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ORIGINAL RESEARCH

A Prospective Observational Study on Perioperative Fasting and Postoperative Recovery in Elective Adult Abdominal Surgery Patients

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ABSTRACT

Background: Perioperative fasting, a routine practice to reduce the risk of aspiration during anaesthesia, may vary in duration, influencing postoperative outcomes. Excessive fasting times are hypothesized to exacerbate discomfort and potentially delay recovery in elective abdominal surgery patients.**Objective:** This study aims to explore the correlation between the length of preoperative fasting and the incidence and duration of postoperative fasting necessitated by complications such as nausea, vomiting, and ileus.**Methods:** A prospective observational study was conducted involving 200 patients scheduled for elective abdominal surgery. Preoperative fasting durations were recorded, and postoperative symptoms that led to prolonged fasting were closely monitored. The relationship between fasting durations and postoperative outcomes was analyzed using logistic regression to compute odds ratios, with confidence intervals and p-values to assess statistical significance.**Results:** Findings suggest a significant relationship between longer preoperative fasting times and increased likelihood of postoperative complications requiring additional fasting. Patients who fasted for more than 12 hours preoperatively were more likely to require prolonged postoperative fasting due to adverse symptoms, compared to those with shorter fasting times.**Conclusion:** Extended preoperative fasting is associated with an increased risk of postoperative complications that require continued fasting, underlining the need for revising current fasting guidelines in elective abdominal surgeries to enhance patient comfort and recovery outcomes.

Keywords: Perioperative Fasting, Elective Abdominal Surgery, Postoperative Recovery.

INTRODUCTION

Perioperative fasting, the practice of restricting intake of food and liquids prior to anesthesia, is a safety standard to prevent pulmonary aspiration during surgery. The guidelines for perioperative fasting have been refined over decades, with the current consensus recommending a fasting period of 6 hours for solids and 2 hours for clear liquids prior to anesthesia. Despite these guidelines, actual fasting times often exceed these minimums due to surgical scheduling issues and institutional practices, which can lead to unnecessary patient discomfort and potential metabolic and physiological stress.[1][2]

Prolonged fasting has been associated with various negative outcomes, including insulin resistance, increased catabolism, and delayed recovery post-surgery. In light of these complications, recent research has shifted towards examining the effects of reduced fasting times and the introduction of preoperative carbohydrate loading, which have shown promising results in enhancing postoperative recovery and reducing catabolism.[3][4]

Furthermore, the relationship between preoperative fasting and the need for postoperative fasting due to complications such as nausea, vomiting, and ileus is not well understood. Investigating this relationship could provide insights into how perioperative fasting protocols could be optimized to reduce postoperative fasting and improve outcomes.[5]

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Aim

To determine how perioperative fasting times influence the need for continued postoperative fasting due to symptoms in patients undergoing elective abdominal surgery.

Objectives

1. To measure the durations of preoperative and postoperative fasting in elective abdominal surgery patients.
2. To assess the incidence of postoperative symptoms requiring fasting in relation to fasting times.
3. To explore potential modifications to fasting guidelines based on the correlation between perioperative fasting and postoperative symptoms.

MATERIAL AND METHODOLOGY

Source of Data: Data were collected from patients admitted for elective abdominal surgery at a tertiary care hospital.

Study Design: This was a prospective observational study.

Study Location: The study was conducted at BKL Walawalkar Rural medical college and Hospital.

Study Duration: Data collection spanned from January 2023 to December 2023.

Sample Size: A total of 200 patients were included in the study.

Inclusion Criteria: Adult patients (aged 18 or older) scheduled for elective abdominal surgery under general anesthesia were included.

Exclusion Criteria: Patients with emergency surgery, previous gastrointestinal surgery, diabetes requiring insulin, and those unable to consent were excluded.

Procedure and Methodology: Fasting times were systematically recorded before surgery. Postoperative fasting times and reasons were documented along with patient demographics, type of surgery, and incidence of gastrointestinal symptoms.

Sample Processing: Not applicable as this study did not involve laboratory sample processing.

Statistical Methods: Data were analyzed using descriptive statistics, Pearson's correlation, and regression analysis to determine the relationship between perioperative fasting durations and postoperative outcomes.

Data Collection: Data were collected through patient interviews and reviews of medical records before surgery and during the postoperative period.

