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COMPARATIVE EVALUATION OF TWO DIFFERENT DOSES OF IM EPHEDRINE FOR REDUCING POST OPERATIVE NAUSEA AND VOMITING FOLLOWING LAPAROSCOPIC TUBECTOMIES: A RANDOMIZED CONTROLLED TRAIL

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Abstract

Introduction: Post-operative nausea and vomiting (PONV) is a common and distressing problem after anaesthesia. Nausea and vomiting are associated with the use of general anaesthesia. The earliest description was given by John Snow in 1848. The general incidence of vomiting is about 30%, the incidence of nausea is about 50%, and in a subset of high-risk patients, the PONV rate can be as high as 80%.

Materials and Methods: a double blinded randomized controlled trial which was conducted prospectively in 100 female patients between the age of 18-40 years, scheduled to undergo interval laparoscopic tubectomy at Vijayanagar Institute of Medical Sciences Hospital, Ballari. The study period was for one year and was conducted between November 2016 to October 2017 in the Department of Anaesthesiology and Critical Care, VIMS, Ballari. Institutional ethical committee approval for all patients.

Results: The age distribution in the two groups share a similar distribution with no significant difference between them, p-value = 0.18. The distribution of patients with their BMI was comparable between the two groups with a p-value = 0.16. The two groups do not have a statistically significant difference with respect to the Apfel risk score for PONV, p-value = 0.557. It took an average of 34.52 ± 3.04 minutes and 35 ± 3.26 minutes for the surgery to complete in Group A and Group B respectively. The difference in the two groups was not statistically significant, p-value > 0.05.

Conclusion: 30 mg ephedrine is more effective in preventing post-operative nausea vomiting in laparoscopic tubectomy cases under general anesthesia than 15 mg ephedrine when given intra muscularly with similar hemodynamic changes and without any significant adverse hemodynamic side effects.

Key Words: Post-operative nausea and vomiting, BMI, PONV, laparoscopic tubectomy.

INTRODUCTION

Post-operative nausea and vomiting (PONV) is a common and distressing problem after anaesthesia.[1] Nausea and vomiting are associated with the use of general anaesthesia.[2] The earliest description was given by John Snow in 1848.

The general incidence of vomiting is about 30%, the incidence of nausea is about 50%, and in a subset of high-risk patients, the PONV rate can be as high as 80%. Surgical procedures such as laparoscopic surgeries, abdominal surgeries, strabismus surgeries, tonsillectomies are associated with high incidence of nausea and vomiting.[3]

PONV is a significant problem in early discharge of patients following ambulatory surgeries with discharge postponed or precluded.[7]
Traditionally, drugs such as 5HT3 antagonist like ondansetron, steroids like dexamethasone, dopamine receptor antagonist like metoclopramide and ephedrine are used to treat PONV.[4] Ephedrine, a sympathomimetic agent has been found to be useful for treating PONV in the immediate post-operative period in doses of 0.5mg/kg body weight when given intra muscularly (IM) just before the end of surgery.[5]

This study is designed to determine the efficacy of two different doses of IM ephedrine (30 mg & 15 mg) in controlling PONV following laparoscopic tubectomies performed under general anaesthesia. Haemodynamic effects and side effects of the two doses of the drug will also be evaluated.

MATERIALS AND METHODS

Source of Data: Our study, a double blinded randomized controlled trial which was conducted prospectively in 100 female patients between the age of 18-40 years, scheduled to undergo interval laparoscopic tubectomy at Vijayanagar Institute of Medical Sciences Hospital, Ballari. The study period was for one year and was conducted between November 2016 to October 2017 in the Department of Anaesthesiology and Critical Care, VIMS, Ballari. Institutional ethical committee approval for all patients.

Inclusion Criteria:

- Patients posted for interval laparoscopic tubectomy
- Age 22 to 40 yrs
- ASA I and ASA II

Exclusion Criteria:

- Patient refusal
- Patient on antiemetics, steroids, and chronic use of opioids for other indications
- Significant medical conditions such as cardiovascular diseases, endocrinologic diseases, liver diseases, kidney diseases, neurologic disorders.

Methods of Data Collection: Informed written consent was obtained from all the patient. Hundred patients satisfying the inclusion criteria and posted for laparoscopic tubectomy under general anaesthesia were selected.
A detailed history, complete physical examination and investigations as necessary were done for all the patients.

The study population was randomly allocated into 2 groups of 50 patients (n=50) each by sealed opaque envelope method. The study population was randomized with the help of computer-generated randomization table.

The sample size of 50 each is arrived based on assumed reduction in PONV at least by > 20 % in both samples compared to ondansetron and a difference of 30 % between two groups, with a power of 80 % and α value 0.05.

Emetogenic history such as history of previous episodes of PONV, history of medication and any past or recent episodes of motion sickness, smoking status were elicited. The predictive PONV risk was attributed to each patient using Apfel PONV risk score. The Apfel simplified score includes female gender, history of PONV and/or motion sickness, non-smoking status,

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and postoperative use of opioids. When 0, 1, 2, 3, or 4 factors are present, the risk of PONV is 10%, 20%, 40%, 60%, or 80%, respectively. Other anthropometric data was collected from the patients during the pre-anaesthetic evaluation. All the patients were on standard nil by oral status.

