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The Incidence of Postoperative Retching and Vomiting in the Adult Patient Undergoing Abdominal Surgery Following Intraoperative Administration of Droperidol

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This is to certify that the thesis prepared by Gary L. Miller, entitled "The Incidence of Postoperative Retching and Vomiting in the Adult Patient Undergoing Abdominal Surgery Following Intraoperative Administration of Droperidol," has been approved by this committee as satisfactory completion of the thesis requirement for the degree of Master of Science.

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Table of Contents

List of Tables

Abstract

THE INCIDENCE OF POSTOPERATIVE RETCHING AND VOMITING IN THE ADULT PATIENT UNDERGOING ABDOMINAL SURGERY FOLLOWING INTRAOPERATIVE ADMINISTRATION OF DROPERIDOL

Gary L. Miller, B.S.N.

The complication of postoperative nausea and vomiting is still one of the most common today. The potential for secondary complications associated with retching and vomiting such as aspiration pneumonitis strain of suture line with possible hemorrhage, and potential fluid and electrolyte imbalance makes prevention of retching and vomiting a primary concern in the management of the postoperative patient.

The use of antiemetic drugs to prevent or control postoperative nausea and vomiting is a long-standing practice. Droperidol, an antiemetic, routinely used since being introduced in 1963, has been found to be successful in treating postoperative nausea and vomiting. This study examines the effect of droperidol .018 mg/kg given intramuscularly one half hour prior to the end of anesthesia on postoperative emesis in the adult gynecological patient presenting for total abdominal hysterectomy.

Twelve patients were in this double-blind study, six acted as controls and six were in the experimental group. All subjects were premedicated with morphine sulfate 0.1 mg/kg and glycopycolate 0.2 mg, intramuscularly administered. All were induced with pentathol 4 mg/kg preceded by curare 3 mg and followed by succinylcholine 1.5 mg/kg for intubation. The subjects were maintained on isoflurane, sixty percent

nitrous in oxygen, and pancuronium for relaxation. The subjects were of similar age and weight. Duration of anesthesia was similar with a mean of 2.93 hours overall.

The incidence of retching or vomiting was considered as the same result. The droperidol group had one subject retch only and another retch and vomit. This gave a 33 percent incidence of retching and vomiting. The control group had three subjects retch and vomit, giving a 50 percent incidence. The small sample size provided no statistical significance.

The results showed a trend of decreased vomiting in the adult subject presenting for total abdominal hysterectomy. The routine use of droperidol in this particular population cannot be recommended from these results.

CHAPTER 1

Introduction

Problem Statement

The complication of postoperative nausea and vomiting is still one of the most common today (1,2,3). Patients often reveal that fear of postoperative nausea and vomiting is one of their primary concerns. A prior experience with postoperative nausea and vomiting may increase that patient's stress level and make it much more difficult to emotionally prepare that patient for surgery. The potential for secondary complications associated with retching and vomiting such as aspiration pneumonitis, strain of suture line with possible hemorrhage, cerebral accident due to increased intracranial pressure, potential fluid and electrolyte imbalance, and possible trauma to the esophagus, makes prevention of retching and vomiting a primary concern in the management of the postoperative patient.

The use of antiemetic drugs to prevent or control postoperative nausea and vomiting is a long standing-practice dating back to the 1950's. Droperidol, an antiemetic, routinely used since being introduced in 1963 has been found to be successful in treating postoperative nausea and vomiting (2,4,5,6,7,8). Droperidol acts by blocking the dopaminergic receptors in the Chemoreceptor Trigger Zone (CTZ). This inhibits the transmission of emetic stimuli from the CTZ to the Emesis Center (EC). The EC actually stimulates vomiting. The effectiveness of Droperidol has been often studied but very little

research is based on a milligram per kilogram basis.

The purpose of this study is to arrive at the effectiveness of Droperidol in preventing postoperative retching and vomiting based on a specific milligram per kilogram basis.

Research Question

What is the effect of intramuscular droperidol given intraoperatively 30 minutes prior to the end of anesthesia on the incidence of postoperative retching and vomiting in the adult patient undergoing intra-abdominal surgery without bowel resection, for 24 hours postop?

