ISSN: 0975-3583,0976-2833 VOL13, ISSUE 08, 2022

A Prospective, Randomized, Blinded, Comparative Study on "Liberal Vs. Restrictive" Fluid Protocol's Impact on Post-Operatal Nausea, Vomiting, and Discharge Criteria in Patients Getting Puerperal Sterilization Under GA as Day Care Surgery

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Abstract

Background: In patients having puerperal sterilisation as day surgery, to compare the effects of liberal and restrictive fluid protocols on post-operative nausea, vomiting, and discharge criteria, incidence and severity of post-operative pain, discharge criteria, and patient well-being as measured by thirst, headache, dizziness, drowsiness, and fatigue. **Material and Methods:** The subjects of a prospective, randomised experiment from June 2021 to May 2022 were patients undergoing puerperal sterilisation through GA at Area Hospital, Dhone, Nandyal, Andhra Pradesh, India. In this study, 120 volunteers were split into two groups of 60 each. **Results:** The mean VAS score for the GL group at two hours was 1.75. At six hours, the mean VAS score was 1.08. At 12 hours, the mean VAS score was 0.45. After 24 hours, the VAS score was on average 0.20. At two hours, 59 patients in Group GL (98.3%) and 56 patients in Group GR (93.3%) heard bowel sounds. One patient (1.6%) from Group GR and three (5%) from Group GL both passed flatus at six hours. At 12 hours, there were 31 patients (51.6%) and 21 patients (35%) in group GR who had both passed flatus, respectively. At 24 hours, 59 patients (98.3%) and 59 patients (98.3%) in group GR both passed the flatus. At 2 hours or 6 hours, not a single patient in either group had passed any faeces. At 12 hours, only 2 people in group GR (3.3%) had faeces. The "p" value was found to be 0.495 and 0.200, respectively, at 12 and 24 hours, which is statistically insignificant. **Conclusion:** PONV and VAS pain levels were lower in patients who received 15 ml/kg of fluid prior to surgery. These patients were discharged earlier than the group receiving restriction fluids. Prior to ambulatory surgery, hydration reduced PONV. The safe and inexpensive treatment for post-operative nausea and vomiting is liberal fluid therapy.

Keywords: PADSS, PONV, BMI, and puerperal sterilisation.

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Introduction

Despite being crucial to getting the best results from surgery, fluid treatment is still one of the most contentious aspects of postoperative care. When a patient is unable to meet these goals by normal oral fluid intake, perioperative fluid administration seeks to prevent dehydration, maintain an adequate circulation volume, and prevent inadequate tissue perfusion. As knowledge of the effects of various fluids has increased in recent years, the choice of fluid in a variety of clinical circumstances can now be logically guided by an awareness of the physical and chemical properties of the multiple fluids available. There are, however, few clinical outcome data that may be utilised to guide this choice. Historically, determining how much fluid to administer has been more problematic than deciding which fluid to administer.[1,2]

The evidence regarding the effects of peri-operative fluid on the results of major surgery are contradictory, with some research claiming that fluid restriction reduces postoperative ileus time and postoperative complications. Individualized, goal-directed fluid delivery is beneficial, according to other researchers, primarily for reducing the duration of

ISSN: 0975-3583,0976-2833 VOL13, ISSUE 08, 2022

postoperative ileus and hospital stays. Randomized clinical trials show that 1-2 L of IV fluid, primarily crystalloid, can lessen postoperative symptoms such nausea, vomiting, and dizziness. Without procedure-specific, evidence-based recommendations for managing perioperative fluids, fluid administration regimens vary widely in daily practice.[3-5]

Negative effects such as nausea, vomiting, thirst, sleepiness, and vertigo can cause ambulatory patients significant difficulty. After ambulatory surgery, postoperative nausea and vomiting (PONV) is a common consequence. High degrees of patient distress and unhappiness can be caused by PONV. It is a limiting factor in the early departure of patients after ambulatory surgery and a primary cause of unplanned hospital stay. Current strategies for the prevention and management of postoperative nausea and vomiting (PONV) remain limited, and >25% of patients continue to develop PONV within 24 hours of surgery. In patients at high risk, the incidence of PONV might reach 80%. Although some suggest preventative antiemetic therapy for those at high risk, with rescue antiemetic treatment for bouts of PONV, the ideal strategy remains uncertain.[5-7]