The patients were shifted to the OT, intravenous access was ensured and were connected to basic monitors such as Electrocardiography (ECG), non-invasive blood pressure (NIBP) and pulse oximetry (SPO_2). Basal vitals were recorded and monitored through the surgery. Ringer Lactate infusion was started.

Inj. glycopyrrolate 0.01mg/kg, Inj. midazolam 0.03 mg/kg and Inj. fentanyl 1µg/kg were administered intravenously. Positive pressure ventilation by mask was avoided before intubation to minimize gastric distention.[5] Patients were preoxygenated with 100% oxygen for 3 min and induced with Inj. Thiopentone 5mg/kg, Inj. succinyl choline 1.5 mg/kg IV, following which trachea was intubated with endotracheal tube of appropriate size. The placement of endotracheal tube was confirmed using five-point auscultation method and capnography.

Anaesthesia was maintained with nitrous oxide and oxygen (66:33) with sevoflurane 1% to 2% and Inj. vecuronium 0.08 mg/kg IV given intermittently.

Group A received 15mg IM ephedrine before the reversal of neuromuscular blockade and *Group B* received 30mg IM ephedrine before the reversal of neuromuscular blockade.

Reversal of neuromuscular blockade was achieved with Inj. neostigmine 0.05mg/kg IV and Inj. glycopyrrolate 0.01mg/kg IV.

Patients were monitored in the recovery room for 3 hours and then shifted to postoperative ward where the patients were admitted for 24 hours after the surgery and were discharged after the second post-operative day. The following parameters were observed, recorded and followed up for a period of 24 hours, every 15 minutes for 3 hours and every 3rd hourly thereafter.

i. Incidence of post-operative nausea (PON)
ii. Incidence of post-operative vomiting (POV)
iii. Incidence of retching.
iv. Hemodynamics (SBP, DBP, MAP, HR).
v. Oxygen saturation (SpO_2)
vi. Side effect like palpitation, headache and others if any
vii. Use of rescue antiemetic agent

PONV was rated using the PONV score described by Mathew *et al*. score 0 = no nausea, no vomiting, 1 = nausea present, no vomiting, 2 = nausea ±, vomiting present, and 3 = vomiting > 2 episodes in 30 min. Patients with a score of more than 2 were given rescue anti-emetic agent Inj. ondansetron 4 mg IV. Time of administration of rescue antiemetic and total doses used over 24 hours was noted.

The data was collected in prepared proforma meeting the objectives of the study. Data was analyzed using SPSS21.0. Appropriate statistical tests were applied for the numerical and categorical variables. The collected data was entered in Microsoft excel sheet and relevant formulas were used to arrive at mean, SD, percentages and frequency. Continuous data were presented as Mean ± SD and categorical data were presented as percentages and number. Student t test (two tailed, independent) was used to test the study parameters on a continuous scale. Chi square test was used to test the parameters on a categorical scale. A p-value of <0.05 was considered as statistically significant difference between the groups. The graphs and tables were generated on Microsoft excel.

RESULTS

Table 1: Age distribution among the study groups

Age group (In yrs.)	Group A		Group B		P value
	Number of Patients	Percent (%)	Number of Patients	Percent (%)	
22 - 25	2	4.0	0	0.0	0.18
26 - 30	41	82.0	38	76.0	
31 - 35	7	14.0	12	24.0	
Total	50	100.0	50	100.0	

