Efficacy of Postoperative Oral Fluid Replacement Versus Traditional Intravenous Fluid Replacement in Primary Total Knee Arthroplasty: A Randomized Controlled Trial

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INTRODUCTION:
There are few studies focusing on perioperative fluid management after total knee arthroplasty (TKA). Oral fluid replacement is one factor of the enhanced recovery after surgery (ERAS) protocol. This study aims to investigate the efficacy of oral fluid replacement compared to traditional intravenous (IV) fluid replacement after unilateral TKA and its complications.
METHODS:
We conducted a randomized controlled trial with 118 patients who underwent unilateral primary TKA. All participants were randomized into the oral fluid (OF) group (59 cases) and the IV fluid (IF) group (59 cases). The OF group discontinued IV fluids immediately after surgery and began drinking water postoperatively. The IF group received IV fluid replacement and was allowed to drink water as usual. The primary outcome was the time to walk after TKA. The secondary outcomes were the incidence of oliguria, postoperative nausea and vomiting (PONV), the time up and go test (TUGT), urine output during hospitalization, and complications up to 3 months postoperatively.
RESULTS:
The time to walk was similar between the two groups (8.16 ± 5.37 hours in the OF group vs 6.82 ± 4.36 hours in the IF group, $p > 0.05$). The incidence of oliguria was also similar between the two groups (28% in the OF group and 24% in the IF group, $p = 0.67$). The OF group had a higher rate of PONV compared to the IF group (32% vs 23%, $p < 0.05$). TUGT was similar between the OF and IF groups on the first two days after surgery (70 ± 25 vs 70 ± 24 seconds) in on postoperative day (POD) 1 ($p > 0.05$), and 56 ± 18 vs 58 ± 18 seconds on POD 2 ($p > 0.05$). Urine output was also similar between the two groups (2831 ± 1125 vs 3500 ± 1591 mL on POD 1($p > 0.05$), and 2215 ± 959 vs 2428 ± 1216 mL on POD 2 ($p > 0.05$).
DISCUSSION AND CONCLUSION:
Postoperative oral fluid replacement alone was comparable to traditional IV fluid replacement after unilateral TKA. However, postoperative nausea and vomiting occurred more frequently with oral fluid intake. Additional antiemetics should be used to prevent this adverse event and improve the efficacy of oral fluid replacement following TKA.