

## Harsukh Educational Charitable Society

### International Journal of Community Health and Medical Research

Journal home page: [www.ijchmr.com](http://www.ijchmr.com)

doi: 10.21276/ijchmr

Official Publication of "Harsukh Educational Charitable Society" [Regd.]

ISSN E: 2457-0117

ISSN P: 2581-5040

RNI No. - PUNENG/2017/75049

Index Copernicus value 2016 = 52.13

## Original Article

### Comparison Of PONV Score Using Ringer's Solution And 5% Dextrose In Patients Of Laproscopic Cholecystectomy- A Clinical Study

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#### ABSTRACT

**Background:** Post-operative nausea and vomiting (PONV) is a common and distressing complication after anaesthesia and surgery. The present study was conducted to determine the effect of dextrose in LC patients in preventing PONV. **Materials & Methods:** The present study was conducted on 200 patients of both genders. All were selected for LC under general anaesthesia. They were divided into 2 groups. Group I patients received an infusion of 500 cc lactated Ringer's solution and group II received 5% dextrose in lactated Ringer's solution over a period of 30 min. All patients rated their nausea and vomiting intensity using the verbal rating scale immediately at post-anaesthesia care unit arrival; 60 and 120 min after arriving at the PACU and 12 and 24 h after surgery. **Results:** Nausea score at 60 minutes (N1) was 1 in group II and 5.2 in group I, N2 was 0.86 in group II and 4.2 in group I, N3 was 1.24 in group II and 2.84 in group I and N4 was 0.2 in group II and 0.1 in group I. The difference was significant ( $P < 0.05$ ). Vomiting score T1 was 5.26 in group I and 1 in group II, T2 was 1.32 in group I and 0.63 in group II, T3 was 2.48 in group I and 1.24 in group II and T4 was 1.42 in group I and 0.82 in group II. The difference was statistically significant ( $P < 0.05$ ). **Conclusion:** Author found that administration of IV dextrose before anaesthesia induction may be recommended as an effective and safe method for the prophylaxis of PONV after LC.

**Key words:** Dextrose, Nausea, Vomiting

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**This article may be cited as:** Lakhotia R, Longani S, Singh MK, Aggarwal A, Bogra J, Mishra LD. Comparison of PONV Score Using Ringer's Solution And 5% Dextrose In Patients Of Laproscopic Cholecystectomy- A Clinical Study. HECS Int J Comm Health Med Res 2018; 4(3):17-19

#### INTRODUCTION

Post-operative nausea and vomiting (PONV) is a common and distressing complication after anaesthesia and surgery. The true incidence of PONV is difficult to determine because of the lack of a single stimulus of onset as well as the range of possible etiologies. In the absence of antiemetic treatment, the incidence of PONV is estimated to be 25% to 30% for all surgical interventions and patient populations.<sup>1</sup>

Although PONV is usually self-limiting and non-fatal, it is unpleasant and leads to considerable post-operative discomfort and dissatisfaction. For most surgical patients, PONV is a greater concern than is post-operative pain and patients continue to rank PONV as the most unfavourable complication.<sup>2</sup>

New guidelines state that cholecystectomy and laparoscopic surgery are associated with higher PONV incidence. Research has established that PONV incidence is higher after laparoscopic cholecystectomy (LC) than after other types of surgery. Propofol

use in maintaining anaesthesia also reduces PONV. Patients administered propofol to induce anaesthesia have a lower incidence of PONV after LC than do those administered thiopentone/halothane for anaesthesia.<sup>3</sup> Different pharmacological and non-pharmacological approaches have been used for preventing PONV. Results have been presented for perioperative fluid therapy and dextrose administration, two proposed strategies for preventing PONV. In two recently published studies investigating the effect of post-anaesthesia intravenous (IV) dextrose 5% on PONV, one reported a positive preventive effect; however, the other study did not confirm this finding.<sup>4</sup> The present study was conducted to determine the effect of dextrose in LC patients in preventing PONV.

#### MATERIALS & METHODS

The present study was conducted in the department of Anaesthesia. It comprised of 200 patients of both genders. All were selected for

LC under general anesthesia. They were informed regarding the study and written consent was obtained. Ethical clearance was taken prior to the study. General information such as name, age, gender etc. was recorded. They were divided into 2 groups. Group I patients received an infusion of 500 cc lactated Ringer's solution and group II received 5% dextrose in lactated Ringer's solution over a period of 30 min.

All the patients received general anaesthesia using the same protocol. As for pre-medication, all patients received IV midazolam (0.02 mg/kg) and fentanyl (2µg/kg) before anaesthesia induction. We induced general anaesthesia with propofol (2–2.5 mg/kg) and cisatracurium (0.15 mg/kg) and maintained it with 50% oxygen,

All patients rated their nausea and vomiting intensity using the verbal rating scale immediately at post-anaesthesia care unit arrival; 60 and 120 min after arriving at the PACU and 12 and 24 h after surgery. Results thus obtained were subjected to statistical analysis using chi-square test. P value less than 0.05 was considered significant.