Graph 1: Age distribution among the study groups

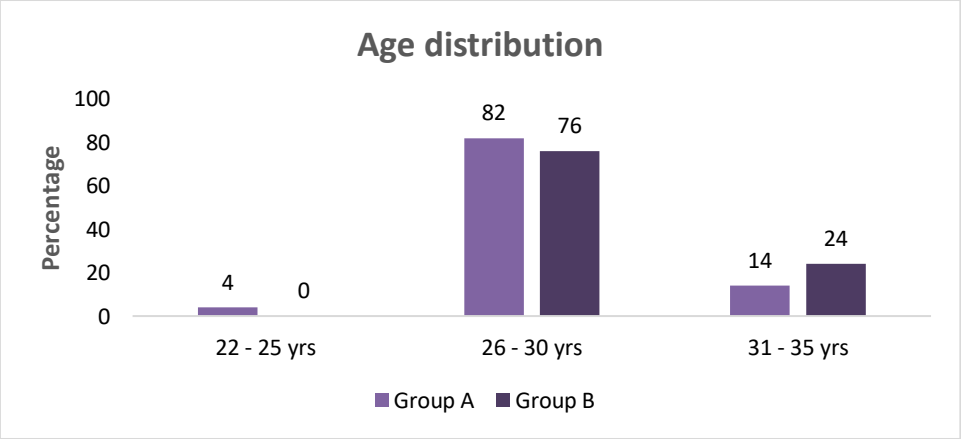


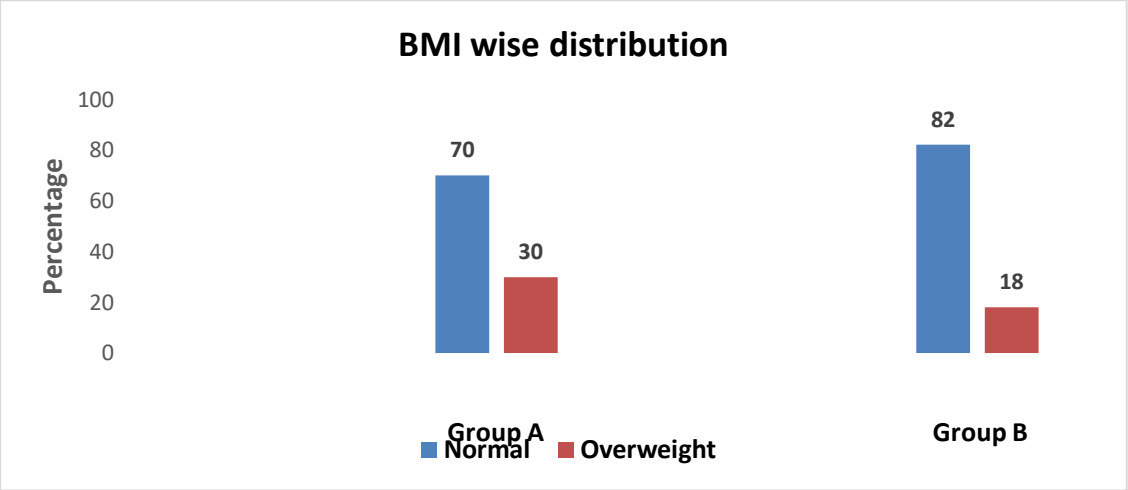
Table 2: BMI distribution among the study groups

BMI	Group A		Group B		P value
	Number of Patients	Percent (%)	Number of Patients	Percent (%)	

Normal	35	70	41	82	0.16
Overweight	15	30	9	18	
Total	50	100	50	100	

The age distribution in the two groups share a similar distribution with no significant difference between them, p-value = 0.18

Graph 2: BMI distribution among the study groups



The distribution of patients with their BMI was comparable between the two groups with a p-value = 0.16

Table 3: Comparison of history of post-operative nausea vomiting

h/o PONV	Group A		Group B		P value
	Number of Patients	Percent (%)	Number of Patients	Percent (%)	
Yes	23	46	21	42	0.687
No	27	54	29	58	
Total	50	100	50	100	

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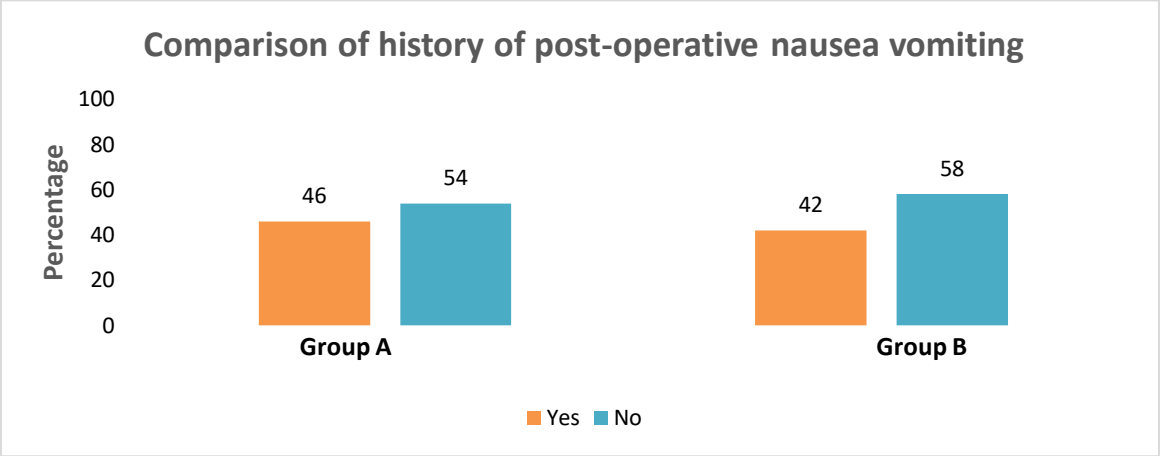
Graph 3: Comparison of history of post-operative nausea vomiting

