A Randomized Control Trial of a Multimodal Antiemetic Management for the Prevention of Postoperative Nausea and Vomiting in Patients Undergoing Ambulatory Gynecologic Endoscopic Surgery

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Background: *Postoperative nausea, and vomiting (PONV) is a common side effect in ambulatory gynecologic endoscopic surgery. It is a cause of a delay in the discharge of patients from the hospital. This study implemented multimodal antiemetic management to prevent PONV in Songklanagarind hospital.*

Objective: *To evaluate the efficacy of multimodal antiemetic management on PONV prevention in patients undergoing ambulatory gynecologic endoscopic surgery.*

Material and Method: *The study was a randomized double blind control trial conducted in Songklanagarind hospital. 340 patients, undergoing ambulatory gynecologic endoscopic surgeries, were enrolled into the study. All patients were randomized to receive conventional management (The control group), or multimodal antiemetic management (The multimodal group) under volatile-based general anesthesia. Patients in the control group received thiopental induction and used nitrous oxide for maintenance of anesthesia. Whilst, patients in the multimodal group received propofol induction without the use of nitrous oxide. Patients were then classified into risk levels, according to the risk factors of PONV using a simplified risk score and administered antiemetic according to the protocol: The multimodal group received ondansetron±dexamethasone ±dimenhydrinate prophylaxis, while the control group received no drugs, or only an ondansetron prophylaxis. This was dependant on the patients risk level. The incidence of nausea, emesis and antiemetic requirements were recorded at recovery room. The severity score of PONV was collected every 30 minutes up until 180 minutes and then again at 24 hours after surgery by telephone call.*

Results: *166 patients (The control group) along with 162 patients (The multimodal group) underwent analysis. There were no statistically significant differences between the two groups in concerns to; age, weight, history of PONV, type of surgery, duration of anesthesia, and opioids usage. Patients in the control group had a higher incidence of nausea than those in the multimodal group significantly at PACU (16.9% vs 8.0%, p = 0.02), and at 24 hours (16.3% vs 5.6%, p<0.01). Those in the control group also had more severe degrees of PONV than those within the multimodal group significantly at 30, 60 and 120 min in PACU (p = 0.01, 0.03 and 0.04, respectively) and at 24 hours (p<0.01). Moreover, the control group required antiemetic treatment during PACU stays which was higher than those patients in the multimodal group significantly (19.9% vs 6.8%, p<0.001).*

Conclusion: *Multimodal antiemetic management is more effective on the prevention of PONV in terms of reducing incidence of nausea, degree of PONV and rescued antiemetic requirements during PACU as well as at 24 hours, than those receiving no intervention, or the single drug prophylaxis in patients undergoing ambulatory gynecologic endoscopic surgery.*

Keywords: *multimodal antiemetics management, postoperative nausea and vomiting, ambulatory, endoscopic surgery*

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Postoperative nausea and vomiting (PONV) in ambulatory settings contributes to delayed discharges from the hospital. As a direct result this increases the required manpower in the postanesthetic care unit (PACU), and un-planned hospital admissions due to severe nausea and vomiting[1,2]. The incidence of PONV in gynecologic laparoscopic surgery is generally 54%, but can rise up to 92% depending on the institute[3-5]. In Songklanagarind hospital, the PONV incidence was recorded to be at 30 % in patients undergoing gynecologic laparoscopic

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surgery. There are four risk factors of PONV 1) Female gender, 2) Non smoker, 3) Perioperative using opioid, nitrous oxide, or volatile anesthetic agents and/ or postoperative opioids usage. 4) Having a history of PONV or motion sickness[6,7]. Apfel and colleague[8] created a simplified risk score to identify the risks of PONV, and they found that the incidence of PONV correlated with the number of risk factors. Therefore, PONV prophylaxis has been recommended for patients, who have more than 2 risk factors, or a moderate risk status for PONV[6,9-11].

