RESEARCH PAPER

Role of Chewing Gum in Enhancing Gastrointestinal Motility in the Postoperative Period Following Total Laparoscopic Hysterectomy

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ABSTRACT

Introduction: Postoperative ileus is a common complication following total laparoscopic hysterectomy (TLH), leading to delayed recovery and prolonged hospital stay. Chewing gum, as a form of sham feeding, has been proposed to enhance gastrointestinal motility. The study aimed to evaluate the role of chewing gum in enhancing gastrointestinal motility in the postoperative period following TLH.

Materials and Methods: This randomized controlled trial was conducted at a tertiary care centre from July 2025 to March 2026, including 50 patients undergoing TLH. Patients were categorized into two groups: chewing gum group (n = 25) and standard care group (n = 25), based on routine postoperative practices. Primary outcomes included time to first bowel sounds, passage of flatus, and defecation. Secondary outcomes included incidence of paralytic ileus and duration of hospital stay. Statistical analysis was performed using independent t-test and chi-square test.

Results: Baseline characteristics were comparable between the groups. The chewing gum group showed significantly earlier return of bowel sounds (6.57 ± 1.27 vs 10.23 ± 1.54 hours; $p < 0.001$), passage of flatus (7.64 ± 1.63 vs 22.92 ± 3.05 hours; $p < 0.001$), and defecation (26.00 ± 2.52 vs 43.36 ± 2.46 hours; $p < 0.001$). The incidence of paralytic ileus was significantly lower in the chewing gum group [1 (4%) vs 6 (24%); $p = 0.041$]. A higher proportion of patients had hospital stay ≤3 days [16 (64%) vs 0 (0%); $p < 0.001$], and mean hospital stay was significantly shorter (3.00 ± 0.91 vs 5.32 ± 0.75 days; $p < 0.001$).

Conclusion: Chewing gum was associated with improved postoperative gastrointestinal recovery following TLH. Further randomized studies are required to confirm these findings.

Keywords: Chewing gum; Postoperative ileus; Laparoscopic hysterectomy; Gastrointestinal motility; Recovery

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INTRODUCTION

Postoperative ileus is a common and clinically significant complication following abdominal and pelvic surgeries, including total laparoscopic hysterectomy (TLH) [1,2]. It is characterized by a transient impairment of gastrointestinal motility, resulting in delayed passage of flatus and stool, abdominal distension, nausea, and patient discomfort [3]. Although TLH is associated with faster recovery compared to open procedures, postoperative ileus continues to affect recovery by prolonging hospital stay and increasing healthcare costs [4-6]. Early return of bowel function is therefore an important determinant of postoperative recovery and patient satisfaction [7].

Various strategies have been employed to reduce the duration of postoperative ileus and enhance gastrointestinal recovery [8]. These include early

ambulation, judicious use of opioids, minimally invasive surgical techniques, and early enteral feeding [9]. In recent years, sham feeding in the form of chewing gum has emerged as a simple, safe, and cost-effective intervention [10]. Chewing gum is thought to stimulate the cephalic phase of digestion via activation of vagal pathways, leading to increased secretion of gastrointestinal hormones and enhanced bowel motility, even in the absence of actual food intake [11].

Several studies have demonstrated that chewing gum may accelerate the return of bowel function, reduce time to first flatus and defecation, and shorten hospital stay following abdominal surgeries [12-16]. However, the evidence remains variable, and limited data are available specifically in patients undergoing total laparoscopic hysterectomy. Given the increasing adoption of minimally invasive gynaecological procedures, there is a need to evaluate the effectiveness of such non-pharmacological interventions in this patient population.

Therefore, the present study aimed to evaluate the role of chewing gum in enhancing gastrointestinal motility in the postoperative period following total laparoscopic hysterectomy.

MATERIALS AND METHODS

This randomized controlled trial was conducted in the Department of Obstetrics and Gynecology at Adichunchanagiri Institute of Medical Sciences obtaining approval from the Institutional Ethics Committee (IEC No.: AIMS/IEC/262/2025). The study was carried out over a period of nine months, from July 2025 to March 2026.

The sample size was calculated based on proportions reported by Bhatiyani B et al., where 74% of patients in the chewing gum group and 45% in the control group demonstrated bowel sounds at 3 hours [17]. The sample size was calculated using the formula:

$$n = \frac{(Z_{\alpha/2} + Z_{\beta})^2 \left[p_1(1 - p_1) + p_2(1 - p_2) \right]}{(p_1 - p_2)^2}$$

Using a 95% confidence level and 80% power, the minimum required sample size was calculated to be 41 participants. However, considering feasibility and study duration, a total of 50 participants were included in the study, with 25 participants in each group.