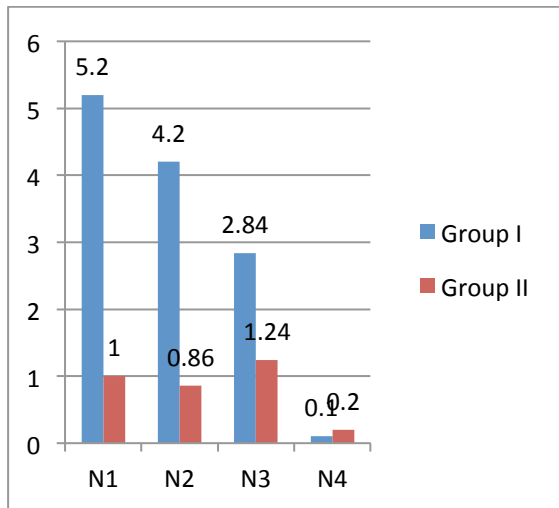
**RESULTS**

Total- 200		
Group I (Ringer's solution)	Group II (5% dextrose)	P value
100	100	1

**Table I Distribution of patients**

Table I shows that group I patients (100) received an infusion of 500 cc lactated Ringer's solution and group II (100) received 5% dextrose in lactated Ringer's solution. The difference was non-significant (P= 1).

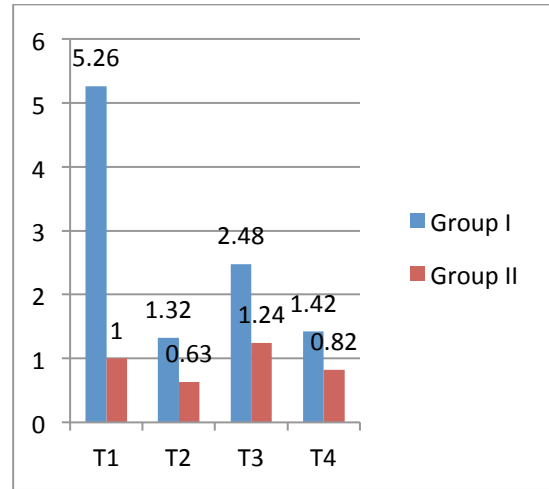
**Graph I Nausea score in both groups**



Graph I shows that nausea score at 60 minutes (N1) was 1 in group II and 5.2 in group I, N2 was 0.86 in group II and 4.2 in group I, N3 was 1.24 in group II and 2.84 in group I and N4 was 0.2 in group II and 0.1 in group I. The difference was significant (P< 0.05). Graph II shows that vomiting score T1 was 5.26 in group I and 1 in group II, T2 was 1.32 in group I and 0.63 in group II, T3 was 2.48 in group I and 1.24 in group II and T4 was 1.42 in group I and 0.82 in group II. The difference was statistically significant (P< 0.05).

I and 0.82 in group II. The difference was statistically significant (P< 0.05).

**Graph II Vomiting score in both groups**



**DISCUSSION**

LC has been introduced in cholelithiasis management; however, the evidence shows excessive episodes of PONV after LC. Many studies have been conducted to evaluate the efficacy of different antiemetic medications in preventing PONV after LC, with a variable success rate. Such medication may also be problematic in terms of side effects including hypotension, dysphoria, excessive sedation, hallucination and dry mouth.<sup>5</sup> Numerous agents have been used to treat PONV at varying dosages and time intervals. Parameters such as nausea and vomiting scores for 4 hours in the early postoperative period or in the postoperative 24 hours, number of episodes and severity of vomiting, number of antiemetics required, amount of antiemetics used, hospitalization time, and problems caused by nausea and vomiting are studied to evaluate the effectiveness of these agents.<sup>6</sup> In present study, group I patients received an infusion of 500 cc lactated Ringer's solution and group II (100) received 5% dextrose in lactated Ringer's solution. We found that nausea score was significantly low in group II as compared to group I. At 60 minutes (N1), it was 1 in group II and 5.2 in group I, N2 was 0.86 in group II and 4.2 in group I, N3 was 1.24 in group II and 2.84 in group I and N4 was 0.2 in group II and 0.1 in group I. This is similar to Anil et al.<sup>7</sup> The vomiting center is an indistinct area located in the lateral reticular formation of the medulla, which is responsible for controlling and coordinating nausea and vomiting. The center receives a wide range of afferent inputs from receptors in the gastrointestinal tract, peripheral pain receptors, the nucleus solitarius, vestibular system, the cerebral cortex, and the chemoreceptor trigger zone.<sup>8</sup> In present study we found that vomiting score was lower in group II as compared to group I. It (T1) was 5.26 in group I and 1 in group II, T2 was 1.32 in group I and 0.63 in group II, T3 was 2.48 in group I and 1.24 in group II and T4 was 1.42 in group I and 0.82 in group II. The difference was statistically significant (P< 0.05).

Several factors have been implicated specifically in laparoscopic cholecystectomy such as CO<sup>2</sup> insufflation, distension of the abdomen and irritation of the diaphragm and other abdominal viscera. In addition, other factors have also been associated such as

female gender, history of motion sickness, obesity, length of surgery, post-operative pain, use of opioids, and use of inhalational anesthetics like halothane.<sup>9</sup> Apfel et al.<sup>10</sup> in their study in 5000 patients demonstrated that the benefit of a range of antiemetic interventions, including ondansetron, dexamethasone, and droperidol, was similar, with a relative risk reduction of 20% compared with the absence of that intervention, equating to an absolute reduction of 15-20% points on a typical baseline PONV rate in the range 60-70%. This magnitude of benefit has been seen with many antiemetics in separate, placebo-controlled trials, including ondansetron.

## CONCLUSION

Author found that administration of IV dextrose before anaesthesia induction may be recommended as an effective and safe method for the prophylaxis of PONV after LC.

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**Source of support:** Nil

**Conflict of interest:** None declared

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