ORIGINAL ARTICLE

The Effect of Preoperative Oral Carbohydrate Solution Intake on Patient Comfort: A Randomized Controlled Study

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Purpose: *The study was conducted to investigate the effect of preoperative oral carbohydrate loading on the preoperative discomforts and postoperative complications of patients undergoing elective thyroidectomy.*
Design: *A randomized controlled clinical trial.*
Methods: *Ninety patients scheduled for thyroidectomy were divided into three groups: (1) those receiving a carbohydrate-rich drink (CHD), (2) those receiving an overnight 5% glucose intravenous infusion, and (3) those fasting from midnight. The preoperative discomforts and postoperative complications of patients were evaluated using the Visual Analog Scale (VAS). The patients' vital signs and blood glucose levels were measured perioperatively.*
Findings: *In the preoperative assessment, hunger, thirst, mouth dryness, chill, and headache adjusted for age, gender, body mass index, and duration of the operation were all found to be significantly higher in the glucose and fasting groups than the CHD group ($P < .01$). In the postoperative period, the fasting group experienced more vomiting and pain compared with the CHD group ($P < .05$). A significant difference was found between the groups in terms of diastolic blood pressure and pulse rate in the preoperative and intraoperative periods ($P < .05$).*
Conclusions: *The CHD treatment before thyroidectomy increases patient comfort by reducing preoperative discomfort (such as hunger, thirst, dry mouth, fatigue and headache) and early postoperative complications (vomiting and pain).*

Keywords: *carbohydrate-rich drink, patient comfort, preoperative fasting, research.*

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ONE IN 20 PEOPLE, approximately, 5% of the global population, undergoes an elective surgery at one time in their life.[1] Patients are conventionally instructed to be "nil per os" (NPO), meaning that they should abstain from oral food or fluids from midnight before the scheduled surgery. The aim of the NPO practice is to reduce the risk of vomiting and aspiration during the induction of anesthesia and during the surgery. However, overnight fasting before the surgery can result in metabolic, physiological, and psychological discomfort in patients.[2-7] Long periods of fasting before surgery have been reported to cause stress, dehydration, anxiety, uneasiness, hunger, thirst, dry mouth, fatigue, and headache in patients.[6,8,9] In addition to these postoperative complications, loss of fluids during surgery results in fluid deficiency in the postoperative period.[10]

To prevent these possible complications, the duration of preoperative fasting should be kept within an acceptable range.[7] In recent years, following studies reporting that NPO practice in elective surgery does not affect the risk for aspiration, the recommendations particularly regarding the intake of clear liquids (water, coffee, tea with no milk and clear juices) have changed. Randomized controlled studies and meta-analyses have suggested that the intake of water or other clear liquids up to 2 hours before induction of anesthesia does not increase the volume and acidity of gastric juices and does not pose a risk in terms of aspiration.[6,11-14] This application has also been reported to decrease preoperative feelings of thirst and anxiety and give comfort to patients without increasing the gastric content during overnight fasting, but it does not have an impact on the metabolism or carbohydrate reserves.[5,7]

In recent years, carbohydrate-rich drink (CHD) has been used as a safe fasting process before surgery.[15,16] It has been reported that these solutions do not pose a risk for aspiration and decrease insulin resistance when the duration of gastric emptying and the amount of liquid intake are controlled. It takes approximately 90 minutes for the oral carbohydrate solutions to pass through the stomach; therefore, these solutions can be taken up to 2 hours before the surgery.[7] Furthermore, studies have shown that the administration of CHD is effective in reducing dehydration, headache, nausea-vomiting, feelings of thirst and hunger, anxiety, and insulin resistance. It also increases preoperative patient comfort, suppresses the catabolic response, and reduces the hospital stay.[6,8,15-19]

The effect of CHD was investigated in a meta-analysis of 27 studies containing a total of 1,976 patients. It was found that the use of CHD not only decreases insulin resistance, but also reduces the number of hospitalized days after major abdominal operations by 2 days. CHD was also reported to have no effect on postoperative complications.[18]

In Turkey, there is limited research on CHD. The patient protocols of many surgical clinics favor fasting before elective surgery. The objective of this study was to determine the effect of CHD intake before elective thyroidectomy on preoperative discomfort of patients (hunger, thirst, mouth dryness, chill, and headache) and postoperative complications (nausea, vomiting, and pain).

Methods

Study Design and Setting

This parallel randomized controlled study was conducted between March 2011 and September 2011 in a hospital in the west of Turkey. The hospital has a capacity of 200, beds with 25 being located in the general surgery clinic. The research protocol was developed using a multidisciplinary approach, which included the overall perioperative team.

Sample

The sample size was calculated taking into consideration the blood glucose scores from Ayoğlu et al,[4] namely 80% power, $\alpha = 0.01$ error, and a minimum sample size for three groups of 69. Of the initial 100 patients planned to be included in the study, three patients did not meet the research criteria and two patients did not give consent. During the preoperative follow-up, five patients were found to have taken food after midnight and therefore were excluded from the study. As a result, a total of 90 patients were equally divided into three groups prospectively using the block randomization method. A total of 30 blocks, each consisting of three patients were created using a random number table. Blinding or masking was not performed in the study (Figure 1).