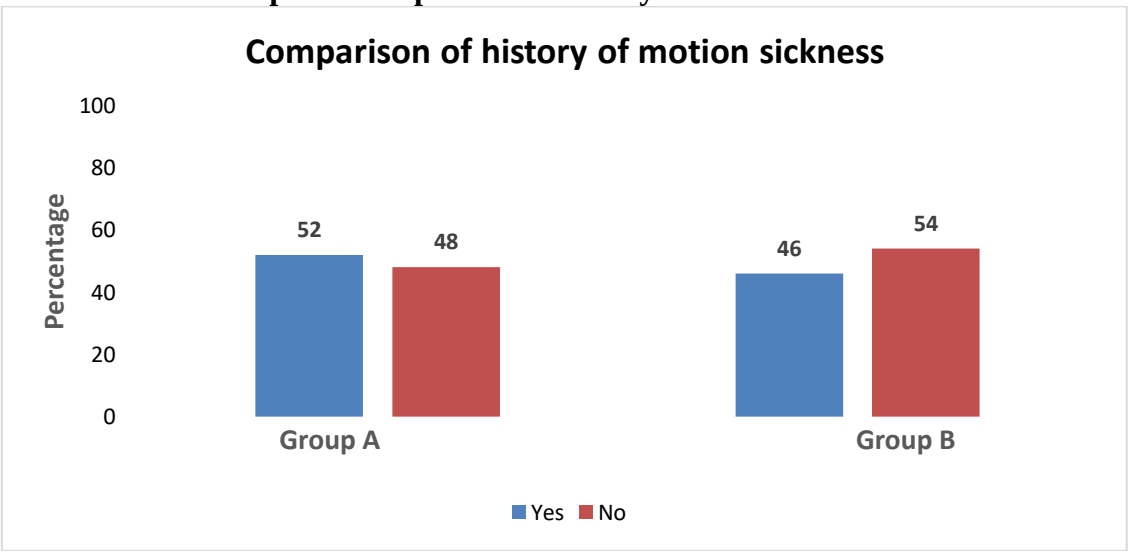


History of PONV is similar in both the groups. P-value =0.687

Table 4: Comparison of history of motion sickness

h/o motion sickness	Group A		Group B		P value
	Number of Patients	Percent (%)	Number of Patients	Percent (%)	
Yes	26	52	23	46	0.548
No	24	48	27	54	
Total	50	100	50	100	

Graph 4: Comparison of history of motion sickness

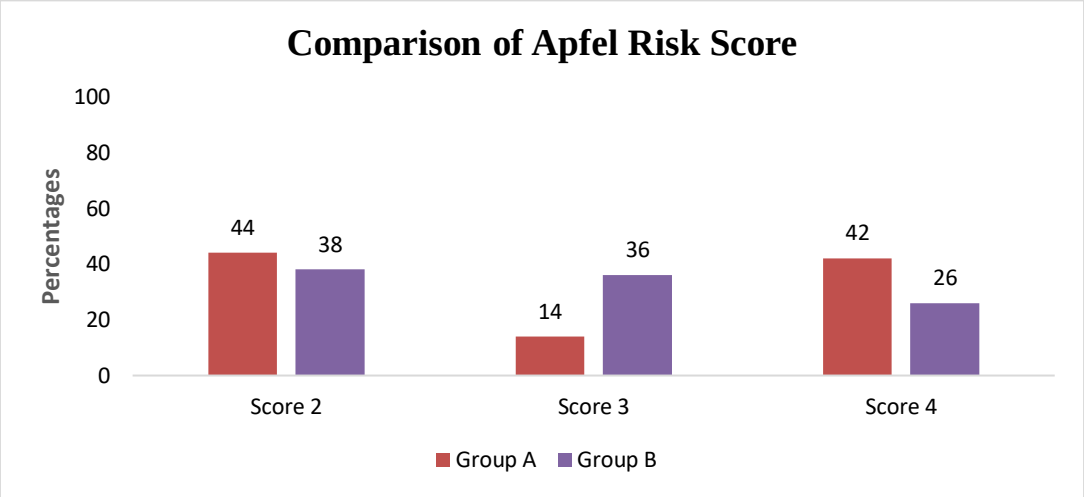


The prevalence of history of motion sickness in the two groups is not statistically significant difference, p-value = 0.548

Table 5: Comparison of Apfel Risk Score

Apfel - Risk Score	Group A		Group B		P value
	Number of Patients	Percent (%)	Number of Patients	Percent (%)	
Score 2	22	44	19	38	0.557
Score 3	13	14	18	36	
Score 4	15	42	13	26	
Total	50	100	50	100	

Graph 5: Comparison of Apfel Risk Score



The two groups do not have a statistically significant difference with respect to the Apfel risk score for PONV, p-value = 0.557

Table 6: Comparison of intraoperative use of Intra Vascular Fluid

Intra-venous Fluid	Group A	Group B	P value
	Mean ± SD	Mean ± SD	
IV fluids administered (ml)	525.6 ± 61.91	525 ± 49.13	0.957

SD = standard deviation, IV = intra venous

Intra operative IV fluid usage was similar in two groups, p-value > 0.05. Group A used an average of 525.6 ± 61.91 ml IVF (RL) and Group B used an average of 525 ± 49.13 ml IVF (RL)

Table 7: Comparison of duration of surgery

Parameters	Group A	Group B	P value
	Mean ± SD	Mean ± SD	
Duration of surgery (mins)	34.52 ± 3.04	35 ± 3.26	0.775