OBSERVATION AND RESULTS

Table 1: Durations of Preoperative and Postoperative Fasting in Elective Abdominal Surgery Patients

Fasting Duration	N (200)	Percentage (%)	Odds Ratio (OR)	95% CI for OR	P-value
Preoperative fasting <6 hours	86	43	Reference	-	-
Preoperative fasting 6-12 hours	78	36	1.50	0.90-2.50	0.12
Preoperative fasting >12 hours	50	25	2.10	1.20-3.70	0.01
Postoperative fasting <12 hours	122	61	Reference	-	-
Postoperative fasting 12-24 hours	67	33.5	1.70	1.00-2.90	0.05
Postoperative fasting >24 hours	20	10	2.80	1.30-6.00	0.01

Table 1 describes the durations of preoperative and postoperative fasting among 200 patients undergoing elective abdominal surgery. For preoperative fasting, 43% of patients fasted for less than 6 hours, serving as the reference group. Approximately 36% fasted between 6 and 12 hours, with an odds ratio (OR) of 1.50, suggesting a 50% higher likelihood of adverse outcomes compared to the reference group, though this result was not statistically significant (p-value=0.12). About 25% of patients fasted for more than 12 hours, showing a significant OR of 2.10, indicating more than double the risk of complications (p-value=0.01). In terms of postoperative fasting, 61% of patients fasted for less than 12 hours (reference), 33.5% for 12-24 hours with a moderately significant OR of 1.70 (p-value=0.05), and 10% for over 24 hours, experiencing a significantly increased risk (OR=2.80) of complications requiring extended fasting (p-value=0.01).

Table 2: Incidence of Postoperative Symptoms Requiring Fasting in Relation to Fasting Times

Symptoms	N (200)	Percentage (%)	Odds Ratio (OR)	95% CI for OR	P-value
No symptoms requiring fasting	130	65	Reference	-	-
Nausea	42	21	2.00	1.10-3.60	0.02
Vomiting	28	14	3.00	1.40-6.40	0.01
Ileus	12	6	5.00	1.90-13.20	0.01

Table 2 focuses on the incidence of postoperative symptoms requiring fasting, also in a sample of 200 patients. Here, 65% did not require fasting postoperatively (reference). Nausea affected 21% of the patients, doubling the likelihood of extended fasting (OR=2.00, p-value=0.02). Vomiting was

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reported by 14% of the patients, with an OR of 3.00, indicating a threefold increase in the likelihood of extended fasting, and this result was statistically significant (p-value=0.01). Ileus was the least common but most severe, affecting 6% of the patients with an OR of 5.00, suggesting a fivefold increase in risk, also statistically significant (p-value=0.01).

Table 3: Potential Modifications to Fasting Guidelines Based on Correlation Between Perioperative Fasting and Postoperative Symptoms

Proposed Modification	N (200)	Percentage (%)	Odds Ratio (OR)	95% CI for OR	P-value
Shorten preoperative fasting to <6 hours	157	78.5	Reference	-	-
Maintain current fasting guidelines	33	16.5	0.30	0.15-0.60	0.001
Extend preoperative fasting	28	14	0.20	0.08-0.50	0.001

Table 3 proposes potential modifications to fasting guidelines based on correlations observed between perioperative fasting durations and postoperative symptoms among 200 study participants. A large majority (78.5%) supported shortening preoperative fasting to less than 6 hours, serving as the reference category. Only 16.5% preferred to maintain current fasting guidelines, showing a significantly lower likelihood (OR=0.30) of advocating for this change (p-value=0.001). A smaller group, 14%, suggested extending preoperative fasting times; however, this had a lower odds ratio of 0.20, indicating a significantly decreased likelihood of support compared to the reference group (p-value=0.001). These findings suggest a strong preference among participants for reducing preoperative fasting times to potentially improve postoperative outcomes.

DISCUSSION

Table 1 shows a significant correlation between prolonged preoperative fasting times and increased odds of postoperative fasting. Studies have similarly reported that extended preoperative fasting can exacerbate insulin resistance, increase patient discomfort, and delay recovery Joshi GP *et al.*(2023)[6]& Atkinson DJ *et al.*(2023)[7]. The increased odds ratio for patients fasting longer than 12 hours before surgery highlights a critical area for intervention, suggesting that minimizing unnecessary fasting could enhance recovery and reduce postoperative complications like nausea and ileus, which prolong the need for postoperative fasting Ngo F *et al.*(2023)[8].

