Impact of Preoperative Oral Carbohydrate Loading on Recovery of Surgical Patients

Leni Alejo, RN, MSN, CCRN

Background

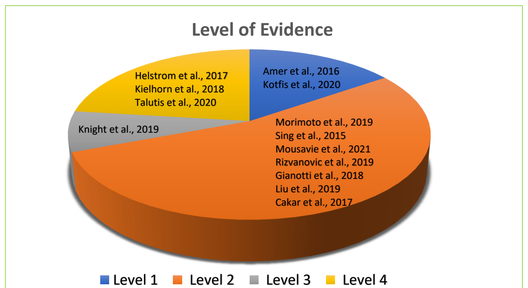
- Surgery poses a great stress on the body from fasting overnight to the actual insult to the body (Liu et al., 2019)
- Overnight fasting before surgery causes metabolic, physiological and psychological discomforts in patients (Cakar et al., 2016)
- Awad et al., 2013 as cited in Gianotti et al. (2018) showed that giving a preoperative oral carbohydrate (OCH) drink appears to modulate alterations of glucose metabolic pathways postoperatively thereby making patients recover faster after surgery
- As a component of Enhanced Recovery after Surgery (ERAS) protocol, preoperative OCH has been implemented for several years now although its safety and efficacy in elective surgery patients has conflicting results (Amer et al., 2016)

Purpose

- This study aims to find out how safe preoperative OCH loading is and its effects on the quality of post surgical recovery of patients

Methods

- An integrated review of literature was conducted
- Cochrane, Pub Med, and Ovid were searched using the terms carbohydrate loading and postoperative or post surgical outcome
- Search criteria was limited to full texts, English language, humans aged 18+, and between years January 2015 – April 2021
- Inclusion criteria included studies with preoperative oral carbohydrate loading and effects on surgical recovery
- The original search identified 55 articles and 3 more from other sources. After screening the articles 3 duplicates were removed and 42 were excluded due to not meeting the inclusion criteria
- Findings from the studies were synthesized for comparative analysis of results



Authors	Interventions	Post surgical outcomes
Morimoto et al., 2019; Gianotti et al., 2018	Oral carbohydrates (OCH) vs. plain water or placebo	• Non-diabetics with OCH had decreased catabolism & ketones, increased insulin levels and normal median glucose levels postoperatively
Rizvanovic et al., 2019; Kotfis et al., 2020; Talutis et al., 2020; Liu et al., 2019	Oral carbohydrate (OCH) vs. fasting	• Decreased length of stay; less post op insulin requirements/aortic clamping duration/insulin resistance inflammatory markers/pain/nausea & vomiting; faster return of gastrointestinal function & ambulation in non-diabetic patients with OCH • No significant post op blood sugar increase and insulin requirements between non-diabetic & type 2 diabetics with OCH and fasting groups
Sing et al., 2015; Amer et al., 2016	Oral carbohydrate (OCH) vs. placebo vs. fasting	• Sing et al. (2015) proved OCH patients had decreased post op nausea/vomiting & pain over placebo and fasting groups • Amer et al. (2016) showed no difference on the three groups in terms of length of stay and post op complications
Knight et.al., 2019; Kielhorn et al., 2018	Simple oral carbohydrate (SIM) vs. complex oral carbohydrate (COM)	• More episodes of hyperglycemia in SIM patients postop for both non-diabetics and type 2 diabetics
Mousavie et al., 2021; Cakar et al., 2017	Oral carbohydrate (OCH) vs. IV carbohydrate infusion (IVCH) vs. fasting	• Non-diabetic OCH patients had less post op pain, nausea /vomiting, & higher quality of recovery compared to the IVCH and fasting group
Hellstrom et al., 2017	Oral carbohydrate (OCH) to elderly women	• OCH safe to administer to non-diabetic and diabetic elderly (over 75 y) women • No delay in gastric emptying time if OCH administered within 3 hrs. preop

*All studies did not report any aspiration events.

Results

- 58 articles were initially identified; 13 included in final sample
- Level of evidence rated using evidence pyramid published by Long and Gannaway

Discussion/ Implications

- All the studies showed that OCH is safe to administer to patients with mild systemic disease undergoing elective surgery.
- All but one of the studies supported the beneficial effects of preop OCH to patients recovering from surgery.
- 3 studies showed even type 2 diabetics will benefit from OCH without significantly raising post op blood sugar.
- Studies showed composition and timing of preoperative OCH intake affect overall benefits in postoperative recovery.
- More studies are needed to explore effects of preoperative OCH to patients with moderate co-morbidities.

References

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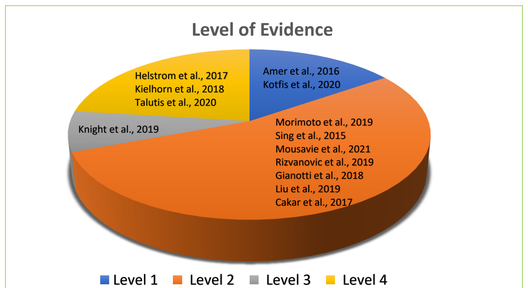

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