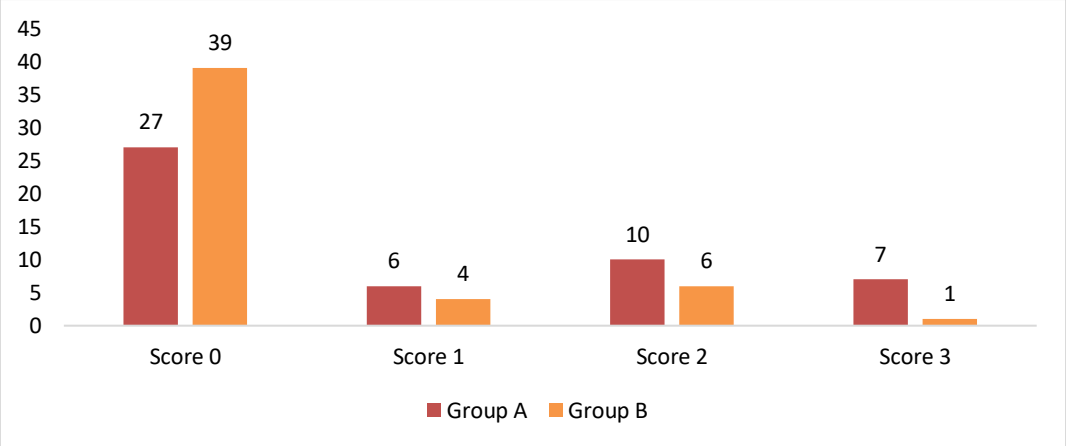
SD = standard deviation

It took an average of 34.52 ± 3.04 minutes and 35 ± 3.26 minutes for the surgery to complete in Group A and Group B respectively. The difference in the two groups was not statistically significant, p-value > 0.05.

Table 8: Comparison of Mathew et al. PONV Score among the study groups

Mathew et al. PONV Score	Group A		Group B		P value
	Number of Patients	Percent (%)	Number of Patients	Percent (%)	
Score 0	27	54	39	76	0.044
Score 1	6	12	4	10	
Score 2	10	20	6	12	
Score 3	7	14	1	2	
Total	50	100	50	100	

Graph 8: Comparison of Mathew et al. PONV Score among the study groups

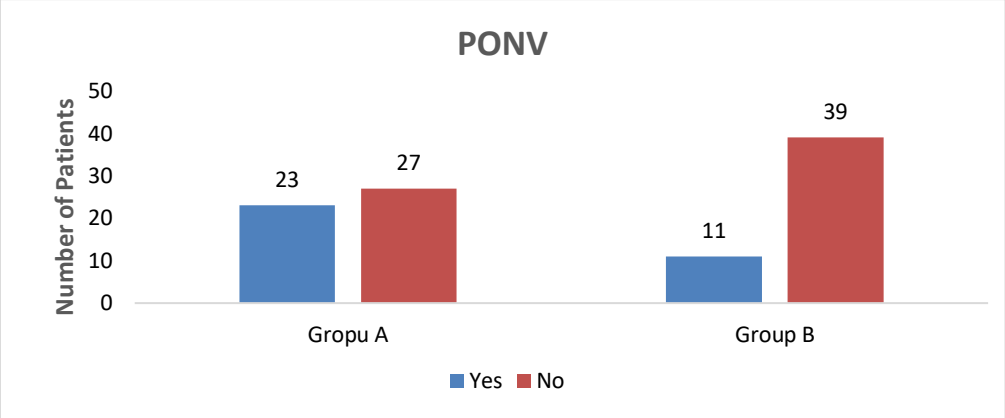


27 patients in Group A and 39 patients in Group B had a score of 0. In Group A 6, 10 and 7 patients had scores of 1, 2 and 3 respectively where as in Group B 4, 6 and 1 patients had a score of 1, 2 and 3 respectively. The difference between the two groups was statistically significant (p-value < 0.05).

Table 9: Comparison of Incidence of PONV

	Group A		Group B		P-value
	Number of Patients	Percentage (%)	Number of Patients	Percentage (%)	
Yes	23	46	11	22	0.0211
No	27	54	39	78	
Total	50	100	50	100	

