

ORIGINAL RESEARCH

Role of intravenous dextrose on reducing postoperative nausea and vomiting during middle ear surgeries

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ABSTRACT

Background: Under local or general anesthesia, middle ear surgeries (mastoidectomy and tympanoplasty) are complicated by a high rate of postoperative nausea and vomiting. The present study evaluated the role of intravenous dextrose on reducing postoperative nausea and vomiting during middle ear surgeries. **Materials & Methods:** 80 healthy patients scheduled for tympanoplasty under general anesthesia of both genders were divided into 2 groups of 40 each. Group I received Ringer's lactate solution and group II received 5% dextrose in Ringer's lactate solution intravenously following surgery. Postoperative nausea and vomiting scores, antiemetic doses were recorded. **Results:** The mean duration of surgery (min) was 104.2 and 103.5, duration of anaesthesia (min) was 118.3 and 119.0, intra-operative narcotic used (mg) was 115.4 and 115.7 and intra-operative blood loss (ml) was 18.4 and 17.5 in group I and II respectively. PON was seen in 20 and 15, POV in 4 and 3 in group I and II respectively. Average emetic episodes was 1.7 and 0.82, antiemetic used per individual (mg) was 3.2 and 1.4 and mean duration of stay in PACU (min) was 184.2 and 140.7 in group I and II respectively. The difference was significant ($P < 0.05$). **Conclusion:** By reducing the amount of rescue antiemetic used and the length of stay in the post-anesthesia care unit, a postoperative 5% intravenous infusion of dextrose led to better management of postoperative emesis.

Keywords: middle ear surgeries, nausea, vomiting

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INTRODUCTION

Under local or general anesthesia, middle ear surgeries (mastoidectomy and tympanoplasty) are complicated by a high rate of postoperative nausea and vomiting. When no preventative antiemetic was administered, the reported incidence ranged from 62% to 80%.¹ The second most frequent side effect of surgery and anesthesia is postoperative nausea and vomiting (PONV), which can lead to improper oral intake, electrolyte imbalance, dehydration, unanticipated readmissions, delayed release, higher rates of stomach aspiration, and wound dehiscence.² As a result, PONV prophylaxis is essential, cost-effective, enhances patient satisfaction, and improves results.³ Pharmacologic treatments that block emetogenic receptors have demonstrated a 20% reduction in PONV incidence.⁴ Fluid administration and perioperative carbohydrate (dextrose) loading are two

other treatments that have recently been suggested.⁵ Despite inconsistent results, numerous studies have documented the use of perioperative intravenous (IV) fluid treatment and its impact on the incidence and severity of PONV. The data that indicate the use of IV dextrose solution following surgery to reduce nausea and vomiting are limited and shown mixed results.⁶ The present study evaluated the role of intravenous dextrose on reducing postoperative nausea and vomiting during middle ear surgeries.

MATERIALS & METHODS

The study was carried out on 80 healthy patients scheduled for tympanoplasty under general anesthesia of both genders. All gave their written consent to participate in the study. Data such as name, age, gender etc. was recorded. They were divided into 2 groups of 40 each. Group I received Ringer's lactate solution and group II

received 5% dextrose in Ringer's lactate solution intravenously following surgery. A standard technique was applied for general anesthesia in all patients and single dose of ondansetron 4 mg was given intravenously half-hour before recovery from anesthesia. Postoperative nausea and vomiting scores,

antiemetic doses were recorded at 0, 30, 60, 90, 120 min and 24 hours. The duration of stay in post-anesthesia care unit was also noted. Results thus obtained were subjected to statistical analysis. P value < 0.05 was considered significant.

RESULTS

Table I: Baseline characteristics

Parameters	Group I	Group II	P value
Duration of surgery (min)	104.2	103.5	0.73
Duration of anaesthesia (min)	118.3	119.0	0.85
Intra-operative narcotic used (mg)	115.4	115.7	0.14
Intra-operative blood loss (ml)	18.4	17.5	0.36

Table I shows that mean duration of surgery (min) was 104.2 and 103.5, duration of anaesthesia (min) was 118.3 and 119.0, intra-operative narcotic used (mg) was 115.4 and 115.7 and intra-operative blood loss (ml) was 18.4 and 17.5 in group I and II respectively. The difference was significant ($P < 0.05$).