There are 2 strategies used to prevent PONV. Firstly, a non-medical strategy such as; using propofol infusion for maintenance of anesthesia, adequate intravascular volume before surgery and avoiding using nitrous oxide, volatile and opioids. Secondly, medical prophylaxis such as; serotonin receptor antagonist group (ondansetron), dexamethasone, butyrophenones group (droperidol), antihistamine (dimenhydrinate, diphenhydramine) and benzamides (metoclopamide). Multimodal antiemetic management has been studied, and shown that it is an effective method for the prevention of PONV in patients undergoing gynecologic laparoscopic surgery[12,13].

However, the strategies for multimodal antiemetic management for PONV prevention are different, and depend on the institute adapting to using them suitably within their setting. In our institute, we created a multimodal antiemetic management protocol according to the simplified risk scores, for giving antiemetic drugs in patients undergoing gynecologic laparoscopic surgery. The objective of this study was therefore, to evaluate the effectiveness of multimodal antiemetic prophylaxis protocols compared to conventional prophylaxis.

Material and Method

After, the study was approved by the, Institutional Review Board Committee of Prince of Songkla University, patients aged between 18 and 45 years old, ASA physical status I or II and scheduled for ambulatory gynecologic endoscopic surgery in Songklanagarind hospital were recruited into the study. Patients, who were pregnant or breast-feeding, had allergies to the study drugs, were morbidly obesity, (BMI ≥35 kg/m2), taking opioids, steroids, anti-phychotic drugs or antiemetic drugs within the last 24 hours before surgery were excluded from the study. All the participants were verbally informed, and written consent was given before enrollment into the study at the surgical day care unit.

Patients, who achieved the inclusion and exclusion criteria, were randomized into two groups. These being; either the conventional management group (The control group), or the multimodal antiemetic management group (The multimodal group), using a computer generated block randomization. The randomization list was sealed in an envelope, and it was opened only when patients were enrolled into the study. Patients, along with evaluators were unaware of any patient's group. However, anesthesiologists and nurses, who had taken care of patients during the perioperative period, were unblinded.

After enrollment into the study, all patients were assessed for the risk factors of PONV according to the simplified risk score by Apfel[14].This included: 1) Female gender 2) Non-smoker 3) A history of PONV, or motion sickness 4) Planned usage of opioids during surgery. The risk of PONV was then classified into: Low risk (1 risk factor). Moderate risk (2 risk factors). High risk (3 risk factors). Extremely high risk (4 risk factors). Perioperative management followed the protocol, depending on the patients assigned group.

Control group: An intravenous catheter was established, and then lactate ringer's solution, or normal saline 5-7 ml/kg was infused 20 minutes before induction of anesthesia. Fentanyl 2 mcg/kg along with midazolam 1 mg was given, and then thiopental 3-5 mg was used for induction. Cisatracurium, or vecuronium was used to facilitate endotracheal tube intubation. Isoflurane/sevoflurane combining 30-40% oxygen in nitrous oxide was used for the maintenance of anesthesia. PONV prophylaxis was given to patients as described in Table 1.

Multimodal group: Patients received lactated ringer's solution, or normal saline 15 ml/kg over a period of 20 minutes before induction of anesthesia. Fentanyl 2 mcg/kg, and midazolam 1 mg was given before induction. Propofol 2-2.5 mg/kg was used for induction, and cirsatracurium or vecuronium was used to facilitate tracheal intubation. During the maintenance of anesthesia, 30-40% oxygen was used mixed with air, and volatile anesthetic agents (isoflurane or sevoflurane). PONV prophylaxis was administered, depending on the risk of PONV as shown in Table 1.

All patients were monitored using standard methods including; electrocardiogram, pulse oximetor, non-invasive blood pressure, end tidal carbondioxide and gas monitoring. After, the operation was concluded muscle relaxation was reversed, then the endotracheal

tube was removed upon the patients becoming fully awake. After this, the patients were transferred to the PACU. They were observed in the PACU until data collection was completed, and readiness to discharge was achieved.