Cost-effective, preferably non-pharmacologic techniques to reduce the incidence of PONV are still required. Inadequate intravascular volume may contribute to PONV, and perioperative treatment of IV fluids may minimise the incidence of unfavourable outcomes in outpatient surgery. A sufficient number of IV fluids administered intraoperatively to repair this deficiency may effectively avoid PONV. The combination of intraoperative anaesthesia and surgical losses, which are frequently insufficiently replenished, leads to hypovolemia and decreased blood supply to the gut. If not treated, intestinal ischemia is connected with increased serotonin release. As a result, adding more fluids reduces the risk of PONV, most likely by improving mesenteric perfusion and minimising gut ischemia and the associated release of serotonin. However, research on perioperative fluid delivery has employed varying techniques and produced contradictory results. Therefore, IV fluid therapy's potential benefit in lowering PONV has yet to be conclusively shown.[8,9]

Consequently, a research was designed to test the hypothesis that administering large volumes of IV fluids to patients undergoing ambulatory surgery would minimise the incidence and/or severity of PONV and other postoperative complications. We propose to test this theory in a widely performed procedure across the nation that would benefit if the patient met discharge criteria as soon as possible.[9,10] This randomised study aimed to assess the effects of liberal and restrictive fluid protocols on post-operative nausea and vomiting, as well as discharge criteria, in patients receiving puerperal sterilisation under GA as day surgery.

Material and Methods

A prospective randomised study conducted on individuals undergoing puerperal sterilisation under general anaesthesia as a day care treatment in Area Hospital, Dhone, Nandyal, Andhra Pradesh, India from June 2021 to May 2022. After receiving the Institutional Ethical Committee's blessing, a prospective, randomised trial involving 120 patients was carried out over the course of six months. Patients who were part of the Group R (Restrictive Fluid Protocol) got 2 ml/kg of Ringer Lactate. Patients in the Group L (Liberal Fluid Protocol) received 15 ml/kg of Ringer Lactate as part of the trial. During the study, ECG, ANIBP, SaO2, ETCO2, and temperature were recorded.

Methodology: ASA PS 1 and 2 patients between the ages of 18 and 40 were taken into consideration after receiving written consent and ethical committee approval. In the trial, patients were randomly divided into 2 groups of 60 each using computer-generated randomization. After patients agreed to participate in the trial, an anesthesiologist evaluated them before to surgery, and appropriate investigations were requested in accordance with the institution's regulations [10,11]. The VAS scale's use was explained to the patients. Using an

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L&T Star 60 monitor, a typical IV line was set up in the premedication room along with ECG, ANIBP, SaO2, ETCO2, and temperature monitoring. The master chart included case information. IBM analysed the data. SPSS Version 23.0. Descriptive statistics, frequency analysis, and percentage analysis were employed for categorical variables, and mean and standard deviation for continuous variables. Unpaired sample t-test used to compare bivariate samples in independent groups. Chi-Square and Fisher's exact tests were employed to analyse categorical data. All the following statistical tools consider 0.05 significant.

Inclusion criteria

Patients with ASA PS 1 and 2 who are between the ages of 18 and 40 are having puerperal sterilisation under GA as a day care surgery.

Exclusion Criteria

1. BMI > 30
2. Smokers
3. The Background of Motion Sickness
4. Dynamic instability
5. Renal, cardiac, gastrointestinal, and nervous system diseases
6. Conditions that can complicate pregnancy

Results

Demographic Profile

Table 1: Distribution of Age

	Age distribution	
Age (in years)	**Group GL**	**Group GR**
Mean	25.94	25.47
S.D	3.301	3.331
‘p’ value	0.475	

The average age of those in Group GL was 25.94. The GR Group's patients were on average 25.47 years old. The statistically insignificant "p" value for the age group is 0.475.

Table 2: Distribution of Weight

	Weight distribution	
Weight (in kgs)	**Group GL**	**Group GR**
Mean	53.20	52.67
S.D	8.355	7.536
‘p’ value	0.738	

Participants in Group GL had an average weight of 53.20 pounds. The average patient weight in Group GR was 52.67 pounds. Statistics show that the 'p' value of 0.738 is not significant.