Graph 9: Comparison of Incidence of PON

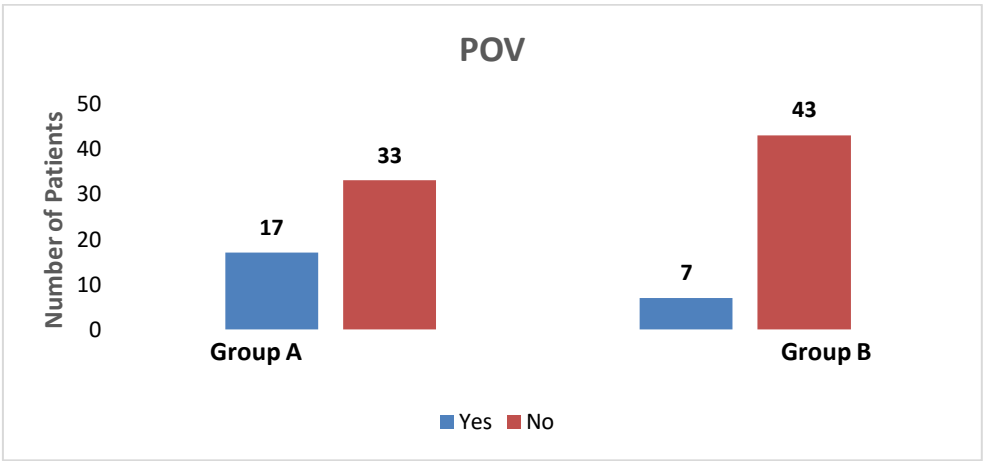


The incidence of PON in the two groups have a statistically significant difference with a P-value of 0.0211 (p-value < 0.05).

Table 10: Comparison of Incidence of POV

	Group A		Group B		P-value
	Number of Patients	Percentage (%)	Number of Patients	Percentage (%)	
Yes	17	24	7	14	0.0192
No	33	66	43	86	
Total	50	100	50	100	

Graph 10: Comparison of Incidence of POV



17 patients in Group A experienced vomiting and 7 patients in Group B experienced vomiting. The incidence of POV in the two groups have a statistically significant difference with a P-value of 0.019 (p-value < 0.05).

Table 11: Comparison of Incidence of POR

	Group A		Group B		
	Number of Patients	Percentage (%)	Number of Patients	Percentage (%)	P-value
Yes	8	16	2	4	
No	42	84	48	96	
Total	50	100	50	100	0.0455

8 patients in Group A experienced retching and 2 patients in Group B experienced retching. The p-value is 0.0455, indicating that the difference for the incidence of POR in the two groups are statistically significant (p-value < 0.05).

Table 12: Comparison of Incidence of PONs

	Group A		Group B		P-value
	Number of Patients	Percentage (%)	Number of Patients	Percentage (%)	
Yes	23	46	11	22	
No	27	54	39	78	0.0211
Total	50	100	50	100	

The incidence of PON in the two groups have a statistically significant difference with a P-value of 0.0211 (p-value < 0.05). 23 patients in Group A experienced nausea and 11 patients Group B experienced nausea.

Table 13: Comparison of requirement of rescue antiemetic

Ondansetron Rescue	Group A		Group B		P value
	Number of Patients	Percent (%)	Number of Patients	Percent (%)	
Yes	17	34	7	14	
No	33	66	43	86	**0.019**
Total	50	100	50	100	

Rescue antiemetic was required in 17 patients in Group A whereas only 7 patients required rescue antiemetic treatment in Group B. The difference in use of rescue antiemetic was statistically significant with a p-value of 0.019 (p-value < 0.05).

Table 14: Comparison of post-operative PR

Intervals	Group A		Group B		P value
		SD		SD	
0 min	83.12	9.084	85.28	5.679	0.157
15 min	74.24	6.397	76	5.177	0.133

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30 min	74.26	5.742	75.34	5.177	0.326
45 min	74.5	5.482	73	5.177	0.162
1 hr	74.8	5.103	73.76	4.788	0.296
75 min	76.5	5.075	77.22	4.983	0.501
90 min	77.5	5.308	78	4.913	0.64
105 min	77	5.245	78.16	4.913	0.279
2 hr	78	4.875	79.16	4.913	0.35
135 min	74.62	5.026	75.16	4.913	0.588
150 min	74.88	5.045	75	4.913	0.91
165 min	77.68	8.38	77.52	4.495	0.905
3 hr	74.78	5.048	75.5	4.913	0.562
6 hr	75.64	3.942	76.36	4.77	0.4127
9 hr	75.3	2.957	73.96	4.53	0.083
12 hr	75.06	2.41	74.36	4.534	0.34
15 hr	75.9	3.131	75.5	5.1	0.637
18 hr	76.4	3.124	77.62	5.329	0.0855
21 hr	76.4	2.955	75.82	3.96	0.408
24 hr	77.02	3.113	76.52	4.2	0.481

SD = standard deviation, PR = pulse rate

The post-operative pulse rate at various intervals in the two groups were statistically not significant, p-value > 0.05 in all time intervals. No adverse hemodynamic outcome was observed in post-operative period.