Patients characteristics including; age, body weight, non-smoking, or smoking, history of PONV, or motion sickness along with the level of PONV risk classified into mild, moderate, high and extremely high risk were recorded. Perioperative information; diagnosis, operation, duration of anesthesia, fluid replacement and type of opioids usage were also noted. The incidence of nausea, and emesis episodes were recorded by anesthetic nurses in the recovery room. If patients had persistent nausea symptoms lasting more than 10 minutes, or vomited more than once then rescue antiemetic was supplemented to relieve symptoms. The rescued antiemetic drug was prescribed by anesthesiologist in the operating theater according to the patient's group (Table 1). Degree of PONV was classified as; mild (mild symptom, no vomit, and no request of treatment), moderate (having nausea/emesis, and requiring treatment) and severe (no improvement with treatment). This was evaluated every 30 minutes until a elapsed time of 180 minutes after surgery by nurses in the recovery room. These nurses, who assessed the incidence of PONV and severity of PONV, were not involved in the study. At 24 hours after surgery, the incidence of nausea, emesis and verbal nausea scores (0 = none, 1 = mild, 2 = moderate, 3 = severe) were also obtained from patients scoring of the severity of nausea and vomiting via a telephone call. Additionally, patient's satisfaction towards PONV prophylaxis was also obtained.

Statistical analysis using R program version 3.1.1 (2014-07-10) Copyright (C) 2014 The R Foundation for Statistical Computing, Platform: x86_64-apple-darwin10.8.0 (64-bit). A power analysis ($\alpha = 0.05$, $\beta = 0.2$) was calculated in order to reduce the incidence of PONV in patients undergoing gynecologic endoscopic surgery from 30% to 15% according to the incidence of PONV in Songklanagarind Hospital. Finally, 170 patients, including a 20% drop out per group, were enrolled into the study. Distributions of continuous variables were tested using the Shapiro-Wilk normality test. The student t test was used to test the differences between the groups for normal-distributed continuous variables (age, body weight); Wilcoxson Rank Sum test, with continuity correction, was used to analyze non-normal distributed continuous variables (duration of anesthesia and surgery). Chi-square test and Fisher's Exact test were used to analyze the difference of categorical variables (e.g., risk of PONV, type of surgery, incidence of PONV and degree of PONV) between the groups. A *p*-value less than 0.05 was considered statistically significant.

Results

340 patients were enrolled into the study. 170 patients were placed in the control group, and 170 patients were placed in the multimodal group. Four patients in the control group (3 cases converted to explore laparotomy, 1 case of protocol violation), along with 8 patients in the multimodal group (4 cases converted to explore laparotomy, 4 cases of protocol violation) were withdrawn from the study. The final total of patients was therefore; 166 patients in the control group, and 162 patients in the multimodal group being analyzed (Fig1). There were no differences between the groups in regards to demographic and perioperative information (age, body weight, type of surgery, duration of surgery and anesthesia, perioperative opioid use) except for the level of PONV risk (Table 2). The levels of PONV (mild-moderate, high, extremely high) in the control group versus the multimodal group were 0, 57.2%, 42.8% and 3.1%, 63.6%, 33.3%, respectively.

The incidence of nausea was higher in the control group than that of the multimodal group significantly (16.9% vs 8.0% respectively, *p*-value = 0.02). The number of episode of nausea was also statistically significant different between the groups (*p*-value = 0.04). However, the incidence of emesis, and the number of episodes of emesis were not different between each group. Patients in the control group required antiemetic treatment during PACU stay at a higher level than those patients in the multimodal group significantly (19.9% vs 6.8% respectively, *p*-value <0.001). Patients completing responses from PONV prevention (no symptoms, or signs of nausea and emesis) in the control group were significantly lower than that of those in the multimodal group (78.3% vs 90.1%, *p*-value <0.01). There was no statistical significant difference in the unplanned admission rate between the two groups (Table 3). The degree of PONV during the follow up time is presented in Table 4. There were statistically significant differences between the groups at; 30, 60 and 120 minutes after general anesthesia. The most common cause of unplanned admission was due to surgical causes, (49.1% in the control group, 60% in the multimodal group) and followed by severe dizziness

accompanied with severe postoperative pain. There were four cases in the control group, while there were no cases within the multimodal group being admitted due to a condition of severe PONV.