Table 3: Distribution of BMI

	BMI distribution	
BMI (in kg/m^2)	**Group GL**	**Group GR**
Mean	22.28	22.77
S.D	3.208	3.374
‘p’ value	0.453	

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Subjects in Group GL had a mean BMI of 22.28. The mean BMI of the patients in Group GR was 22.77. Statistics show that the 'p' value of 0.453 is not significant.

Table 4: Duration of Surgery

Duration of Surgery		
Duration of surgery (minutes)	**Group GL**	**Group GR**
Mean	17.45	17.94
S.D	2.524	2.485
'p' value	0.325	

In Group GL, surgery lasted an average of 17.45 minutes. The average operation time in Group GR was 17.94 minutes. Statistics show that the 'p' value of 0.325 is not significant.

Table 5: ASA Distribution

	ASA distribution			
	Group GL		**Group GR**	
	No. of patients	**%**	**No. of patients**	**%**
PS I	45	75	39	65
PS II	15	25	21	35
TOTAL	60	100	60	100
'p' value	0.529			

In Group GL, there are 15 patients in PS II, which is 25% of the total, and 45 patients in PS I, which is 75% of the whole. In Group GR, there are 21 patients in PS II, which is 35% of the total, and 39 patients in PS I, which is 65% of the whole. The "p" value, which was discovered to be 0.529, is not statistically significant.

Table 6: Comparison of VAS

	Comparison of VAS				**'p' VALUE**
	Group GL		**Group GR**		
VAS	**Mean**	**SD**	**Mean**	**SD**	
2 hours	1.75	0.771	3.14	0.693	0.0005
6 hours	1.08	0.688	2.31	0.735	
12 hours	0.45	0.610	1.37	0.747	
24 hours	0.20	0.401	0.71	0.576	

At two hours, the mean VAS score for the GL group was 1.75. The mean VAS score was 1.08 at six hours. The mean VAS score at 12 hours was 0.45. The average VAS score after 24 hours was 0.20. At two hours, the mean VAS score for the GR Group was 3.14. The average VAS score was 2.31 after six hours. The mean VAS score at 12 hours was 1.37. The average VAS score after 24 hours was 0.71. The 'p' value was discovered to be 0.0005 at 2, 6, 12, and 24 hours, respectively, which is statistically significant.

Table 7: Comparison of PONV

	Comparison of PONV				**'p' value**
	Group GL		**Group GR**		
PONV	**Mean**	**SD**	**Mean**	**SD**	
2 hours	0.25	0.440	1.53	0.612	0.0005
6 hours	0.06	0.238	1.18	0.434	
12 hours	0.02	0.140	0.71	0.460	

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24 hours	0.02	0.140	0.10	0.300	0.094

The average PONV score in the GL group at two hours was 0.25. The average PONV score was 0.06 at six hours. The average PONV score at 12 hours was 0.02. The average PONV score at 24 hours was 0.02. The mean PONV score in the GR Group at two hours is 1.53. The mean PONV score was 1.18 at six hours. The average PONV score at 12 hours was 0.71. The average PONV score after 24 hours was 0.10. In 2, 6, and 12 hours, it was discovered that the "p" value was 0.0005, which is statistically significant, and at 24 hours, it is 0.094, that is not in statistical significance.

Table 8: Comparison of PADSS

	Comparison of PADSS				
	Group GL		**Group GR**		
PADSS	Mean	SD	Mean	SD	'p' VALUE
2 hours	6.96	0.599	6.18	0.478	0.0005
6 hours	8.12	0.431	7.04	0.344	0.0005
12 hours	9.24	0.619	8.76	0.790	0.0002
24 hours	10.00	0.000	9.67	0.476	0.0005

The average score for the PADSS after two hours in the GL Group was 6.96. The average score was 8.12 after six hours. The mean value at 12 hours was 9.24. The mean value at 1days was 10.00. The mean score in the GR Group for the Post Anaesthetic Discharge Scoring System at two hours was 6.18. The average score at six hours was 7.04. The average score at 12 hours was 8.76. The average score after 24 hours was 9.67. At 2, 6, and 24 hours, the 'p' values were determined to be 0.0005 and 0.002, respectively, making them statistically significant. At 12 hours, the 'p' value is 0.002.