Graph I: Baseline characteristics

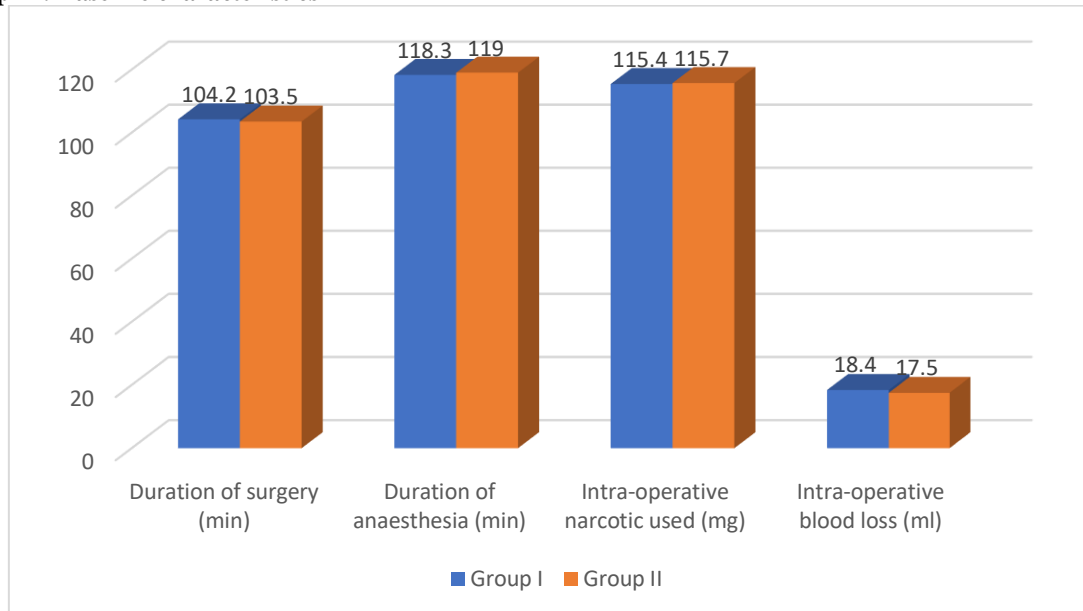
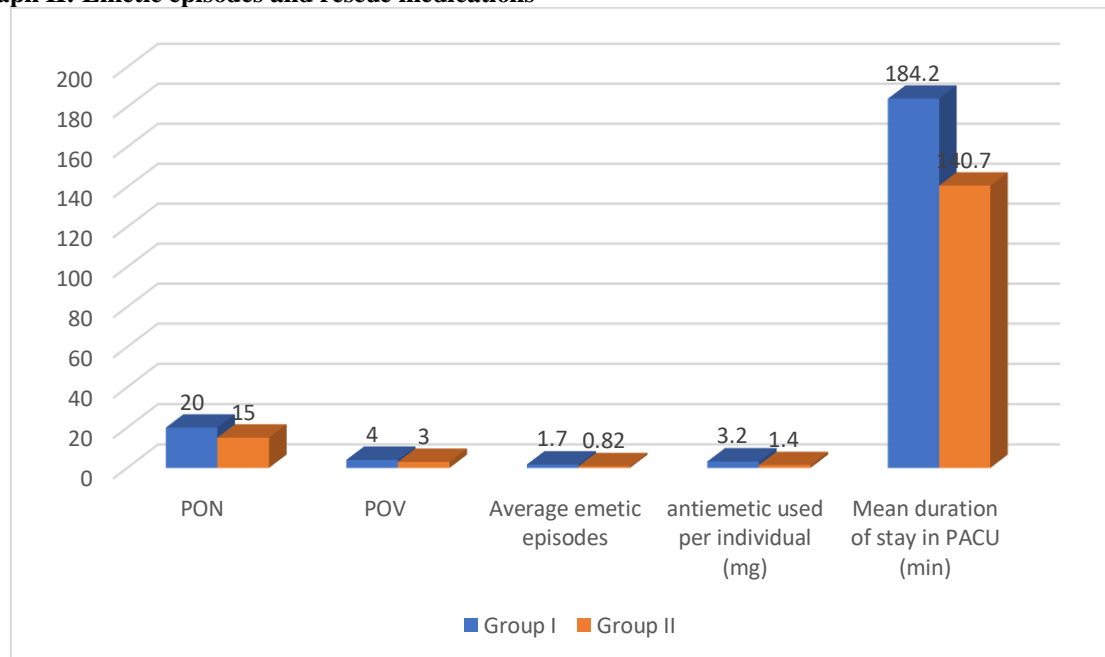