Eligible participants were female patients aged 35–65 years undergoing elective, uneventful total laparoscopic hysterectomy (TLH) and belonging to American Society of Anaesthesiologists (ASA) physical status I–III. Patients were required to be capable of chewing gum (i.e., without major jaw dysfunction). Patients were excluded if they had known gastrointestinal motility disorders, underwent concomitant major bowel surgery, had a history of chronic opioid use, had severe uncontrolled systemic illness (ASA IV or higher), or were unable to chew gum due to jaw dysfunction or had a known allergy to gum ingredients.

In this observational design, no intervention was assigned by the investigators. Patients were categorized into two groups based on the postoperative care practices followed in the ward: those who received chewing gum as part of routine postoperative care (chewing gum group, n = 25) and those who received standard postoperative care without chewing gum (standard care group, n = 25). The use of chewing gum was based on existing clinical practice and patient compliance, and the investigators did not influence group allocation.

All patients underwent TLH under standardized surgical and anaesthetic protocols. Postoperative management, including analgesia, early mobilization, and diet advancement, was similar across both groups, except for the use of chewing gum. Patients in the chewing gum group typically chewed sugar-free gum at regular intervals (approximately three times daily for 15–20 minutes) until the return of bowel function, as per routine ward practice.

Patients were monitored for recovery of gastrointestinal function. The primary outcome measures were time to first bowel sounds, time to first passage of flatus, and time to first defecation, recorded in hours. Secondary outcomes included the incidence of postoperative paralytic ileus and duration of hospital stay. Hospital stay was also categorized as ≤3 days and >3 days. Postoperative paralytic ileus was defined as delayed gastrointestinal motility characterized by abdominal distension, absence of bowel sounds, and failure to pass flatus or stool beyond 72 hours postoperatively [18].

Data were collected prospectively using a structured proforma. Continuous variables were expressed as mean ± standard deviation (SD) and compared using the independent sample t-test. Categorical variables were expressed as N (%) and analyzed using the chi-square test. A p-value of <0.05 was considered statistically significant.

RESULTS

Baseline characteristics were comparable between the two groups. Most patients were aged 40–49 years [10 (40%) vs 9 (36%)], with no significant difference in age distribution ($\chi^2 = 0.59$, $p = 0.90$). Mean age (46.12 ± 8.24 vs 45.36 ± 7.91 years; $t = 0.33$, $p = 0.74$), ASA grade distribution ($\chi^2 = 0.18$, $p = 0.91$), and duration of surgery (118.4 ± 15.6 vs 115.8 ± 14.9 minutes; $t = 0.59$, $p = 0.55$) were also comparable (Table 1).

Table 1: Baseline Sociodemographic Characteristics of Study Participants (n = 50)

Variable	Category	Standard Care (n = 25)	Chewing Gum (n = 25)	Statistical value	p-value
Age Group (years)	35–39	6 (24%)	7 (28%)	$\chi^2 = 0.59$	0.90
	40–49	10 (40%)	9 (36%)		
	50–59	7 (28%)	6 (24%)		
	60-65	2 (8%)	3 (12%)		
	Mean ± SD	46.12 ± 8.24	45.36 ± 7.91	t = 0.33	0.74
ASA grade	I	8 (32%)	9 (36%)	$\chi^2 = 0.18$	0.91
	II	14 (56%)	13 (52%)		
	III	3 (12%)	3 (12%)		
Duration of Surgery (min)	Mean ± SD	118.4 ± 15.6	115.8 ± 14.9	t = 0.59	0.55

The mean time to first bowel sounds was significantly shorter in the chewing gum group (6.57 ± 1.27 hours) compared to standard care (10.23 ± 1.54 hours) (t = 9.17, p < 0.001) (Table 2).

Table 2: Comparison of Time to First Bowel Sounds (hours)

Study Group	Mean ± SD	t-value	p-value
Standard Care	10.23 ± 1.54	**9.17**	**<0.001**
Chewing Gum	6.57 ± 1.27		

Time to first passage of flatus was significantly reduced in the chewing gum group (7.64 ± 1.63 hours) compared to standard care (22.92 ± 3.05 hours) (t = 22.10, p < 0.001) (Table 3).

Table 3: Comparison of Time to First Passage of Flatus (hours)

Study Group	Mean ± SD	t-value	p-value
Standard Care	22.92 ± 3.05	**22.10**	**<0.001**
Chewing Gum	7.64 ± 1.63		

The mean time to first defecation was significantly shorter in the chewing gum group (26.00 ± 2.52 hours) compared to standard care (43.36 ± 2.46 hours) (t = 24.67, p < 0.001) (Table 4).