Table 9: Comparison of TUG TEST

	TUG test				
	Group GL		**Group GR**		
TUG TEST (seconds)	Mean	SD	Mean	SD	'p' value
12 hours	37.51	8.561	40.16	8.900	0.129
24 hours	15.63	5.181	16.73	4.418	0.252

After 12 hours, the mean tug total time in the GL Group is 37.51 seconds. The average time was 15.63 seconds after 24 hours. At 24 hours, the mean tug test duration in the GR Group is 40.16 seconds. The average time is 16.73 seconds at 24 hours. The 'p' value was discovered to be 0.129 and 0.252 at 12 and 24 hours, respectively, that is statistically insignificant.

Table 10: Comparison of Thirst

		THIRST				
Hours		**Group GL**		**Group GR**		**'p' value**
		Number	Percentage	Number	Percentage	
2	Yes	25	41.6%	42	70%	
	No	35	58.3%	18	30%	0.000
6	Yes	19	31.6%	30	50%	
	No	41	68.3%	30	50%	0.015
12	Yes	5	8.3%	10	16.6%	
	No	55	91.6%	50	83.3%	0.102

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	Yes	2	3.3%	9	15%	
24	No	58	96.6%	51	85%	0.122

At two hours, 25 patients in Group GL (41.6%) and 42 patients in Group GR (70%), respectively, reported feeling thirsty. Thirst was experienced by 19 patients in Group GL (31.6%) and 30 patients in Group GR (50%) at the 6-hour mark. At 12 hours, 10 patients (16.6%) in Group GR and 5 patients (8.3%) in Group GL developed thirst, respectively. At 24 hours, 2 patients in Group GL (3.3%) and 9 patients in Group GR (15%) reported feeling thirsty. Statistics have shown that the "p" values for thirst at 2 and 6 hours are, respectively, 0.000 and 0.015. Thirst was shown to have a "p" value of 0.102 at 12 hours and 0.122 at 24 hours, which is statistically insignificant.

Table 11: Comparison of Dizziness

		DIZZINESS				
Hours		**Group GL**		**Group GR**		**'p' value**
	Number Percentage Number Percentage					0.234
	Yes	8	13.3%	12	20%	
2	No	52	86.6%	48	80%	
	Yes	9	15%	11	18.3%	0.539
6	No	51	85%	49	81.6%	
	Yes	5	8.3%	0	0%	0.495
12	No	55	91.6%	60	100%	
	Yes	1	1.6%	1	1.6%	1.000
24	No	59	98.3%	59	98.3%	

After 2 hours, 12 patients (20%) in Group GR and 8 patients (13.3%) in Group GL reported feeling lightheaded. At 6 hours, 11 patients (18.3%) in Group GR and 9 patients (15%) in Group GL reported feeling lightheaded. At 12 hours, 5.3% of patients in Group GL and 0% of patients in Group GR reported feeling lightheaded. One patient in each of Groups GL and GR reported feeling lightheaded at 24 hours (1.6%). The 'p' value for dizziness was determined to be 0.234, 0.539, 0.495,1.000 correspondingly at 2, 6, and 12 hours, which is statistically insignificant.

Table 12: Comparison of Drowsiness

		DROWSINESS				
Hours		**Group GL**		**Group GR**		**'p' value**
		Number Percentage Number Percentage				
2	Yes	4	6.6 %	9	15%	0.436
	No	56	93.3%	51	85%	
6	Yes	3	5%	7	11.6%	0.060
	No	57	95%	53	88.3%	
	Yes	-		-	-	-
12	No	60	100%	60	100%	
24	Yes	-		-	-	-
	No	60	100%	60	100%	

During 2 hours, 4 patients in Group GL (6.6%) and 9 patients in Group GR (15%) reported feeling sleepy. At 6 hours, 3 patients in Group GL (5%) and 7 patients in Group GR (11.6%) reported feeling sleepy. No patients in either group reported feeling sleepy at 12 or 24 hours.

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The "p" value for sleepiness at two and six hours was discovered to be, respectively, 0.436 and 0.060, which is statistically insignificant.