Definition of Terms

1. Retching: The active attempt of the patient to expel stomach contents without success.
2. Vomiting: The active effort of the patient to expel stomach contents with success.
3. Droperidol (Inapsine): A butyrophenone tranquilizer with alpha adrenergic and dopaminergic antagonistic qualities causing moderate hypotension, sedation, and antiemetic effects.
4. Adult patient: A non-obese, ASA I or II female, 18-49 years of age undergoing an intra-abdominal surgical procedure without bowel resection.
5. ASA: American Society of Anesthesiologists. A categorizing of patient's physical condition.
    A) Class I: "The patient has no organic, physiologic, biochemical, or psychiatric disturbance. The

pathologic process for which the operation is to be performed is localized and does not entail a systemic disturbance."

B) Class II: "Mild to moderate systemic disturbance caused either by the condition to be treated surgically or by other pathophysiologic processes."

6. End of Anesthesia: Removal of the endotracheal tube.

7. Intramuscular: Left deltoid injection.

8. Non-obese: Less than 20 percent above ideal body weight.

Hypothesis

The adult patient will experience no reduction in the incidence of postoperative retching and/or vomiting after receiving droperidol .018 mg/kg IM intra-operatively.

Variables

Dependent: Postoperative retching and vomiting.

Independent: Intramuscular administration of droperidol .018 mg/kg administered intra-operatively.

Assumptions

1. The nursing staff will record all incidents of retching and vomiting postoperatively.

2. The patient will accurately report all incidents of retching and vomiting not recorded by the nursing staff.

Limitations

1. The investigator will rely on the nursing staff to accurately record all incidents of retching and vomiting.

2. The investigator will rely on the skill of the anesthetist to ventilate the patient without pushing air into the stomach.

Delimitations

1. The patient will be assigned to one of two groups, a control or an experimental group, based on a random table of numbers in a double-blind fashion.

2. In an effort to control the variables of postoperative retching and vomiting within this study, a homogeneous group consisting of females, ages 18-49 years, ASA I or II, non-obese, undergoing an intra-abdominal surgical procedure lasting two to four hours without bowel resection were utilized.

Theoretical Framework

Nausea, Vomiting, and Associated Factors

Vomiting is described as the active expulsion of gastric contents through the mouth. This is immediately preceded by tachypnea, salivation, and pupil dilation resulting from an autonomic discharge. There are two areas of the brain responsible for vomiting, the emesis center (EC) and the chemoreceptor trigger zone (CTZ). These two centers are located in the medulla and when sufficiently stimulated, vomiting occurs (9,10).

The EC is located near the dorsolateral border of the lateral reticular formation and ventral to the tractus solitarious and its nucleus. This area of the medulla also contains the respiratory center, salivatory nuclei, vasomotor center, vestibular nuclei, and bulbofacilitatory and inhibitory systems. The EC is located in the center of these regulatory nuclei which explains the patterned

response, earlier described, during vomiting (10). The EC may be directly stimulated by efferent pathways from various locations. For example, mucosal irritation of the gastrointestinal tract, mechanical distention of bowel or biliary tract, myocardial infarction, meniere's disease, vestibular neuronitis, or viral hepatitis may stimulate the EC. The EC may also be indirectly stimulated via the CTZ (3).

The CTZ is located in the medulla superficial to the EC area postrema in the floor of the fourth ventricle. The CTZ can be stimulated by drugs such as digitalis, antibiotics, cytotoxic agents, alcohol, ergots, opiates, and inhalation anesthetics. Also, the CTZ may be stimulated by toxicosis such as diabetic acidosis, uremia, and carcinomatosis, or stimulated by radiation and motion sickness (3,11).

There are numerous factors that correlate with the incidence of vomiting when considering the postoperative patient, i.e., sex, age, weight, preoperative medication, anesthetic technique, operative site, duration, postoperative pain, and gonadotropin levels (9,12,13,14)

Studies have shown that female patients experience an increased incidence of vomiting as compared to male patients (9). Janhunen and Tammisto reported an 18.1 percent difference in the incidence of postoperative vomiting between male and female patients (15). A difference of 15.8 percent was reported by Iwamoto and Schwartz (4). The difference in the incidence of postoperative vomiting between the sexes is also interrelated to the age of the patient.