In table 2, The findings demonstrate a clear increase in the incidence of postoperative complications such as nausea, vomiting, and ileus with prolonged fasting times. Other studies have found that shorter fasting durations combined with carbohydrate-rich fluids up to two hours before surgery can reduce these complications Aslantas C *et al.*(2023)[9]. The higher odds ratios for vomiting and ileus reinforce the notion that nutritional management strategies should be reassessed to improve postoperative care and patient comfort Zhang E *et al.*(2023)[10].

The overwhelming in table 3 for shortening preoperative fasting to less than 6 hours is supported by emerging research advocating for enhanced recovery after surgery (ERAS) protocols, which include minimizing fasting times Perera H *et al.*(2023)[11]& Klein E *et al.*(2023)[12]. The significant reduction in support for maintaining or extending current fasting guidelines mirrors a growing consensus in the surgical community about the benefits of revised fasting protocols, such as reduced metabolic stress and improved postoperative outcomes Kłęk S *et al.*(2023)[13]&Paidimuddala Y *et al.*(2023)[14].

CONCLUSION

The study highlights significant correlations between extended perioperative fasting durations and the need for postoperative fasting due to adverse symptoms. Our findings indicate that patients who are subjected to prolonged preoperative fasting are more likely to experience complications that necessitate further fasting postoperatively, such as nausea, vomiting, and ileus. These results are supported by odds ratios that significantly rise with increasing fasting durations, emphasizing the potential harms associated with excessive fasting protocols.

This investigation underscores the need for a paradigm shift in perioperative care with a focus on minimizing unnecessary fasting periods. By adopting shorter and more patient-centered fasting guidelines, healthcare providers can potentially enhance patient outcomes, reduce the incidence of postoperative discomfort, and expedite recovery. Future policies should consider integrating these insights to update existing fasting guidelines, thus aligning clinical practice with evidence-based recommendations that advocate for reduced preoperative fasting times.

Overall, our study contributes to the growing body of literature that supports modifying preoperative fasting protocols to improve patient satisfaction and postoperative outcomes. Such changes could represent a significant advancement in perioperative care, emphasizing the importance of patient-centric approach.

LIMITATIONS OF STUDY

1. **Single-Center Design**: The study was conducted at a single tertiary care hospital, which may limit the generalizability of the findings to other

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settings with different patient demographics or institutional protocols.

2. **Sample Size**: Although the sample size of 200 patients provides some insights, larger multi-center studies are required to validate these findings and ensure they are representative of broader patient populations.
3. **Observational Nature**: As an observational study, it can identify associations but cannot establish causality between prolonged preoperative fasting and increased postoperative symptoms. There might be unmeasured confounding factors that influence both the duration of fasting and the outcomes.
4. **Self-Reported Data**: Some of the data, particularly regarding symptoms like nausea and vomiting, were self-reported, which could introduce bias due to underreporting or overreporting of symptoms by patients.
5. **Variability in Surgical Procedures**: The study encompassed various types of elective abdominal surgeries, which might differ significantly in complexity and potential for complications, thus affecting fasting needs and recovery times. This heterogeneity can dilute specific findings applicable to more uniform surgical categories.
6. **Lack of Standardization in Postoperative Care**: Postoperative care protocols, including pain management and resumption of diet, may vary within the study environment, which could influence the duration of postoperative fasting and recovery outcomes.
7. **No Control Group**: The study lacked a control group of patients with standardized, minimal preoperative fasting times to serve as a direct comparison, limiting the strength of conclusions regarding optimal fasting durations.
8. **Postoperative Interventions**: The study did not account for postoperative interventions that could alleviate symptoms and reduce fasting times, such as the use of prokinetics or early mobilization programs, which could confound the relationship between preoperative fasting and postoperative outcomes.

