O is 4 i.e. 8%, group D is 10 i.e. 20% and OD is 1 i.e. 2% within the first 0-6 hrs.

The incidence of PONV in group O is 12 i.e. 24%, group D is 4 i.e. 8% and group OD is 4 i.e. 8% within 6-24hrs. The incidence of PONV in group D is significant higher then group OD (p<0.05) within 0-6hrs and the incidence of PONV is significant higher in O then group OD within 6-24hrs (p<0.05).

**Table 6: Use of Antiemetic in Three Groups in 0-6 hours and 6-24 hours**

<table>
<thead>
<tr>
<th>Time Interval</th>
<th>Group O (N=50)</th>
<th>Group D (N=50)</th>
<th>Group OD (N=50)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No.</td>
<td>%</td>
<td>No.</td>
</tr>
<tr>
<td>0-6 hours</td>
<td>3</td>
<td>6.00</td>
<td>8</td>
</tr>
<tr>
<td>6-24 hours</td>
<td>10</td>
<td>20.00</td>
<td>2</td>
</tr>
<tr>
<td>Total</td>
<td>13</td>
<td>26.00</td>
<td>10</td>
</tr>
</tbody>
</table>

**Statistical Analysis Table**

**In 0-6 hours**

<table>
<thead>
<tr>
<th>Group</th>
<th>P value</th>
<th>Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group O Vs. Group D</td>
<td>0.047*</td>
<td>Significant</td>
</tr>
<tr>
<td>Group O Vs. Group OD</td>
<td>0.60</td>
<td>Not significant</td>
</tr>
<tr>
<td>Group D Vs. Group OD</td>
<td>0.01*</td>
<td>Significant</td>
</tr>
</tbody>
</table>

**In 6-24 hours**

<table>
<thead>
<tr>
<th>Group</th>
<th>P value</th>
<th>Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group O Vs. Group D</td>
<td>0.056</td>
<td>Not significant</td>
</tr>
<tr>
<td>Group O Vs. Group OD</td>
<td>0.012*</td>
<td>Significant</td>
</tr>
<tr>
<td>Group D Vs. Group OD</td>
<td>1.00</td>
<td>Not significant</td>
</tr>
</tbody>
</table>

* Significant (p value < 0.05)
Table no.6 shows the incidence of antiemetic use in group O is 3 i.e. 6%, group D is 8 i.e. 16% and group OD is 1 i.e. 2% within 0-6hrs. The incidence of antiemetic use in group O is 10 i.e. 20%, group D is 2 i.e. 4% and group OD is 2 i.e. 4% within 6-24hrs.

The incidence of antiemetic use in group O is significant higher then group D and group OD (p<0.05) but no such difference is present between group O and OD (p>0.05) within 0-6hrs. The incidence of antiemetic use in group O is significant higher then group OD (p<0.05) but no such difference is present between group O and group D and between group D and group OD (p>0.05) within 6-24hrs.

Table-7: Duration of Anesthesia in these patients

<table>
<thead>
<tr>
<th>Duration of Anesthesia</th>
<th>Group O (mean±SD)</th>
<th>Group D (mean±SD)</th>
<th>Group OD (mean±SD)</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Duration</td>
<td>104.26 ± 7.97</td>
<td>105.47 ± 9.83</td>
<td>107.79 ± 9.58</td>
<td>0.169, NS</td>
</tr>
</tbody>
</table>

NS: Not significant

Table 7 shows mean duration of anesthesia in group O 104.26±7.97min, group D 105.47±9.83 min and group OD is 107.79±9.58 min.

DISCUSSION

Post-operative nausea vomiting are the most common complaints after anesthesia and surgery. There is a high incidence of PONV in patients undergoing general anesthesia for laparoscopic surgeries which is due to various reasons including prolonged CO₂ insufflations, residual pneumoperitoneum, gallbladder surgery, isoflurane and glycopyrrolate application, hypotension during the operation, history of movement disorders and PONV [41].

In the current study, the incidence of PONV in patients undergoing laparoscopic surgery who received antiemetic as treatments was compared.

Considering the fact that PONV is inevitable during the laparoscopic surgeries, no placebo drug was applied due to the ethical reasons. The dosage applied in the research was based on the prescription used in other studies [42]. Corticosteroid exerts its effects on specific reception protein and regulates the expression
of corticosteroid-responsive genes. A time sequence for the occurrence of this change in gene expression and protein synthesis is necessary. For this reason, the majorities of the corticosteroids effects do not appear immediately but instead they occur several hours later. As dexamethasone has potent anti-inflammatory [28] effect, it may be beneficial for post-operative pain. This condition can explain the latency of antiemetic effects of dexamethasone. In addition, the prolonged antiemetic effect of dexamethasone can be attributed to the prolonged half-life of this drug (36 to 72 hr) [43]. Dexamethasone is a glucocorticosteroid that has severe antiemetic effects for PONV. The recommended dose for adult patients is 5-10 mg. The antiemetic effect of this drug may be attributed to prostaglandin antagonism, peripheral or central control of serotonin, increase in releasing endorphin and change in penetrability of CSF blood barrier in relation to serum proteins [44].

Ondansetron is selective 5-HT3 antagonist that is used for its effect in nausea and vomiting due to chemotherapy and radio therapy in addition to surgery [45]. This medicine has minor side effects such as headache, flushing, vertigo and constipation.