Table 15: Comparison of post-operative SBP

Intervals	Group A		Group B		P value
		SD		SD	
0 min	126.52	6.425	128.5	6.258	0.121
15 min	114.2	5.803	114.32	4.524	0.908
30 min	113.68	4.666	115.52	5.323	0.069
45 min	113.68	6.146	115.2	5.485	0.189

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1 hr	114.08	4.882	115.6	5.268	0.138
75 min	114.96	4.319	113.6	5.268	0.161
90 min	114.36	3.696	113.5	5.268	0.246
105 min	114.84	2.888	113	4.226	0.112
2 hr	114.8	5.345	113.5	4.226	0.201
135 min	113	5.194	115	3.527	0.085
150 min	113.04	6.919	111.08	3.527	0.077
165 min	115.48	4.056	116.6	5.674	0.2589
3 hr	114.5	6.919	113.36	4.246	0.195
6 hr	116.96	6.931	117.36	4.246	0.7286
9 hr	114.04	5.999	115.2	4.12	0.2807
12 hr	111.28	5.866	113.04	3.901	0.0804
15 hr	115.32	4.268	116.8	3.428	0.0917
18 hr	113.92	4.08	115.12	3.503	0.122
21 hr	113.16	4.022	112.36	3.445	0.3026
24 hr	116.52	3.764	117.6	3.454	0.1382

SD = standard deviation, SBP = systolic blood pressure

The post-operative systolic blood pressure measured at various time intervals in the two groups were statistically not significant, p-value > 0.05in all time intervals

Table 16: Comparison of post-operative DBP

Intervals	Group A		Group B		P value
		SD		SD	
0 min	86.5	6.928	86.8	5.19	0.738
15 min	75.92	4.332	76.2	4.625	0.424
30 min	74.28	4.333	74.5	4.13	0.806
45 min	75.6	3.283	75.96	4.266	0.688
1 hr	75.28	3.097	74.96	4.486	0.679
75 min	75.92	3.475	75.5	4.177	0.64

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90 min	75	2.807	74	4.177	0.163
105 min	74.28	2.857	75	3.527	0.314
2 hr	74.12	2.504	73.8	3.527	0.654
135 min	72.32	2.226	73.1	3.527	0.275
150 min	73.92	3.475	74.2	3.527	0.694
165 min	74.52	4.459	75.12	4.662	0.512
3 hr	72.84	5.467	73.88	4.415	0.298
6 hr	76.84	5.467	75.96	4.49	0.3812
9 hr	74.48	3.887	74.8	3.703	0.6748
12 hr	72.8	3.854	73.12	3.432	0.662
15 hr	74.12	5.516	75.44	3.453	0.1067
18 hr	75.8	3.838	77.16	3.382	0.0663
21 hr	76.24	4.326	75.28	3.374	0.2177
24 hr	76.16	3.929	75.04	3.481	0.1278

SD = standard deviation

DBP = diastolic blood pressure

The post-operative diastolic blood pressure measured at various time intervals in the two groups were statistically not significant, p-value > 0.05 in all time intervals

Table 17: Comparison of post-operative MAP

Intervals	Group A		Group B		P value
		SD		SD	
0 min	99.84	6.315	100.7	4.71	0.229
15 min	88.68	3.907	88.90667	4.282	0.757
30 min	87.41333	4.291	88.17333	4.297	0.282
45 min	88.29333	3.196	89.04	4.528	0.294
1 hr	88.21333	2.796	88.50667	4.541	0.684
75 min	88.93333	3.315	88.2	4.271	0.327
90 min	88.12	2.235	87.16667	4.271	0.18
105 min	87.8	2.167	87.66667	3.348	0.779

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2 hr	87.68	2.768	87.03333	3.271	0.363
135 min	85.88	2.477	87.06667	3.527	0.098
150 min	86.96	3.359	86.49333	3.527	0.51
165 min	88.173	2.669	88.94	3.452	0.216
3 hr	86.72667	4.487	87.04	4.303	0.654
6 hr	90.213	4.447	89.76	4.022	0.5944
9 hr	87.667	3.327	88.267	3.359	0.3717
12 hr	85.627	3.252	86.427	2.872	0.1953
15 hr	87.85	4.396	89.227	2.816	0.0657
18 hr	88.507	3.382	89.813	3.097	0.0673
21 hr	88.547	3.462	87.64	2.813	0.1537
24 hr	89.613	3.573	89.227	2.956	0.5575

SD = standard deviation, SBP = systolic blood pressure

The post-operative systolic mean arterial pressure measured at various time intervals in the two groups were statistically not significant, p-value > 0.05 in all time intervals.

DISCUSSION

The PONV after general anaesthesia in ambulatory surgery poses a significant problem. It is often rated as the most common complaint after pain post operatively. PONV can result in prolonged duration of stay in the hospital and delay in discharge of the patient.[7]

Various antiemetics have been described in the treatment and prevention of this 'big little problem'. Ondansetron, a commonly used antiemetic, has reported side effects of dizziness, flushing, elevated liver enzymes and constipation. Higher doses of metoclopramide (1-2 mg/kg) reduces emesis but leads to sedation and dystonia. Older generation antiemetics like droperidol can cause dose dependent sedation and drowsiness. Droperidol is also associated with QTc segment prolongation and torsades de pointes and hence is comes with FDA black box warning.[8]

In our study the patients in two groups had a similar demographic profile and a similar ASA physical status. The two groups had similar Apfel's PONV score predictive of PONV. Past history of PONV and past history of motion sickness was also comparable between the two groups. Ventilation technique that promotes gastric distention is a risk factor for PONV.[9] Since positive pressure ventilation by mask before intubation can cause gastric distention[5], we used succinylcholine to aid intubation after induction. The average duration of surgery was 34.5 minutes in group A and 35 minutes in group B. There were no incidences of prolonged neuromuscular blockade.