Table II: Emetic episodes and rescue medications

Parameters	Group I	Group II	P value
PON	20	15	0.01
POV	4	3	0.72
Average emetic episodes	1.7	0.82	0.01
antiemetic used per individual (mg)	3.2	1.4	0.03
Mean duration of stay in PACU (min)	184.2	140.7	0.05

Table II, graph I shows that PON was seen in 20 and 15, POV in 4 and 3 in group I and II respectively. Average emetic episodes was 1.7 and 0.82, antiemetic used per individual (mg) was 3.2 and 1.4 and mean duration of stay in PACU (min) was 184.2 and 140.7 in group I and II respectively. The difference was significant ($P < 0.05$).

Graph II: Emetic episodes and rescue medications

DISCUSSION

PONV has a number of significant impacts on a procedure's ultimate cost and therapeutic result.⁷ Furthermore, the most widely utilized preventive treatments center on treating patients with additional medications, which adds to their load and exposes them to more dangerous side effects.⁸ Conversely, oral glucose is a well-known treatment for emesis that poses little to no risk to people who do not have diabetes.^{9,10} The present study evaluated the role of intravenous dextrose on reducing postoperative nausea and vomiting during middle ear surgeries.

We found that mean duration of surgery (min) was 104.2 and 103.5, duration of anaesthesia (min) was 118.3 and 119.0, intra-operative narcotic used (mg) was 115.4 and 115.7 and intra-operative blood loss (ml) was 18.4 and 17.5 in group I and II respectively. Irkal et al¹¹ tested the role of intravenous 5% dextrose on reducing the frequency of postoperative nausea and vomiting. The participants were randomized into two groups (n=45) to receive either Ringer's lactate solution (group C) or 5% dextrose in Ringer's lactate solution (group D) intravenously following surgery. A standard technique was applied for general anaesthesia in all patients and single dose of ondansetron 4 mg was given intravenously half-hour before recovery from anaesthesia. Postoperative nausea and vomiting scores, antiemetic doses were recorded at 0, 30, 60, 90, 120 min and 24 hours. Conversely, patients in group D consumed less antiemetic doses ($P = 0.004$), and had a short duration of stay in the postanesthesia care unit when compared with patients in group C.

We found that PON was seen in 20 and 15, POV in 4 and 3 in group I and II respectively. Average emetic episodes was 1.7 and 0.82, antiemetic used per individual (mg) was 3.2 and 1.4 and mean duration of stay in PACU (min) was 184.2 and 140.7 in group I

and II respectively. Dabu et al¹² determined whether the rate of PONV can be decreased by postoperative administration of IV dextrose bolus. They enrolled 62 nondiabetic, ASA class I or II nonsmoking outpatients scheduled for gynecologic laparoscopic and hysteroscopic procedures. Patients were randomized into 2 groups: the treatment group received dextrose 5% in Ringer lactate solution, and the control (placebo) group received Ringer lactate solution given immediately after surgery. All patients underwent a standardized general anaesthesia and received 1 dose of antiemetic a half hour before emergence from anaesthesia. PONV scores, antiemetic rescue medications, narcotic consumption, and discharge time were recorded in the postanesthesia care unit (PACU) in half-hour intervals. The 2 groups were similar with regard to age, weight, anxiety scores, prior PONV, non per os status, presurgical glucose, anaesthetic duration, intraoperative narcotic use, and total weight-based fluid volume received. Postoperative nausea scores were not significantly different in the dextrose group compared with the control group ($P > 0.05$) after Bonferroni correction for repeated measurements over time. However, patients who received dextrose 5% in Ringer lactate solution consumed less rescue antiemetic medications (ratio mean difference, 0.56; 95% confidence interval, 0.39-0.82; $P = 0.02$), and had a shorter length of stay in the PACU (ratio mean difference, 0.80; 95% confidence interval, 0.66-0.97; $P = 0.03$) compared with patients in the control group.

The shortcoming of the study is small sample size.

CONCLUSION

Authors found that by reducing the amount of rescue antiemetic used and the length of stay in the postanesthesia care unit, a postoperative 5% intravenous

infusion of dextrose led to better management of postoperative emesis.

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