Table 4: Comparison of Time to First Defecation (hours)

Study Group	Mean ± SD	t-value	p-value

Standard Care	43.36 ± 2.46	**24.67**	**<0.001**
Chewing Gum	26.00 ± 2.52		

Paralytic ileus occurred in fewer patients in the chewing gum group [1 (4%)] compared to standard care [6 (24%)], which was statistically significant ($\chi^2 = 4.16$, $p = 0.041$) (Table 5).

Table 5: Comparison of Postoperative Paralytic Ileus

Study Group	Ileus Present	Ileus Absent	χ^2 value	p-value
Standard Care	6 (24%)	19 (76%)	**4.16**	**0.041**
Chewing Gum	1 (4%)	24 (96%)		

A higher proportion of patients in the chewing gum group had hospital stay ≤3 days [16 (64%) vs 0 (0%)], while all standard care patients had >3 days stay [25 (100%)]; this difference was highly significant ($\chi^2 = 22.53$, $p < 0.001$) (Table 6).

Table 6: Distribution of Hospital Stay

Study Group	≤3 Days	>3 Days	χ^2 value	p-value
Standard Care	0 (0%)	25 (100%)	**22.53**	**<0.001**
Chewing Gum	16 (64%)	9 (36%)		

Mean hospital stay was significantly shorter in the chewing gum group (3.00 ± 0.91 days) compared to standard care (5.32 ± 0.75 days) ($t = 9.83$, $p < 0.001$) (Table 7).

Table 7: Comparison of Length of Hospital Stay (days)

Study Group	Mean ± SD	t-value	p-value
Standard Care	5.32 ± 0.75	**9.83**	**<0.001**
Chewing Gum	3.00 ± 0.91		

DISCUSSION

The present study demonstrated a significantly faster recovery of gastrointestinal function in the chewing gum group, with earlier return of bowel sounds, passage of flatus, and defecation. In addition, a lower incidence of paralytic ileus and shorter duration of hospital stay were observed. These findings suggest that chewing gum is an effective and simple intervention for enhancing postoperative gastrointestinal recovery following total laparoscopic hysterectomy.

These findings are comparable to those reported by Bhatiyani B et al., who observed a significantly higher proportion of patients with early bowel sounds at 3 hours (74% vs 45%; $p = 0.003$) and earlier passage of flatus (median 10 vs 13 hours; $p = 0.015$) in the chewing gum group [17]. This supports the role of chewing gum as a form of sham feeding that stimulates bowel motility. Similarly, a randomized study in patients undergoing laparoscopic hysterectomy demonstrated that chewing gum significantly reduced the time to bowel movement, flatus, and defecation ($p < 0.001$), reinforcing its beneficial effect on postoperative recovery [19].

Further evidence from systematic reviews and meta-analyses also aligns with the present findings. A recent meta-analysis of laparoscopic gynecological procedures reported that chewing gum significantly reduced the time to first bowel sounds and passage of flatus, indicating improved gastrointestinal motility [20]. Another systematic review similarly concluded that chewing gum accelerates recovery of bowel function by reducing time to bowel sounds and flatus, although effects on defecation and hospital stay were less consistent [21].

The reduction in paralytic ileus and shorter hospital stay observed in the present study is also supported by

previous literature, where chewing gum has been shown to improve postoperative outcomes and reduce complications [21]. Studies have demonstrated that gum chewing leads to faster return of bowel sounds and reduced time to flatus following laparoscopic gynaecological surgery, thereby contributing to enhanced recovery [21,22].

Strengths and Limitations

The present study has several strengths, including its prospective design, uniform surgical technique (total laparoscopic hysterectomy), and well-defined outcome measures assessing multiple parameters of gastrointestinal recovery, which enhance the internal validity of the findings. However, certain limitations must be acknowledged. The study had a relatively small sample size and was conducted at a single centre, which may limit the generalizability of the results. The observational design may introduce selection bias, as group allocation was not randomized. Furthermore, potential confounding factors such as variations in postoperative analgesia, patient compliance with gum chewing, and early mobilization were not strictly controlled. Larger, multicentric randomized controlled trials are needed to validate these findings and establish definitive recommendations.

CONCLUSION

In the present study, chewing gum use was associated with significantly earlier recovery of gastrointestinal function following total laparoscopic hysterectomy, as evidenced by earlier return of bowel sounds, passage of flatus and defecation, along with a lower incidence of paralytic ileus and shorter hospital stay. These findings suggest a beneficial role of chewing gum in postoperative recovery; however, given the observational design, further well-designed randomized studies are required to establish causality and confirm these results.

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