At 24 hours, after conclusion of surgery, the control group also had a higher incidence of nausea more so than that of the multimodal group (16.3% vs 5.6%, *p*-value <0.01). In addition, the control group also had more significantly severe degrees of PONV compared to those in the multimodal group (Table 5). There was no statistical significant difference in the satisfaction score on PONV prophylaxis between the groups (4.8 sd = 0.4 vs 4.9 sd = 0.3, *p*-value = 0.06). Subgroup analysis is shown in table 6. There were no statistically significant differences between groups on the incidence of nausea and emesis at recovery room in both high-risk and extremely high-risk subgroups. However, the multimodal group showed lower incidence of nausea and emesis at 24 hours within the high-risk subgroup significantly.

Discussion

The objective of this study was to evaluate the efficacy of the multimodal antiemetic management on the prevention of PONV in patients undergoing ambulatory gynecologic endoscopic surgery. This study confirms that using multimodal antiemetic management to prevent PONV in gynecologic endoscopic surgery is effective in reducing both the incidence of nausea during the PACU, as well as at an elapsed time of 24 hours, and the degree of PONV at 30, 60, 120 min in the PACU, and at 24 hours. Additionally, the multimodal antiemetic management also reduced the antiemetic requirements during PACU stay.

This study demonstrated that multimodal antiemetic, in volatile-anesthetic patients, undergoing gynecologic endoscopic surgery was effective in reducing the incidence of PONV from 17% to 8% during PACU stay, and from 16% to 5% at 24 hours. These results were similar with the previous two studies conducted by Scuderi et al[12] and Habib et al[15] reporting that multimodal management was more effective than no-intervention, or mono-therapy in the prevention of PONV by: 'Increasing the proportion of completed response rate for PONV prevention, less patients required antiemetic therapy and hence, a lesser PONV score.'

Scuderi et al study[12] used perioperative propofol combined with remifentanyl infusion, no volatile anesthetic agents/nitrous oxide, along with low doses of ondansetron for PONV prophylaxis, whereas Habib et al[15] used perioperative propofol infusion without volatile and nitrous oxide, combining droperidol and ondansetron for PONV prevention. This multimodal antiemetic management had some points which differed from those two studies by Scuderi et al[12] and Habib et al[15]. Our multimodal antiemetic management protocol was created in order to reduce the incidence of PONV. These included; avoidance of using nitrous oxide, adequate hydration, using propofol induction, coupled with multi-antiemetic prophylaxis. In our institute, some of our anesthesiologists are not familiar with the perioperative propofol infusion for maintenance of anesthesia. Consequently, our protocol did not implement perioperative propofol infusion into the multimodal antiemetic management protocol.

The chemoreceptor trigger zone (CRTZ), located at the area postrema of the fourth ventricle, triggered by general anesthesia and opioids, is a common mechanism of PONV[13]. Ondansetron, 5-hydroxytyptanine type 3 (5-HT3) receptor antagonist, is a common drug used for PONV prophylaxis, and has been proved both in terms of in safety and effectiveness in reducing PONV[16,17]. Single prophylaxis dexamethasone has been reported in significantly reducing the incidence of PONV, compared to placebos, whilst the mechanism of action has not been definitely described[18,19]. The combination between dexamethasone and 5-HT3 antagonists has been evaluated, and recommended for PONV[20,21].

Combined antiemetic has shown to be more effective than single drug prophylaxis for PONV[22,23]. Eberhart et al[22] combined oral tropisetron and dexamethasone preoperatively for PONV prophylaxis in patients undergoing volatile general anesthesia base, and found that combined antiemetic drugs were more effective than single drug prophylaxis in reducing the PONV score, as well as the incidence of PONV over 24 hours after surgery. Kim et al[23] also reported that combining intravenous dexamethasone during induction of anesthesia, and ondansetron at the end of surgery, resulted in a significant reduction in the incidence of PONV after volatile based general anesthesia in both high, and very high-risk groups of PONV. Therefore, a combination between intravenous dexamethasone and ondansetron, which is available in our institute and costless to implementation in all patients, was used in our multimodal antiemetic protocol for preventing PONV.

