Oral Hydration Protocol Prior to Total Joint Arthroplasty - Not Always a Winning Formula

Farhan Ahmad, Samuel Peter Alfonsi, E Bailey Terhune, Robert A Burnett, Craig J Della Valle

INTRODUCTION: Preoperative carbohydrate-containing sports beverages are increasingly used in enhanced recovery protocols for total joint arthroplasty (TJA), yet their effects on electrolyte homeostasis remain poorly characterized. This study evaluated the impact of a preoperative oral rehydration therapy (ORT) protocol on postoperative hyponatremia incidence and length of stay (LOS) following TJA.

METHODS: This retrospective cohort study compared patients undergoing primary TJA under a traditional nil per os (NPO) protocol (Pre-ORT) versus patients who received 500mL of a carbohydrate solution (Gatorade, Chicago IL) 5 hours prior to surgery (Post-ORT). The primary outcome was postoperative hyponatremia (sodium <135 mmol/L). Secondary outcomes included sodium change severity and LOS. Analyses were stratified by surgery time (morning, midday, afternoon/evening) and adjusted for demographics and comorbidities.

RESULTS: A total of 4,565 patients underwent TJA, comprising 1,609 (35.2%) in the Pre-ORT group and 2,956 (64.8%) in the Post-ORT group. The Post-ORT protocol was associated with an 11.0% absolute increase in hyponatremia incidence (49.0% vs 38.0%, p<0.001). Pre-ORT hyponatremia rates decreased with later surgical times (42.9% to 30.2%, p<0.001), while Post-ORT rates of hyponatremia were independent of surgical timing (p=0.324). Risk factors for hyponatremia included afternoon surgeries (18.8% absolute increase), older patients (>65 years, OR 1.56), and ASA 3 patients (OR 1.63). Post-ORT was associated with greater mean sodium decreases (-3.8 vs -3.0 mmol/L, p<0.001), more severe sodium reductions (49.3% vs 27.6% with decreases ≥3.6 mmol/L), increased complications (8.3% vs 5.9%, p=0.004), and longer LOS (1.7 vs 1.4 days, p<0.001).

DISCUSSION AND CONCLUSION: The ORT protocol was associated with significantly higher rates of postoperative hyponatremia and hospital stays following TJA. Compared to patients who were NPO, ORT lead to higher rates of hyponatremia in later surgical start times. These findings suggest reconsideration of standardized preoperative carbohydrate-containing sports beverages for oral rehydration, particularly for afternoon surgeries and high-risk patients, and highlight the need for protocol optimization to improve perioperative sodium homeostasis.