Table 13: Comparison of Headache

		HEADACHE				
Hours		**Group GL**		**Group GR**		**'p' value**
		Number	Percentage	Number	Percentage	
2	Yes	1	1.6%	7	11.6%	0.060
	No	59	98.3%	53	88.3%	
6	Yes	1	1.6%	0	0%	1.000
	No	59	98.3%	60	100%	
12	Yes	3	5%	2	3.3%	1.000
	No	57	95%	58	96.6%	
24	Yes	1	1.6%	1	1.6%	1.000
	No	59	98.3%	59	98.3%	

In two hours, only 1 patient (1.6%) in Group GL and 7 patients (11.6%) in Group GR reported headaches. At 6 hours, only one patient (1.6%) in Group GL in contrast to none in Group GR had headaches. At 12 hours, 3 patients in Group GL (5%) and 2 patients in Group GR (3.3%) had headaches, respectively. One patient in each of Groups GL and GR reported having a headache at 24 hours (1.6%). The "p" value for headaches was determined to be 0.060, 1.000, 1.000, respectively, which is statistically insignificant at 2, 6, 12, and 24 hours.

Table 14: Comparison of Fatigue

		FATIGUE				
Hours		**Group GL**		**Group GR**		'p' value
		Number	Percentage	Number	Percentage	
2	Yes	4	7.8%	5	9.8%	1.000
	No	47	92.2%	46	90.2%	
6	Yes	2	3.9%	7	13.7%	0.160
	No	49	96.1%	44	86.3%	
12	Yes	0	0%	1	2%	1.000
	No	51	100%	50	98%	
24	Yes	0	0%	0	0%	-
	No	51	100%	51	100%	

After 2 hours, 4 patients (7.8%) in Group GL and 5 patients (9.8%) in Group GR reported feeling tired. At 6 hours, 2 patients in Group GL (3.9%) and 7 patients in Group GR reported feeling tired. One patient from Group GR reported feeling worn out at 12 hours. Both groups' subjects showed no signs of weariness after 24 hours. At 2, 6, and 12 hours, the "p" value was discovered to be 1.000, 0.160, and 1.000, respectively, which is statistically insignificant.

Table 15: Bowel Sound

		BOWEL SOUND				
Hours		**Group GL**		**Group GR**		**'p' value**
		Number	Percentage	Number	Percentage	
2	Yes	59	98.3%	56	93.3%	0.436
	No	1	1.6%	4	6.6%	
	Yes	60	100%	58	96.6%	

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6	No	0	0%	2	3.3%	0.243
12	Yes	60	100%	60	100%	-
	No	0	100%	0	100%	
24	Yes	60	100%	60	100%	-
	No	0	100%	0	100%	

At two hours, 56 patients (93.3%) in Group GR and 59 patients (98.3%) in Group GL had bowel sounds. Bowel sounds were detected at 6 hours in 60 patients in Group GL (100%) and in 58 patients in Group GR (96.6%). Bowel sounds were present at 12 and 24 hours in all patients in both groups. At 2 and 6 hours, the "p" value was discovered to be 0.436 and 0.243, respectively, which is statistically insignificant.

Table 16: Passing flatus

PASSING FLATUS						
Hours		**Group GL**	**Group GR**			**'p' Value**
Number of % Number patients of patients					%	-
2	Yes	0	0	0	0	
	No	60	100	60	100	
6	Yes	3	5	1	1.6	0.617
	No	58	96.6	59	98.3	
12	Yes	31	51.6	21	35	0.840
	No	29	48.3	39	65	
24	Yes	59	98.3	59	98.3	1.000
	No	1	1.6	1	1.6	

At two hours, neither group's participants experienced flatulence. At six hours, one patient (1.6%) from Group GR and three (5%) patients from Group GL both passed flatus. At 12 hours, there were 21 patients (35%) in group GR and 31 patients (51.6%), respectively, who had passed flatus. At 24 hours, 59 patients (98.3%) passed flatus, as did 59 patients (98.3%) in group GR. The 'p' value was discovered to be 0.617, 0.840, and 1.000 correspondingly at 6, 12, and 24 hours, which is statistically insignificant.

Table 17: Defecation

		Deffecation				
Hours		**Group GL**	**Group GR**			**'p' value**
		Number of % Number patients of patients			%	-
2	Yes	0	0	0	0	
	No	60	100	60	100	
6	Yes	0	0	0	0	-
	No	60	100	60	100	
12	Yes	0	0	2	3.3	0.495
	No	60	100	58	96.6	
24	Yes	49	81.6%	11	18.3	0.200
	No	29	48.3%	31	51.6	

In both groups, not a single patient had faeces at 2 hours or 6 hours. Only 2 individuals in group GR (3.3%) had faeces at 12 hours. 49 patients in group GL (81.6%) and 11 patients in

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group GR (18.3%) had faeces at 24 hours. At 12 and 24 hours, the "p" value was discovered to be 0.495 and 0.200, respectively, which is statistically insignificant.