Various age groups of adult patients experienced a difference in the incidence of postoperative vomiting (6,12,14,16) Females 40-49 years of age and males 60-69 years of age experienced the highest incidence of postoperative vomiting compared to other age groups from

20-29 through 60-69 years of age (15).

The obese patient, either male or female, experiences a higher incidence of postoperative nausea and vomiting (6,7,12,14). Bellville postulated that obese patients have a large fat reservoir to absorb the anesthetics as well as other drugs which chemically stimulate nausea and vomiting (9).

The pre-operative medication also plays a role in the incidence of postoperative nausea and vomiting (7). It is generally known that narcotics are associated with an increased incidence of vomiting postoperatively when used as a premedicant. Morphine, with a 42 percent incidence of postoperative nausea and vomiting, has been the most extensively studied, but meperidine has also been implicated in postoperative nausea and vomiting (14). Bellville found a biphasic dose relationship curve when comparing incidence of postoperative nausea and vomiting to the dose of meperidine administered. The incidence of nausea and vomiting was higher at doses lower than and higher than one milligram/kilogram (9).

The anesthetic technique has long been implicated in the incidence of postoperative nausea and vomiting. Bonica et al. (12) implicated ether to have an incidence of 64.2 percent nausea and vomiting. However, Bellville equated this high percentage with anesthetic depth when ether was used for muscle relaxation and was obtained by deep levels of anesthesia (17). Bellville found the incidence of postoperative nausea and vomiting with cyclopropane to be 26 percent (9). Halothane was later studied and found to have a low incidence of postoperative nausea and vomiting of 19.5 percent (13). Ethrane was studied for its contribution to postoperative nausea and

vomiting by Iwamoto and Schwartz (4). Results of 42.1 percent incidence of nausea and vomiting were obtained. In another study, nitrous oxide/oxygen/fentanyl anesthetic technique was compared to isoflurane/fentanyl/oxygen and isoflurane/oxygen technique. Of the patients from each group that experienced nausea and vomiting, 61 percent received 70 percent nitrous oxide/oxygen/fentanyl, 30 percent received 1-1.5 MAC isoflurane/oxygen/fentanyl, and 25 percent received 1-1.5 MAC isoflurane/oxygen (1). Besides the agent used, the skill of the anesthetist must be considered as part of the anesthetic technique. Improper ventilation can lead to air trapped in the stomach, elevation of PCO_2, decreased PO_2, and hypotension, all of which can lead to increased risk of vomiting (9,17).

The operative site has been implicated in contributing to the incidence of postoperative vomiting and retching. Intra-abdominal procedures resulted in a higher incidence compared to other operative sites (2,9,14,15,17). Mortensen et al. reported 61.1 percent and Bonica reported 44.2 percent incidence of postoperative nausea and vomiting following intra-abdominal procedures (6,12).

The duration of anesthesia has been correlated with an increased incidence of postoperative nausea and vomiting (2,4,7,14). However, most studies used short cases lasting less than 15 minutes to 2 hours. Bellville studied a greater range divided into one hour blocks and found a significant difference (17). He found only 17.5 percent incidence with cases 1/2 hour to 1 1/2 hours, 28.4 percent with 1 1/2 hours to 2 1/2 hours, and 46 percent incidence with 2 1/2 to 3 1/2 hours.

Postoperative pain and its treatment play a role in the incidence of postoperative nausea and vomiting. Bellville (9) found that 41

percent of those that had emesis experienced pain. While it is difficult to evaluate postoperative analgesics for pain and their significance towards nausea and vomiting, narcotics have already been implicated concerning nausea and vomiting, and one can assume a contribution from them. Attempts to determine a significance proved unsuccessful (15).

The level of gonadotropin associated with the third and fourth week of the menstrual cycle has been implicated in an increased incidence of postoperative nausea and vomiting (9,14,15). Bellville goes on to say that there is a definitive correlation between the greatest incidence of nausea and vomiting, and the gonadotropin levels peaking between the sixth through the twelfth week of pregnancy. However, no difference in postoperative nausea and vomiting exist between premenopausal and postmenopausal women (17).