The present study showed a 90 % complete

Table 1. Protocol of PONV prophylaxis, and rescue antiemetic in the control and multimodal management groups

PONV risk level	Control group		Multimodal group	
	Prophylaxis	Rescue	Prophylaxis	Rescue
Low	None	Ondansetron 4 mg	None	Ondansetron 4 mg
Moderate	None	Ondansetron 4 mg	Ondansetron 4 mg#	Dimenhydrinate 1 mg
High	Ondansetron 4 mg#	Dimenhydrinate 1 mg	Dexamethasone 4 mg* + Ondansetron 4 mg#	Dimenhydrinate 1 mg
Extremely high	Ondansetron 4 mg#	Dimenhydrinate 1 mg	Dexamethasone 4 mg* Ondansetron 4 mg# + +dimenhydrinate 1 mg#	Dimenhydrinate 1 mg

* was given during induction of anesthesia, # was given at the end of surgery
PONV: postoperative nausea and vomiting

Table 2. Patients demographic information

	Control (n = 166)	Multimodal (n = 162)	*p*-value
Age; mean (sd) years	34.5 (6.1)	33.6 (6.0)	0.18
Body weight; mean (sd) kg	55.0 (8.7)	55.9 (9.24)	0.36
Level of PONV risk; n (%)			0.02
Low-moderate	0	5 (3.1)	
High	95 (57.2)	103 (63.6)	
Extremely high	71 (42.8)	54 (33.3)	
Type of surgery; n#			0.32
Tubal ligation	34	41	
Diagnosis laparoscopy	109	100	
Hysteroscopy	22	14	
Lysis adhesion	11	17	
Other	37	29	
Duration of surgery; median (IQR) min	35 (25,60)	30 (25,49)	0.12
Duration of anesthesia; median (IQR) min	60 (50,85)	60 (51,79)	0.35
Perioperative opioids; n (%)			0.94
Morphine	12 (7.2)	12 (8.1)	
Fentanyl	154 (92.8)	148 (91.9)	
PACU opioids; n (%)*			0.24
Morphine	26 (15.7)	18 (11.1)	
Fentanyl	95 (57.2)	103 (63.6)	
Dynastat^{R}; n (%)	35 (21.1)	32 (19.8)	0.87
Pain score at PACU; median (IQR)	5 (0,8)	5 (2,8)	0.24

Some patients had more than one type of surgery, * some patients did not receive any opioids during PACU stay
PONV: postoperative nausea and vomiting, PACU: post anesthetic care unit

response rate from PONV prevention using multimodal antiemetic management. This result was also similar to the study by Habib et al[15], which reported a response rate of 80% - 90% during a time period of 2 hours, and 24 hours after general anesthesia in multimodal antiemetic management groups after laparoscopic cholecystectomy. On the other hand, Scuderi et al[12] showed a higher number of complete response rates (98%) from PONV in multimodal antiemetic management groups after gynecologic laparoscopic surgery. This might be because the Scuderi et al study[12] implemented propofol and remifentanyl infusion perioperatively, whereas this study used a volatile anesthetic agents base, and fentanyl/morphine for the maintenance of anesthesia. Using volatile anesthetic agents, along with opioids, are considered risk factors of PONV, and trigger agents for CRTZ[23]. Consequently, present

Table 3. The total incidence and number of episode of postoperative nausea and vomiting (PONV), rescued antiemetic drugs in post-anesthetic care unit and the incidence of unplanned hospital admission

	Control group (n=166)	Multimodal group (n=162)	*p*-value
Nausea; n (%)	28 (16.9)	13 (8.0)	0.02
Number of episodes of Nausea; n (%)			0.04
No nausea	138 (83.1)	149 (92.0)	
1 episode	16 (9.7)	9 (5.5)	
≥2 episodes	12 (7.2)	4 (2.5)	
Emesis; n (%)	14 (8.4)	8 (4.9)	0.30
Number of episode of emesis; n (%)			0.16
No emesis	152 (91.6)	154 (95.1)	
1 episode	8 (4.8)	7 (4.3)	
≥2 episodes	6 (3.6)	1 (0.6)	
Rescued antiemetic drugs; n (%)	33 (19.9)	11 (6.8)	<0.001
Complete response from prevention during PACU stay; n (%)	130 (78.3)	146 (90.1)	<0.01
Unplanned admission; n (%)	58 (35.4)	48 (29.6)	0.30