DISCUSSION

Our understanding of the risk variables for PONV has significantly enhanced thanks to contemporary multivariable research, meta-analyses, and systemic reviews. Antiemetic prophylaxis is widely agreed to be neither cost-effective nor risk-free. Patients' requirement for proper hydration has been emphasised since multimodal care of PONV eliminates the need for antiemetic prophylaxis and its side effects.[11,12]

Adverse effects include nausea, vomiting, thirst, sleepiness, and dizziness can cause ambulatory patients a lot of distress. The general health of patients suffers and oral intake is delayed as a result of nausea. Retching due to nausea can worsen pain and discomfort following laparoscopic operations for minor abdominal surgery. Dizziness can hinder ambulation and cause nausea, vomiting, and agitation. Patients who are sleepy after surgery run the risk of harm if they are unable to safeguard their airways. Additionally, it postpones healing and release. These unfavourable consequences prolong early discharge and home readiness, adding to the nursing staff's effort.[12,13]

An easy, affordable, non-pharmacological treatment that could lessen these symptoms and prevent drug-related adverse effects is the administration of crystalloid fluids. According to the available research, liberal fluid administration is advised in situations where substantial trauma and fluid shifting are unlikely, while more cautious fluid administration may be advantageous in stressful situations.[13,14] This prospective, double-blinded, randomised, comparative trial is undertaken in a widely used, common procedure that would benefit if the patient met the criteria for release as soon as possible. There are around 8 to 10 cases of puerperal sterilisation performed daily. From this vast collection of instances, patients who had been posted for puerperal sterilisation were chosen for our study. We made every effort to guarantee maximal standardisation in our study because PONV is impacted by so many different factors. In this approach, patients with BMI > 30 (obesity), smoking, a history of motion sickness, unstable haemodynamics, systemic illnesses affecting the neurological system, kidneys, heart, and gastrointestinal tract, and diseases complicating pregnancy were excluded from the study.[14,15]

The distribution of age and BMI in the two groups was comparable after demographic analysis. There was no discernible difference between the two groups in terms of the distribution of ASA or the mean number of procedures. Vital indicators were tracked and compared during surgery. Heart rate, Systolic Blood Pressure, Diastolic Blood Pressure, Mean Arterial Pressure, and SpO2 did not differ statistically significantly between the two groups. Yogendran.S.et al. evaluated the impacts of preoperative isotonic electrolyte solution infusion rates of 20 ml/kg and 2 ml/kg on negative outcomes in ambulatory surgery in 1995. They stated that the prevalence of PONV had decreased.[15,16]

In our study, Group GL had lower mean PONV scores at 2, 6, and 12 hours (0.25±0.44, 0.06±0.238, and 0.02±0.140) compared to Group GR (1.53±0.612, 1.18±0.434, and 0.71±0.460). The two groups differed significantly from one another. At 24 hours, there was no difference in the mean PONV scores between the two groups (GL 0.02±0.14; GR 0.10±0.300). Our research supports the previous study's finding that using liberal liquids during quick procedures improves patient outcomes. An additional preoperative I.V. hydration therapy with 15 ml.kg-1 considerably decreased the incidence of PONV, according to a 2003 report by Ali S et al. 73% of the conservative fluid group and 23% of the supplementary group experienced PONV. The findings of our investigation are consistent

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with the earlier study. Eighty patients undergoing gynaecological laparoscopy who received either large (2 ml/kg/hour fasting) or small (3 ml/kg) preoperatively participated in a randomised study by Maharaj.C et al in 2005. The study found that in high risk patients coming for ambulatory surgery, preoperative treatment of intravascular volume deficits effectively reduced PONV. Although those at high risk for PONV were not included in our investigation, the outcome is comparable to that of that study.[16,17]