Droperidol

Droperidol is a butyrophenone tranquilizer and neuroleptic agent. It was first synthesized in Belgium by Janssen. In the original studies, Janssen discovered that droperidol had a potent antiemetic effect (18).

While droperidol's original anesthetic use as a premedicant, induction agent, or use with fentanyl as a neuroleptanesthetic continued, more studies appeared about it's superior antiemetic effects (2,3,4,5,6,7,8). This effect is caused by droperidol blocking dopaminergic receptors in the chemoreceptor trigger zone (CTZ). This antagonist activity inhibits the transmission of emetic stimuli from the CTZ to the emesis center (EC)(19,20,21). Loeser et al. suggests that droperidol may also have a direct effect on the EC itself (5).

Droperidol has also demonstrated alpha blocking ability resulting in moderate decrease in blood pressure after administration of moderate doses of 5 mg or greater in adults (20,22).

Droperidol was found to be effective as an antiemetic 30 minutes after intramuscular administration and last up to 24 hours with its peak effect 6 to 12 hours post administration (2).

The metabolism of droperidol is very rapid. The elimination half-life in human subjects was uniformly 134 minutes, suggesting a similar response between patients. The metabolites are inactive and make up 86 percent of the excreted product. Urinary excretion makes up 75 percent of the products (19). After 24 hours, 83 percent of the drug had been excreted (21).

Conclusion

Nursing goals of caring for the postoperative patient suffering from nausea and vomiting are to maintain proper hygiene, maintain fluid and electrolyte balance, achieve rest, prevent physical injury, achieve comfort, and prevent psychological alteration.

The physician's goal is to stop emesis by prescribing the antiemetic that is currently the most effective drug available.

The interrelationship that the medical discipline and the nursing discipline have is a co-existing responsibility to therapeutically intervene and correct the postoperative complication.

CHAPTER 2

Literature Review

In the 1950's Borison and Wang contributed immensely to our understanding of the mechanism of nausea and vomiting. Through research with cats using implanted electrodes they were able to locate two separate areas in the medulla responsible for vomiting (23). The incidence of postoperative nausea and vomiting was quite high at this time and was generally attributed to ether, the primary anesthetic of that time (12). Research of preventing postoperative nausea and vomiting was primarily focused on antihistamines and anticholinergics. The list of variables associated with postoperative nausea and vomiting was growing. Bellville et al. published an article outlining a research format to control these variables and to accurately compare the many antiemetics entering the market (24). Variations on this format are still used today for research of antiemetics.

In the early 1960's, phenothiazines were considered the drug of choice for postoperative nausea and vomiting (9). Then Janssen et al (18) introduced a butyrophenone called droperidol with potent antiemetic effects. Research was also continuing to define the anatomy involved in the process of vomiting (10). By 1969, halothane was well established as an anesthetic and studies revealed it to have a reduced incidence of postoperative nausea and vomiting when compared to ether and cyclopropane. Gold reported a 14.3 percent incidence of postoperative nausea and vomiting associated with halothane (13). That

same study resulted in 51.8 percent with ether and 43.6 percent with cycloprane. Gold's study utilized 1223 women undergoing gynecological surgery.

By 1970, the list of variables associated with postoperative nausea and vomiting was nearly complete. McKie reviewed the literature and published the following list: anesthetic agents and technique, premedicant drugs, operative site, age and sex, duration of operation, hypoxia, hypercarbia and hypotension, rough handling of the patient, experience of the anesthetist, physical status, use of nasogastric tube, position, emotional factors, and postoperative pain (14). Janhunen and Tammisto further supported McKie's findings (15). Later Cressman et al. and Soudijn et al., in separate studies, contributed to the understanding of the absorption, metabolism, excretion, and mechanism of action of droperidol in human subjects (19,21). This lead to an increase in the studies of droperidol as an antiemetic agent. Patton et al. compared it in a double blind study using droperidol and a placebo (7). His study, utilized 41 patients undergoing hysterectomy with ether anesthesia and revealed a 56 percent difference in the incidence of postoperative nausea and vomiting during the first six hours. Winning et al. compared droperidol to diphenidol and a placebo in 21 patients and found that droperidol resulted in a 14 percent difference in the incidence of postoperative nausea and vomiting compared to diphenidol and a 22 percent difference compared to the placebo (8). Iwamoto and Schwartz studied the effects of droperidol on 78 ophthalmic surgery patients using enflurane as the anesthetic (4). The placebo group experienced an incidence of 42 percent postoperative nausea and vomiting. The patients who received droperidol experienced

