Title: Impact of preoperative acetaminophen and carbohydrate loading on pain and functional status in patients undergoing Mohs Micrographic Surgery for non-melanoma skin cancers

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We conducted a randomized controlled trial to examine the impact of preoperative carbohydrate loading and acetaminophen on i) maximum pain level during and after MMS, ii) sensation of anxiety, thirst, hunger and fatigue during MMS, and iii) postoperative use of analgesics. All adult patients undergoing MMS for keratinocytic skin cancers were eligible for recruitment except for those with history of liver transplant, hepatitis, or cirrhosis, or those required to be NPO for subsequent closure by other surgical specialties. Patients were assigned to either control or intervention group using a random number generator.

Intervention:

The control group received usual perioperative care including patient education on diagnosis, treatment and prognosis of skin cancer, encouragement of food and fluid intake, and acetaminophen per patient request. The intervention group, in addition to usual care, received Acetaminophen 1000mg and commercially available carbohydrate drink (50gm in 12 fl. oz.) before initiation of MMS.

Outcome Assessment:

Primary outcome is maximum pain score during and within 48 hours of surgery as reported by patient using a 100mm linear visual analog scale. Patients can place a mark anywhere along a 100mm continuous line to indicate their level of pain. Pain assessment was performed before each Mohs layer and at the end of surgery. Patients were instructed to record their daily maximum pain score for post op day 1 and 2 on the linear visual analog scale and return the

document to the office either in person at the one-week follow-up visit or mailed if unable or unwilling to return due to long distance travel.

Secondary outcomes are i) patient sense of well-being (thirst, hunger, anxiety, and fatigue) at the end of surgery, and ii) use of analgesic after surgery. Patients assessed their sense of thirst, hunger, anxiety and fatigue before and immediately after surgery using a linear visual analog scale, an instrument that is commonly used in clinical trials assessing impact of perioperative interventions.6 They were instructed to document use of any analgesics including over-the-counter non-opioid or prescribed opioid medications on provided forms. The forms were returned in person at one-week follow-up visit or via mail.

Data Collection:

The following baseline information were collected from medical records: i) patient age, gender, prior history of skin cancer, prior history of MMS, history of anxiety or pain syndromes, and food consumption within 2 hours of surgery ii) tumor site, preoperative size, histology, depth of invasion, presence of perineural or lymphovascular invasion, and primary vs. recurrent status, iii) operative details e.g. case duration (defined as length of time between check-in and check-out), number of Mohs layer, final defect size, type of closure, use of oral analgesics during surgery (in addition to the preoperative acetaminophen), and iv) post-operative course including presence for one-week follow-up visit, complications e.g. bleeding and infection.

Data Analysis:

Differences in baseline characteristics between control and intervention groups were analyzed using Chi-square for categorical variables, and the t-test for continuous variables. All statistics were two-tailed, with a significance level of 0.05.