PACU: post anesthetic care unit

Table 4. Degree of PONV over the time after surgery

Time	30 min	60 min	90 min	120 min	150 min	180 min
Control group (n = 166)						
Mild symptoms	13	4	3	4	2	1
Moderate symptoms	8	10	3	7	7	4
Severe symptoms	1	0	1	0	0	1
Multimodal group (n = 162)						
Mild symptoms	3	4	1	1	3	2
Moderate symptoms	4	0	0	1	0	2
Severe symptoms	0	0	0	0	0	0
p-value	0.01	0.03	0.21	0.04	0.22	0.71

PONV: postoperative nausea and vomiting

Table 5. The incidence of PONV at 24 hour after surgery

	Control group (n=166)	Multimodal group (n = 161)	*p*-value
Nausea; n (%)	27 (16.3)	9 (5.6)	<0.01
Emesis; n (%)	7 (4.2)	1 (0.6)	0.08
Degree of PONV; n (%)			<0.01
Mild	21 (12.7)	7 (4.3)	
Moderate	5 (3.0)	1 (0.6)	
Severe	1 (0.6)	0	
Satisfaction score; mean (sd)	4.8 (0.4)	4.9 (0.3)	0.06

PONV: postoperative nausea and vomiting

Table 6. The incidence of PONV at recovery room, and 24 hours after surgery according to the level of risk of PONV

	High-risk group n (%)			Extremely high-risk group n (%)		
	Control (n = 95)	Multimodal (n = 103)	*p*-value	Control (n = 71)	Multimodal (n = 54)	*p*-value
At recovery room						
Nausea	11 (11.6)	8 (7.8)	0.47	17 (23.9)	5 (9.3)	0.04
Emesis	5 (5.3)	5 (4.9)	1	9 (12.7)	3 (5.6)	0.23
At 24 hours						
Nausea	16 (16.8)	3 (2.9)	0.001	11 (15.5)	5 (11.3)	0.60
Emesis	6 (6.3)	1 (1.0)	0.05	1 (1.4)	0	1.00

PONV: postoperative nausea and vomiting

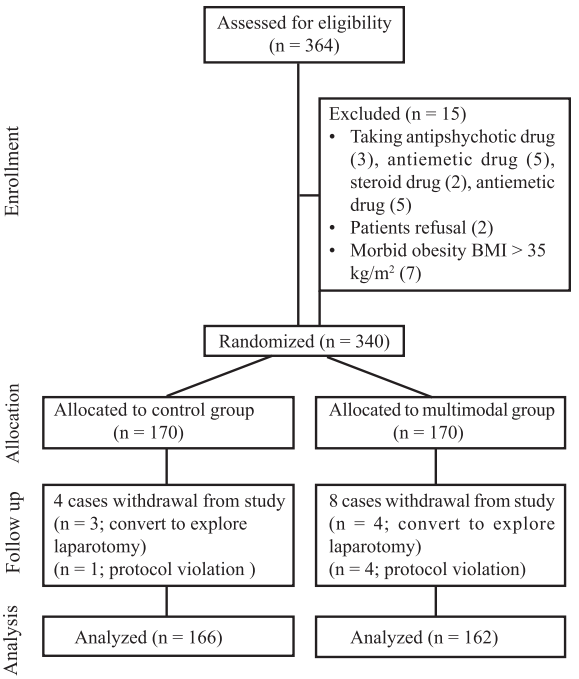

Fig. 1 CONSORT flow diagram.

study reported lower complete response rates for PONV prevention.

There was a significant difference in the level of PONV risk between the 2 groups in this study. Therefore, we did a subgroup analysis by using the level of PONV risk. The multimodal antiemetic management showed a significant reduction in the incidence of nausea and emesis only at 24 hours after surgery, while there was no statically significance difference during the PACU stay in the high-risk subgroup. Furthermore, in the extremely high-risk subgroup, the multimodal management approach also showed a significant reduction in the incidence of nausea only during the PACU stay, whereas there was no statistically significant difference at 24 hours after surgery. This might be an under power to detect a significant different between the groups during subgroup analysis. Because of this, our objective did not determine the effects to the level of risk of PONV as in the previous studies by Kim[23], which reported an obviously significant reduction in the incidence of PONV in high, and very high risk groups of PONV.