After 24 hours post operation. The incidence of PONV and the need to antiemetic drug in patients who used combination of dexamethasone and ondansetron was significantly less than the patients who use done of these drugs. The use of either one of these drugs had similar antiemetic effect. In a study conducted by McKenzie and associates[24], similar results were found.

In addition, Lopez-Olando et al.[10] reported that 84 percent of the patients who used combination of dexamethasone and ondansetron had complete response.

In the current study during the first six hours post operation, The incidence of vomiting and the need for antiemetic drug in the group that received dexamethasone was significantly higher than the group that received either ondansetron or a combination of dexamethasone and ondansetron with no significant difference in the premature incidence of PONV. This result indicates that the use of dexamethasone is not sufficient to prevent the premature vomiting in patients who undergo surgery [15].

Thomas and Jones [15] demonstrated that 28.3 percent of the patients who use dexamethasone faced failure in prophylaxis within the first 3 hours after the operation. This rate for ondansetron alone or combination of ondansetron – dexamethasone was 22 and 8.6 percent, respectively.

Rajeeva et al. [22] showed that the combination of ondansetron – dexamethasone controls the late PONV more effectively than the premature PONV.

In this study, within the 6 to 24 hours post operation, the patients who used ondansetron after the operation needed more antiemetic drug than the patients who received the combination dose ($P = 0.012$), however, no significant difference was found between the group that received dexamethasone compared to the patients who received ondansetron ($P^2 = 0.05$). The shorter duration of effectiveness for ondansetron compare to dexamethasone is an indication of late prophylaxis failure for ondansetron. The half-life of ondansetron is between 4 to 9 hours [46].

Subramaniam and Madan[47] showed that the incidence of premature PONV (in the first 6 hour after the operation) in children who receive dexamethasone is 24.4 percent. For the children who receive ondansetron, this rate was 17.8 percent. These authors also demonstrated that the incidence of late PONV (within 6 to 12 hours) was significantly less in the dexamethasone group compared to the ondansetron group (6.67% vs. 24.4% respectively) Similar results were reported in patients undergoing ambulatory surgery[48]. In addition, it was shown that dexamethasone had stronger effect than ondansetron in preventing delayed nausea and vomiting following chemical therapy [49]. In summary, despite all the advances in medical sciences and anesthesiology, the so called simple subject like PONV remains a challenge. Some patients have a history of severe PONV and some surgery operations are associated with the high risk of PONV. Many researches are underway to examine the preferred treatment in this regard.

This is despite the fact that some of these procedures do not look very promising. The limitations of this study included not counting the frequency, severity, length and duration of nausea and vomiting in addition to follow-up recording of the variables of interest after 24 hours past the operation. Also, the length of hospitalization and possible side effects were not examined. However, the results of this study clearly demonstrated that the patients who face PONV and are treated by combined drug prophylactic approach need less antiemetic drug than the patients who receive one drug.

More researches with less limitation are needed to identify the most effective and economic treatment for the surgery operations. According to the findings of the current study, the treatment of PONV is more effective by the combination of ondansetron and dexamethasone than the use of either one of these two in laparoscopic surgeries. More specifically, dexamethasone alone is not very effective to prevent the premature PONV. In addition, using ondansetron alone is less effective in preventing late PONV comparing to
the combination use of ondansetron and dexamethasone.

SUMMARY AND CONCLUSION
Our study was a prospective, randomized and double blind study. A clinical study was undertaken in our institute to compare the efficacy of ondansetron, dexamethasone separately and ondansetron plus dexamethasone in combination for prevention of post-operative nausea and vomiting in laparoscopic surgeries.

After institutional ethical committee approval and written informed consent 150 patients between age group of 20-50 years of ASA I & II, coming for elective laparoscopic procedures under general anesthesia were selected. We studied 150 patients requiring general anesthesia for laparoscopic surgeries, in a randomized clinical trial. 50 patients received 4mg ondansetron intravenously and another 50 patients received dexamethasone 8mg intravenously and 50 patients received 4mg ondansetron+8mg dexamethasone 10min before induction. Post operatively patients were assessed for degree of nausea, vomiting and requirement of antiemetic drug at time interval of 0-6 hours and then at 6-24 hours. Vomiting occurring up to 0-6 hours was considered early vomiting and from 6-24 hour as delayed vomiting. Statistical comparison was done for all variables.

CONCLUSIONS
Nausea was lower in the combination group OD (6%) when compared to group O of ondansetron (20%) and group D dexamethasone (12%). Incidence of vomiting was also less in combination group OD (4%) when compared to group O Ondansetron (12%) and group D dexamethasone (16%). The need for the antiemetic drug in groups O, D, and OD was 26, 20, and 6 respectively. The incidence of vomiting and failure in prophylaxis was observed in D-group during the first six hrs. The highest need for the anti-emetic drug within the 6 to 24 hours of post operation was observed in group O compared to the group OD.

In our study we understood that dexamethasone alone is less effective in control of early PONV as compared to ondansetron alone is less effective in control of late PONV. Therefore, we conclude that the combination therapy of ondansetron and dexamethasone provides adequate control of PONV, with delayed PONV being better controlled than early PONV in patients undergoing elective laparoscopic surgeries under general anesthesia.

REFERENCES
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