an incidence of 16 percent postoperative nausea and vomiting. Korttila et al. compared domperidone, droperidol, and metaclopramide in the prevention and treatment of nausea and vomiting following balanced general anesthesia (2). Korttila used a lower dose of droperidol than usually studied, 1.25 milligrams. Once again, droperidol provided the lowest incidence, 17 percent, of postoperative nausea and vomiting compared to the placebo, 40 percent; metaclopramide and domperidone, 35 and 40 percent, respectively in the 185 females undergoing orthopedic surgery. A similar comparison of droperidol, haloperidol and prochlorperazine proved that droperidol was the superior antiemetic (5). Droperidol has also been studied for characteristics other than antiemetic effects. For example, Soroker et al. compared diazepam and droperidol for their effects on respiratory function. Diazepam 10 milligrams didn't effect respiratory function, but droperidol 5 milligrams reduced the tidal volume in all 14 normal subjects. However, the reduction of 13.3 percent was not enough to alter blood gas tensions (25).

The 1980's have brought more research on the variables implicated in postoperative nausea and vomiting and more research on the potent antiemetic, droperidol. Perreault et al. studied variations in middle ear pressure during nitrous oxide administration and found, in patients with blocked eustachian tubes, that negative pressure in the immediate postoperative period was sufficient to cause irritation of the vestibular system leading to nausea and vomiting (26). Another study of 77 females found a 61 percent incidence of postoperative nausea and vomiting associated with 70 percent nitrous oxide (1). Mortensen studied the antiemetic effects of droperidol on 300 gynecological

patients using nitrous oxide 67 percent in oxygen and pancuronium. Two different doses were used as well as a placebo . Mortensen found 34.4 percent incidence postoperative nausea and vomiting in the placebo group and in the 2.5 and 5.0 milligram groups, 15.2 and 10.3 percent were respectively recorded (6). Santos and Datta studied the effects of droperidol on 50 subjects undergoing elective caesarean under spinal anesthesia (27). Their placebo group experienced 40 percent and their droperidol group experienced 12 percent postoperative nausea and/or vomiting. Interestingly enough, the droperidol group experienced only nausea 12 percent and the placebo group experienced 12 percent vomiting.

This study will attempt to add to the body of knowledge on the use of droperidol in adults. The research is similar to that of Mortensen (6). The research is attempting to update the efficacy of droperidol with today's anesthetics. To date, no published research exists utilizing isoflurane, quickly becoming the standard inhalation anesthetic, and the concomitant use of droperidol as an antiemetic.

CHAPTER 3

Methodology

Research Design

This investigator conformed to a quasi-experimental design. There were two groups that patients were randomly assigned to. Patients in group I received droperidol .018 mg/kg intramuscularly 30 minutes prior to the end of anesthesia. Group II received no antiemetic treatment intra-operatively.

The subjects were a sample of convenience and were assigned to a group based on random sampling from a table of random numbers. Patient numbers were assigned on the basis of the sequence that patients consented to the study. The selection of group assignment was double blind.

Population, Sample, Setting

The population of this study consisted of the patients assigned to the gynecological surgery service of a 1,000 bed teaching hospital located in the southeast United States. A sample of convenience was drawn from this population which met the criteria of this study. The subjects were female, 18-49 years of age, ASA class I or II, nonobese, and scheduled for intra-abdominal gynecological surgery under endotracheal general anesthesia.

Protocol

The protocol and consent forms were approved by the Committee on

the Conduct of Human Research. The protocol was discussed with the patient the night before surgery and informed consent was obtained.

Group I and II patients were premedicated with morphine sulfate .1 mg/kg and glycopycolate .2 mg intramuscularly. All premedications were given on call to the operating room.

A standard induction was used on both groups consisting of D-tubo curare 3 milligrams, pre oxygenate with 100 percent oxygen for 5 minutes, pentathol 50 milligrams test dose followed by 4 mg/kg, Succinylcholine 1.5 mg/kg, laryngoscopy and endotracheal intubation.