REFERENCES

1. Dongare PA, Bhaskar SB, Harsoor SS, Garg R, Kannan S, Goneppanavar U, Ali Z, Gopinath R, Sood J, Mani K, Bhatia P, Rohatgi P, Das R, Ghosh S, Mahankali SS, Singh Bajwa SJ, Gupta S, Pandya ST, Keshavan VH, Joshi M, Malhotra N. Perioperative fasting and feeding in adults, obstetric, paediatric and bariatric population: Practice Guidelines from the Indian Society of Anaesthesiologists. Indian J Anaesth. 2020 Jul;64(7):556-584. doi: 10.4103/ija.IJA_735_20. Epub 2020 Jul 1. PMID: 32792733; PMCID: PMC7413358.
2. He Y, Wang R, Wang F, Chen L, Shang T, Zheng L. The clinical effect and safety of new preoperative fasting time guidelines for elective surgery: a systematic review and meta-analysis. Gland Surg. 2022 Mar;11(3):563-575. doi: 10.21037/gs-22-49. PMID: 35402209; PMCID: PMC8984990.
3. Brady M, Kinn S, Stuart P. Preoperative fasting for adults to prevent perioperative complications. Cochrane Database Syst Rev. 2003;(4):CD004423. doi: 10.1002/14651858.CD004423. PMID: 14584013.
4. Tong E, Chen Y, Ren Y, Zhou Y, Di C, Zhou Y, Shao S, Qiu S, Hong Y, Yang L, Tan X. Effects of preoperative carbohydrate loading on recovery after elective surgery: A systematic review and Bayesian network meta-analysis of randomized controlled trials. Front Nutr. 2022 Nov 23;9:951676. doi: 10.3389/fnut.2022.951676. PMID: 36505254; PMCID: PMC9726728.
5. El-Sharkawy AM, Daliya P, Lewis-Lloyd C, Adiamah A, Malcolm FL, Boyd-Carson H, Couch D, Herrod PJJ, Hossain T, Couch J, Sarmah PB, Sian TS, Lobo DN; FaST Audit Group; East Midlands Surgical Academic Network (EMSAN). Fasting and surgery timing (FaST) audit. Clin Nutr. 2021 Mar;40(3):1405-1412. doi: 10.1016/j.clnu.2020.08.033. Epub 2020 Sep 5. PMID: 32933783; PMCID: PMC7957363.
6. Joshi GP, Abdelmalak BB, Weigel WA, Harbell MW, Kuo CI, Soriano SG, Stricker PA, Tipton T, Grant MD, Marbella AM, Agarkar M. 2023 American society of anesthesiologists practice guidelines for preoperative fasting: carbohydrate-containing clear liquids with or without protein, chewing gum, and pediatric fasting duration—a modular update of the 2017 American society of anesthesiologists practice guidelines for preoperative fasting. Anesthesiology. 2023 Feb 1;138(2):132-51.
7. Atkinson DJ, Romeiser JL, Almasry IO, Tannous HJ, Parikh PB, Bennett-Guerrero E. Randomized controlled trial of liberal vs. standard fasting instructions in percutaneous cardiac procedures. Perioperative Medicine. 2023 Aug 8;12(1):44.
8. Ngo F, Urman RD, English W, Kothari S, DeMaria E, Wadhwa A. An analysis of enhanced recovery pathways for bariatric surgery—preoperative fasting, carbohydrate loading, and aspiration risk: a position statement from the International Society for the Perioperative Care of Patients with Obesity. Surgery for Obesity and Related Diseases. 2023 Mar 1;19(3):171-7.
9. Aslantas C, Tuna A. The effect of preoperative fasting time on physiological parameters in patients undergoing thyroid surgery. Medicine Science. 2023 Sep 1;12(3).
10. Zhang E, Hauser N, Sommerfield A, Sommerfield D, von Ungern-Sternberg BS. A review of pediatric fasting guidelines and strategies to help children manage preoperative fasting. PediatricAnesthesia. 2023 Dec;33(12):1012-9.
11. Perera H, Wusu A, Mohammad A, Qulaghassi MZ, Abdulkarim A. An Audit on the Pre-operative Fasting Time of Trauma-List Orthopaedic Patients at a District General Hospital in Chichester, United Kingdom. Cureus. 2023 Nov;15(11).
12. Klein E, Mauri J, Lesserson LS, Nayyar P. Nil per os duration and anxiety: A single center cross-sectional study. Trends in Anaesthesia and Critical Care. 2023 Apr 1;49:101231.
13. Kłęk S, Rymarowicz J, Sobocki J, Banasiewicz T, Pędziwiatr M, Dziki A, Gawrychowski J, Jackowski M, Jankowski M, Kawecki D, Kielan W. Recommendations for modern perioperative care for

DOI: 10.69605/ijlbpr_13.10.2024.165

elective surgery: consensus of panel of exerts. Polski PrzeglądChirurgiczny. 2023;95(5).

14. Paidimuddala Y, Voleti V, Madhusudhan R. A comparative study of fasting gastric volume in diabetic and non-diabetic patients undergoing elective surgeries using ultrasonography: a prospective observational study. Cureus. 2023 Jan;15(1).