The strengths of this study are: Giving antiemetic prophylaxis, according to the risk level of PONV, and a large enrollment sample size into the study. The limitation of our study is that we did not measure, and compare the time readiness to home discharge. This was because, all of our patients were assessed for nausea and emesis parameters up until a time of 180 minutes in the PACU. Hence, all participants completed the follow up during their PACU stay. A further study should evaluate whether multimodal antiemetic management could fasten readiness in discharge from hospital in laparoscopic surgery or not.

Conclusion

In conclusion, multimodal antiemetic management is effective in the prevention of PONV in terms of; reducing the incidence of nausea, severity of PONV and rescue antiemetic requirements at PACU stay as well as at the 24 hour mark, after surgery when comparing it to conventional prophylaxis in patients undergoing ambulatory gynecologic endoscopic surgery.

What is already known on this topic?

Given single antiemetic drug has been proved in reducing the incidence of PONV after general anesthesia, and it has been recommended in clinical

practice. The incidence of PONV, however, could not be eliminated in patients undergoing laparoscopic surgery.

What this study adds?

Using multimodal antiemetic management, or dual antiemetic drugs resulted in reducing the incidence of PONV, antiemetic requirements and the severity of PONV during PACU stay and at 24 hours after surgery. It also noted an increasing proportion of 'free from emesis symptoms' in patients undergoing ambulatory gynecologic endoscopic surgery.

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Potential conflict of interest

None.

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การศึกษาการป้องการการเกิดภาวะคลื่นไส้อาเจียนหลังการผ่าตัด โดยใช้การป้องกันแบบองค์รวม (multimodal antiemetic management) ในผู้ป่วยที่ผ่าตัดส่องกล้องทางนรีเวชวิทยาแบบผู้ป่วยนอก

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ภูมิหลัง: *ภาวะคลื่นไส้อาเจียนหลังการส่องกล้องเพื่อการผ่าตัดทางนรีเวชวิทยาพบได้บ่อยและเป็นสาเหตุให้จำหน่ายผู้ป่วยออกจากโรงพยาบาลได้ช้าในกรณีที่ผ่าตัดแบบผู้ป่วยนอก ทางหน่วยงานวิสัญญีโรงพยาบาลสงขลานครินทร์ได้จัดทำแนวทางการป้องกันการเกิดภาวะคลื่นไส้อาเจียนหลังการผ่าตัดสำหรับการผ่าตัดส่องกล้องทางนรีเวชวิทยาโดยใช้หลักการแบบองค์รวม*

วัตถุประสงค์: *ศึกษาประสิทธิภาพของแนวทางดังกล่าวในการป้องกันการเกิดภาวะคลื่นไส้อาเจียนหลังการผ่าตัดแบบส่องกล้องทางนรีเวชวิทยาแบบผู้ป่วยนอก*