Maintenance anesthesia was by isoflurane, nitrous oxide 60 percent in oxygen, and muscle relaxation by pancuronium .04 mg/kg as needed. Appropriate intravenous fluid administration and monitoring were conducted.

Subjects were eliminated from the study if the pre-operative medication was inadequate and the patient appeared emotionally distraught. Also, patients were eliminated if the induction resulted in air in the stomach, hypoxia, hypercarbia, or hypotension greater than 30 percent of baseline. Furthermore, a range of two to four hours for the entire procedure was established to make the duration consistent.

Approximately 30 minutes before completion of anesthesia, group I received droperidol .018 mg/kg intramuscularly in the left deltoid muscle. Group II received one half milliliter normal saline at that same time in the same fashion.

Data collection of retching and vomiting over the next 24 hours was accomplished by review of the anesthesia record, recovery room record, and the floor nursing record. The patient was also questioned

as to the incidence of and frequency of retching and/or vomiting. Nausea was not looked at by the investigator to eliminate the subjective nature of collecting that data.

CHAPTER 4

Analysis of Data

A total of 13 subjects were in this study. One subject was excluded from the data analysis due to failure to meet intraoperative and postoperative criteria. Subject number three had a nasogastric tube placed intraoperatively secondary to the presence of air in the stomach after induction. This left a total of 12 subjects for data analysis.

There were six control subjects in the study. The mean age was 38 years (range 31 to 45 years), and the mean weight was 68.4 kilograms (range 56 to 76.4 kilograms). The mean anesthesia time was 2.88 hours (range 2.5 to 3.2 hours). Of the six control subjects, three experienced retching and vomiting postoperatively. Two out of the three control subjects which experienced retching and vomiting complained of postoperative pain and received morphine sulphate for analgesia in the recovery room.

There were six subjects in the experimental group. The mean age was 37 years (range 28 to 46 years), and the mean weight was 54 kilograms (range 49 to 60 kilograms). Mean anesthesia time was 2.98 hours (range 2.7 to 3.4 hours). One out of the six experimental subjects experienced retching and vomiting postoperatively. Also, one out of six experienced only retching. The one experimental subject that experienced postoperative retching and vomiting complained of postoperative pain and received morphine sulphate for analgesia in the

recovery room.

All 12 subjects received identical preoperative medications and anesthetics. All 12 subjects underwent total abdominal hysterectomies. Of the six control subjects, three (50 percent) retched and/or vomited. The six experimental subjects had two (33 percent) retch and/or vomit.

The small sample size of this study requiring a 2 x 2 table dictated that the Fisher Exact Test (one tail) be utilized for statistical analysis (29). The results proved to be statistically insignificant at the .05 level and failed to reject the null hypothesis. Therefore, no difference in retching and/or vomiting between control and experimental exists (Table 1). Analysis of subjects' weight and duration of anesthesia also proved to be statistically insignificant based on the student's T test. However, the mean age of the subjects which retched and/or vomited compared to those who did not was significant at the .05 level. Further scrutinizing this data with the Fisher Exact Test demonstrated that all of the subjects 40 to 49 years of age experienced retching and/or vomiting. This age group represents four out of the five subjects that experienced retching and/or vomiting (Table 2). Analysis of subjects who received postoperative morphine sulphate for complaints of pain proved statistically insignificant on the .05 level. Postoperative drowsiness was reported more frequently in the subjects who received droperidol.

Table 1

Difference in Retching and/or Vomiting
in Control and Experimental
(P<.05)

Frequency Percent Row Pct Col Pct	N	Y	Total
C	3 25.00 50.00 42.86	3 25.00 50.00 60.00	6 50.00
E	4 33.33 66.67 57.14	2 16.67 33.33 40.00	6 66.67
Total	7 58.33	5 41.67	12 100.00

Key:

C - control
E - experimental
N - no retch and/or vomit
Y - retch and/or vomit

Table 2

Difference in Retching and/or Vomiting by Age
(P>.05)

Frequency Percent Row Pct Col Pct	N	Y	Total
40 and Over	0 0 0 0	4 33.33 100.00 80.00	4 33.33
Less than 40	7 58.33 87.50 100.00	1 8.33 12.50 20.00	80 66.67
Total	7 58.33	5 41.67	12 100.00