The effects of 2 ml/kg Ringer lactate iv (Group A), 12 ml/kg Ringer lactate iv (Group B), and 12 ml/kg of 4.5 percent hydroxyethylstarch (Hetastarch) iv were compared by Chaudhary et al in 2008. They came to the conclusion that adding crystalloids and colloids to preoperative intravenous fluids considerably reduced the incidence of PONV. Similar findings were made in our investigation as well. However, colloid was not utilised in our investigation. Preoperative and intraoperative hydration's effects on PONV were investigated by Adanir Tayfun et al. in 2008. Preoperative volume replacement was given to Group II and intraoperative volume replacement to Group I. Group II (48%) had a significantly lower PONV detection rate than Group I (64%). The study found that replacing the fluid deficit before surgery reduced PONV. His study and ours both found that patients who got a lot of fluid (15 ml/kg) before to surgery had a lower incidence of PONV.[17,18] The administration of intraoperative fluids in our study, however, is comparable between the two groups. They support their claim by pointing out that if the fluid deficiency is corrected two hours before surgery, crystalloid fluids diffuse outside of blood vessels into tissues, restoring the deficit at the cellular level and potentially affecting both peripheral (mucosal hypoperfusion of the gastrointestinal tract) and central (probably the hydration of CTZ cells) mechanisms of PONV. This element was not evaluated in our study.

For preloading of intravenous fluid, Ahmed Turkistani et al. (2009) divided the patients into four groups, each with 20 patients: Tetrastarch with a low MW was given to Group 1, Pentastarch with a medium MW was given to Group 2, Heta-starch with a high MW was given to Group 3, and Ringer lactate was given to Group 4. In comparison to colloid solutions, preoperative fluid supplementation with LR at a dose of 10 ml/kg resulted in a decreased incidence of PONV, it was determined.[18,19] Tetrastarch's long-lasting action, which lasts up to 24 hours postoperatively, makes it a potential good LR substitute for the prevention of PONV. In our investigation, we also discovered that preoperative infusion of Ringer Lactate (15 ml/kg) decreased the incidence of PONV at 2, 6, and 12 hours.

Research by Gaurav Chauhan et al. (2013) examined 200 ambulatory gynaecological laparoscopic surgery patients between the ages of 20 and 40. According to the results of this investigation, intravenous hydration (30 ml/kg compound sodium lactate) administered intraoperatively is a secure and reliable way to avoid PONV. This study's findings match those of our study. The distinction is that intraoperative infusion was employed, and the amount of fluid delivered was two times that of the volume used in our trial (15 ml/kg). In patients with high APFEL scores undergoing laparoscopic cholecystectomy surgery, Selcuk Yavuz et al. (2014) investigated the effects of preoperative intravenous hydration (15 ml/kg RL vs. 2 ml/kg RL) on postoperative nausea and vomiting. The study concluded that preoperative hydration may be useful in preventing surgical nausea in patients with high APFEL scores. The findings of our study agree with those of this study, but we did not include those who were at high risk for PONV.

Chohedri and other (2006) In this prospective, randomised, double-blind trial, 200 ambulatory surgery patients participated. In ambulatory procedures, this study found that high dosage preoperative hydration effectively reduces the likelihood of postoperative vomiting within the first 60 minutes. In our investigation, we discovered that at 2, 6, and 12 hours, the incidence of PONV decreases.[19,20]

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In 172 patients having colorectal surgery, Brandstrup et al. contrasted a liberal vs. restrictive hydration approach. For the liberal group, total IV fluids average 5.4 L, whereas for the restrictive group, it is just 2.7 L. The stringent protocol seemed to lower the frequency of both major and mild problems (ex. anastomotic leakage, pulmonary edema, pneumonia, and wound infection).[20] This is in contrast to our study and further supports the idea that the type of surgery (major vs. minor) matters when determining how much hydration should be administered. In contrast to an equal volume of Ringer's lactate solution or no IV fluids, McCaul et al. discovered that large volume rehydration using a solution containing dextrose led to a greater need for opiate therapy in the PACU. Given that this did not happen with Ringer's lactate solution alone, the addition of dextrose in the IV fluid was probably to blame for the rise in postoperative fentanyl requirements.