วัสดุและวิธีการ: *เป็นการศึกษาแบบสุ่มเปรียบเทียบระหว่างกลุ่มควบคุมและกลุ่มใช้แนวทางการป้องกันการเกิดคลื่นไส้อาเจียนแบบองค์รวม (multimodal management) ผู้ป่วย 340 คนที่ผ่าตัดส่องกล้องทางนรีเวชวิทยาแบบผู้ป่วยนอกถูกเลือกเข้าการศึกษา ผู้ป่วยทุกรายถูกสุ่มเพื่อให้อยู่ในกลุ่มควบคุมหรือกลุ่มที่ใช้แนวทางป้องกัน การเกิดคลื่นไส้อาเจียนแบบองค์รวมภายใต้การระงับความรู้สึกตัวโดยใช้ก๊าซไอระเหยโดยกลุ่มควบคุมนำสลบด้วย thiopental และรักษาความลึกของการสลบด้วยก๊าซระเหยและไนตรัสออกไซด์ ส่วนผู้ป่วยในกลุ่มทดลอง นำสลบด้วย propofol และรักษาความลึกของการสลบด้วยก๊าซระเหยโดยไม่ใช้ไนตรัสออกไซด์ ผู้ป่วยทุกคนจะถูกประเมินความเสี่ยงของการเกิดภาวะคลื่นไส้อาเจียน และจะได้รับยาป้องกันการเกิดคลื่นไส้อาเจียนตามระดับความเสี่ยง โดยกลุ่มควบคุมอาจจะไม่ได้รับยาป้องกันหรือได้รับแค่ยา ondansetron ป้องกันการเกิดคลื่นไส้อาเจียน ส่วนกลุ่มทดลองผู้ป่วยจะได้รับยา ondansetron หรือร่วมกับ dexamethasone หรือร่วมกับ dimenhydrinate ขึ้นอยู่กับระดับความเสี่ยงของการเกิดคลื่นไส้อาเจียนหลังผ่าตัด อุบัติการณ์การเกิดคลื่นไส้อาเจียนและการต้องการใช้ยาแก้คลื่นไส้อาเจียนที่ห้องพักฟื้นจะถูกบันทึก ความรุนแรงของการเกิดคลื่นไส้อาเจียนจะถูกเก็บข้อมูลทุก 30 นาที จนครบ 180 นาที และจะเก็บข้อมูลอีกครั้งที่ 24 ชั่วโมงหลังการผ่าตัดโดยการโทรศัพท์*

ผลการศึกษา: *ผู้ป่วย 166 คนในกลุ่มควบคุมและ 162 คนในกลุ่มทดลองได้ถูกนำข้อมูลมาวิเคราะห์หาความแตกต่าง ระหว่างกลุ่มพบว่าข้อมูลพื้นฐานระหว่างสองกลุ่มไม่มีความแตกต่างกันใน อายุ น้ำหนัก ประวัติการมีภาวะคลื่นไส้อาเจียนชนิดของการผ่าตัด ระยะเวลาที่ใช้ในการผ่าตัดและยาแก้ปวดที่ใช้ระหว่างและหลังการผ่าตัด การศึกษาครั้งนี้ พบว่าผู้ป่วยกลุ่มควบคุมเกิดอุบัติการณ์ภาวะคลื่นไส้อาเจียนหลังการผ่าตัดที่ห้องพักฟื้น (16.9% และ 8.0% ตามลำดับ $p = 0.02$) และที่ 24 ชั่วโมงหลังหลังการผ่าตัด (16.3% และ 5.6% ตามลำดับ $p<0.01$) มากกว่ากลุ่มทดลองอย่างมีนัยสำคัญทางสถิติ ผู้ป่วยกลุ่มควบคุมมีระดับความรุนแรงของการเกิดคลื่นไส้อาเจียนที่รุนแรงกว่ากลุ่มทดลองอย่างมีนัยสำคัญทางสถิติ ที่ 30, 60, 120 นาที ($p = 0.01, 0.03$ และ 0.04 ตามลำดับ) และ ที่ 24 ชั่วโมงหลังการผ่าตัด ($p<0.001$) นอกจากนี้ผู้ป่วยในกลุ่มควบคุมต้องใช้ยาแก้คลื่นไส้อาเจียนสูงกว่า กลุ่มทดลองอย่างมีนัยสำคัญทางสถิติ (19.9% และ 6.8% $p<0.001$)*

สรุป: *การใช้แนวทางป้องกันการเกิดภาวะคลื่นไส้อาเจียนแบบองค์รวมมีประสิทธิภาพในการป้องกันและลดอุบัติการณ์การเกิดอาการคลื่นไส้อาเจียน, ความรุนแรงของการเกิดอาการ และลดการใช้ยารักษาภาวะคลื่นไส้อาเจียนในผู้ป่วยที่ผ่าตัดส่องกล้องทางนรีเวชวิทยาแบบผู้ป่วยนอกได้ เมื่อเปรียบเทียบกับกลุ่มควบคุมที่ใช้วิธีการเดิม*