Key:

Age: 40 and over
less than 40
N - no retch and/or vomit
Y - retch and/or vomit

CHAPTER 5

Discussion

The overall incidence of retching and/or vomiting in this study was 50 percent in the control group and 33 percent in the experimental group. While it has been noted that the sample size prevents statistical significance, possible trends may exist that are similar to previous studies (2,6,7). The age of the subject and its effect on postoperative retching and vomiting proved statistically significant on the .05 level. This correlated with Janhunen and Tammisto which found females age 40-49 years had the highest incidence of vomiting (15).

Most variables in this study were controlled. The sex, weight, age, type of operation, duration, type of anesthetic, and preoperative medication were all controlled. However, subjective evaluation was required as to the emotional status of the patient preoperatively as well as quality of induction by the anesthetist. The very nature of subjective evaluation requires comment as to possible limitations on this study.

Recommendations

The following recommendations for future research are suggested:

1. Repeat study with an increased sample size to determine if results would be statistically significant.
2. Repeat study with an increased sample utilizing only 40-49 year age group to determine if prophylactic treatment would be statistically significant.

3. Repeat study with increased sample size to determine effect of postoperative administration of narcotics on patients treated with droperidol.

Conclusion

While the results of this study have not been statistically significant, a trend of decreased retching and vomiting exists in those subjects who received droperidol. Therefore, droperidol can not be recommended as routine prophylaxis for the adult female presenting for total abdominal hysterectomy.

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Appendix A

Consent Form

The purpose of this study is to determine the effectiveness of a prescribed dosage of Droperidol in preventing postoperative retching and vomiting.

Nonpregnant patients, like yourself, undergoing abdominal surgery are at an increased risk of suffering from retching and vomiting after the operation. It is known that Droperidol (an anti-nausea drug) can reduce the occurance of retching and vomiting in the postoperative period. Droperidol has been used for this purpose since 1963.

Should you decide to participate in this study you will be randomly assigned to one of two groups:

Group I - Will receive a routine preoperative medication.

Group II - Will receive a routine preoperative medication plus a routine dose of Droperidol during the operation.

Upon arrival to the operating room a routine intravenous infusion will be started. Your heart beat and blood pressure will be monitored and anesthesia administered.

The side of effects of Droperidol may include: mild to moderate hypotension (low blood pressure) and postoperative drowsiness.

The conduct of anesthesia will be the same regardless of whether or not you participate in this study. If at any time during anesthesia your safety is compromised, the study will be discontinued.

I agree that the information obtained from this study may be used for teaching or for publication in scientific literature. My name and

identity will be kept confidential.

I understand that in the event of any physical and/or mental injury resulting from my participation in this study, Virginia Commonwealth University will not offer compensation or medical treatment.

_____ _____

signature date

_____

witness

Appendix B

Data Collection Sheet

Patient Data

Subject #_____ Age_____
ASA_____ Wt_____
Procedure_____

Pre-op: satisfactory / unsatisfactory

Induction Time:_____

Problems:_____

Length of Anesthesia:_____hours

Recovery Room

Required narcotics:_____
Problems:_____

TIME	FREQUENCY RETCHING	VOMITING

COMMENTS:

Appendix C

Raw Data

Subject Number	Experimental/ Control	Age in Years	Weight in Kilograms	Duration of Anesthesia	Postop Pain and Tx Morphine mg.	Retch and/or Vomit Frequency	Length Time after Anesthesia
1	C	38	76.4	2.5	0	1	14.0
2	C	44	76	3.2	4	3	1.05
3	excluded from study	19	58	2.6	6	0	--
4	C	36	56	2.8	0	0	--
5	C	35	68	2.9	4	0	--
6	E	34	60	3.1	0	0	--
7	E	28	50	2.8	0	0	--
8	E	46	49	3.1	2	1	6.65
9	E	41	55	3.4	0	1	7.76
10	E	38	60	2.8	0	0	--
11	C	31	62	2.9	4	0	--
12	E	36	50	2.7	0	0	--
13	C	45	72	3.0	4	1	2.75

Vita