Introduction:
The risk of developing acute kidney injury (AKI) after liver transplantation in the immediate postoperative period ranges between 17 to 95%. Most studies in critically ill and surgical patients evaluated the link between chloride-rich resuscitation fluids, not serum chloride levels, and the incidence of AKI. The association between preoperative chloride level or difference in perioperative chloride levels and the incidence of postoperative AKI after liver transplantation were evaluated.

Methods:
Adult patients (≥18 years old) who underwent liver transplantation at Seoul National University Hospital between 2004 and 2015 were included in the retrospective analysis. The difference between preoperative serum chloride level and the immediate postoperative serum chloride level was defined as intraoperative chloride loading. Postoperative AKI within 7 days of liver transplantation was diagnosed according to the RIFLE criteria. Patients were divided into normochloremia group (96-106 mEq/L), hypochloremia group (<96 mEq/L), or hyperchloremia group (>106 mEq/L) according to their preoperative chloride level. Intraoperative chloride loading was defined as the difference between preoperative serum chloride level and immediate postoperative serum chloride level.

Results:
AKI developed in 58.8% (630/1071) of the patients. AKI was more frequent in patients with hyperchloremia (adjusted OR 1.44 [95% CI 1.08-1.90], P=0.01) and hypochloremia (adjusted OR 1.25 [95% CI 1.03-1.53], P=0.03) compared to patients with preoperative normochloremia. MELD scores > 11 and age >56 years were also associated with increased risk of AKI. Intraoperative chloride loading was not a significant risk factor for AKI after liver transplantation.

Conclusion:
Preoperative hyperchloremia and hypochloremia were both associated with an increased risk of developing AKI in the immediate postoperative period after liver transplantation.