In the absence of prophylactic antiemetics, gynaecological patients undergoing laparoscopic surgery show an incidence of PONV up to 40% to77%.The etiology of PONV after laparoscopic surgery is not fully understood, risk factors such as exposure to nitrous oxide,

carbon dioxide insufflation, creation of pneumoperitoneum appear to play a strong role in causing PONV.[8]

The multiple risk factors for PONV such as female gender, non-smoker patients, laparoscopic surgical factors, are seen with elective laparoscopic tubectomy patients. We decided to carry out the study in elective laparoscopic tubectomy cases under general anaesthesia.[9]

Given the high incidence of post-operative nausea vomiting in laparoscopic surgeries, for ethical reasons we decide not to have a control group as that would deny the patient an effective antiemetic prophylaxis.[10]

David M. Rothenberg et al. prospectively studied ephedrine as an antiemetic agent. They used ephedrine in doses of 0.5 mg/kg intramuscularly in laparoscopic tubectomy under general anaesthesia and compared the incidence of PONV, hemodynamic changes, sedation and discharge time with droperidol 0.04mg/kg and saline. They concluded that ephedrine was as effective as droperidol in reducing nausea and vomiting without the sedative effects of droperidol. They noted that IM ephedrine 0.5 mg/kg did not cause any adverse hemodynamic side effects, palpitations and dystonic reactions.[5]

E. Hagemann et al. compared ephedrine 0.05 mg/kg IM and placebo in abdominal hysterectomy under general anaesthesia to study the antiemetic effect and hemodynamic parameters. They observed that the patients treated with ephedrine had significantly less nausea, retching, vomiting and the need of rescue antiemetics. They observed that there was no significant difference in hemodynamic effects like tachycardia, hypertension, and palpitation in ephedrine group when compared to placebo. They concluded that ephedrine when given 0.5mg/kg IM at the end of hysterectomy had a significant antiemetic effect with no evident side effects.[11]

Ade B. Olujohungbe et al. in their prospective study of stuttering priapism in adolescent and young men with sickle cell anaemia assessed side effects of ephedrine such as palpitations, tachycardia, anxiety, tremor in IM doses of 15mg and 30 mg. They observed that ephedrine at doses of 15mg and 30mg were well tolerated and no serious adverse effects were reported.[12]

In our study we compared the 15 mg and 30 mg IM doses of ephedrine to offer a meaningful comparison in studying the prophylactic efficacy of ephedrine and minimising any adverse hemodynamic events.

Debasish Bhar et al. in their study to evaluate the efficacy of IM ephedrine (0.5 mg/kg) in prevention of hypotension during caesarean section under spinal anaesthesia concluded that IM ephedrine 0.5mg/kg gives better haemodynamic stability without any significant increase in the incidence of adverse effect.[13]

Rolbin SH et al. in their study Prophylactic IM ephedrine before epidural anaesthesia for caesarean section observed increased incidence of adverse effects with 50mg IM ephedrine.

The efficacy of 30mg IM ephedrine is already well established but as far as 15 mg IM ephedrine is concerned, there is no available literature in evaluating its prophylactic antiemetic effect. Hence, we chose to compare 15mg IM ephedrine with 30mg ephedrine.

Since the adverse hemodynamic side effects of IM ephedrine at higher doses are evident from the above studies, we decided not to use a higher dose of IM ephedrine in our study.

We found that 30mg IM Ephedrine, when compared with 15mg IM ephedrine was effective in reducing the incidence of nausea and vomiting. In the study conducted by David M Rothenberg et al. it was concluded that 30mg IM ephedrine was as effective as droperidol in reducing nausea and vomiting.[5] In the study conducted by E Hagemann et al. it was concluded that 0.5mg/kg IM ephedrine had a significant antiemetic effect when compared to a placebo.[14]

HR, SBP, DBP, and MAP at various time intervals during first 24 hours post-operatively were comparable between two groups. The study conducted by E Hagemann et al and David

M Rothenberg et al. also did not find any significant difference in mean arterial pressure between 30mg IM ephedrine and placebo in the first 24 hours post-operatively.
In a study conducted by S Varathan et al., comparing the prophylactic IM ephedrine (15 mg vs 30mg) in prevention of hypotension during elective LSCS under subarachnoid block reported no significant change in the mean arterial pressure when 30mg IM ephedrine was given 20 min prior to SAB and 15mg IM ephedrine 10 min prior to SAB.[15]
The hemodynamic safety of 15mg IM ephedrine and 30mg IM ephedrine is well documented and we came across similar finding is our study.

CONCLUSION

30 mg ephedrine is more effective in preventing post-operative nausea vomiting in laparoscopic tubectomy cases under general anesthesia than 15 mg ephedrine when given intra muscularly with similar hemodynamic changes and without any significant adverse hemodynamic side effects.

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