The mean VAS scores in Group GL were lower than those in Group GR (3.14±0.693,2.31±0.735,1.37±0.747,0.71±0.576) at 2,6,12, and 24 hours (1.75±0.771,1,08 ±0.688,.0.45± 0.610,0.20± 0.401). The two groups differed significantly from one another. At all intervals, the p value is 0.0005. The findings of the subsequent study support those of our investigation. Eighty patients undergoing gynaecological laparoscopy who received either large (2 ml/kg/hour fasting) or small (3 ml/kg) preoperatively participated in a randomised trial done by Maharaj C.H. et al. in 2005. A blinded researcher evaluated the frequency and intensity of pain as well as the requirement for additional analgesic therapy at 0.5, 1, and 4 hours postoperatively as well as on the first and third postoperative days. Postoperative pain scores and additional analgesia were reduced in the group receiving large volume infusions. According to the study, intravascular volume deficiencies that were corrected before surgery significantly decreased postoperative discomfort.[20,21]

The Post Anaesthetic Discharge Scoring System was used to evaluate the discharge criteria. A score of 8 or below on a scale of 10 was deemed suitable for discharge. Patients in Group GL reached the score of 8 earlier (at 6 hours), whereas Group GR patients did so at 12 hours. At all time intervals, Group GL's PADSS score was higher than that of Group GR's. In patients having laparoscopic cholecystectomy, Holte K. et al. in 2004 compared intraoperative administration of 40 ml/kg with 15 ml/kg LR. In contrast to 15 mL/kg LR, he found that intraoperative administration of 40 mL/kg improved postoperative organ functioning, recovery, and decreased hospital stay. According to Gaurav Chauhan et al. (2013), intravenous hydration is a secure and reliable way to stop PONV and guarantee patient satisfaction at the time of discharge. The results of our investigation concur with those of the previous two studies.

Patients' general well-being was assessed by asking about their level of weariness, headache, dizziness, and thirst. Thirst was present in 18 patients (35.3%) in Group GL and 39 patients (76.5%) in Group GR at 2 hours. At 6 hours, thirst was reported by 14 patients (27.5%) in Group GL and by 26 patients (51%) in Group GR, both of which were statistically significant. At 12 and 24 hours, there was no discernible difference between the two groups. When compared to the low infusion group (2 ml/kg), Yogendran.S. et al. found that the incidence of thirst was much lower in the high-infusion group (20 ml/Kg). In this study, Chohedri et al. demonstrated how well preoperative high dosage hydration can reduce the frequency of postoperative thirst and vomiting during the first 60 minutes in ambulatory procedures. According to Holte K. et al., individuals who got 40 ml/kg Ringer Lactate had less post-operative thirst. The scores for headache, vertigo, drowsiness, and fatigue at 2, 6, 12, and 24 hours did not significantly differ between the two groups.[21,22] A validated TUG test was used to evaluate post-operative exercise ability and mobilisation after 12 and 24 hours. The mean time for the TUG test after 12 hours was 37.51 seconds for Group GL and 40.16 seconds for Group GL, both with SDs of 8.900. (Group GR). The mean TUG test time after 24 hours in both groups was 15.63 with a standard deviation of 5.181 (Group GL) and

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16.73 with a standard deviation of 4.418 (Group GR), respectively, and was not statistically significant.

Bowel sounds were present at 12 and 24 hours in all patients in both groups. At 24 hours, approximately 98% of the patients in both groups had passed flatus; however, only 22 patients in group GL (43.1%) and 11 patients in group GR (21.6%) defecated, which was not statistically significant. At 2 hours, none of the patients had passed flatus and none had defecated in either group. This is in line with a 2007 study by Holte Kathrine et al. who compared the effects of "liberal" intravascular fluid administration (median 4250 ml, range 3150-5200 ml) versus "restrictive" intravascular fluid administration (median 1740 ml, range 1100-2165 ml) in knee arthroplasty on physiological recovery as the primary outcome variable. He discovered no differences between the groups in terms of exercise ability (TUG test), overall wellbeing, headache, dizziness, drowsiness, or weariness, either before or after surgery. He also discovered no differences in terms of the length of the postoperative ileus.[22]

CONCLUSION

The average PONV and VAS Pain Scores were lower in patients who got a lot of fluid (15 ml/kg) prior to surgery. When compared to the group receiving restrictive fluids, these patients met the requirements for discharge earlier. Hydration before to surgery significantly decreased PONV in individuals undergoing ambulatory surgery. Therefore, I draw the conclusion that liberal fluid therapy is an effective, low-cost, and secure treatment for post-operative nausea and vomiting.

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