Introduction:
Liver transplant (LT) in patients with renal dysfunction presents intraoperative challenges and portends postoperative morbidity. Continuous renal replacement therapy (CRRT) is increasingly used for intraoperative support; however, there is a paucity of data to support this practice.

Methods:
Pilot randomized open-label controlled trial in adults receiving cadaveric LT with a Modification of End-Stage Liver Disease (MELD) score ≥25 and preoperative acute kidney injury (KDIGO stage 1) and/or estimated glomerular filtration rate <60 mL/min/1.73m2. Patients were randomized to intraoperative CRRT (iCRRT) or standard of care. Primary endpoints were feasibility and adverse events. Secondary endpoints were changes in intraoperative fluid balance, complications, and hospital mortality. Analysis was intention-to-treat.

Results:
Sixty patients were enrolled, 32 (53%) were randomized (17 to iCRRT; 15 to control). Mean (SD) was age 49 (13) years, MELD was 36 (8), 75% (n=24) had cirrhosis; 63% (n=20) received preoperative RRT; and 66% (n=21) were transplanted from ICU. One patient allocated to iCRRT did not receive LT. Seven (41%) allocated to control crossed over intraoperatively iCRRT (high central venous pressure [n=4]; abdominal distension [n=1]; massive transfusion [n=1]; hyperkalemia [n=1]). No adverse events occurred. Operating time was similar (513 [140] vs. 463 [115] min, p=0.30). CRRT duration was 379 (137) min, with only 3 interruptions (all due to access). iCRRT fluid removal was 2.8L (range 0–14.5). Fluid balance was 5.3L (2.9) for iCRRT vs. 4.3L (6.1) for control (p=0.57). Postoperative CRRT was similar (77% vs. 50%, p=0.25). There were no differences in reexploration (p=0.36), mechanical ventilation time (p=0.87), reintubation (p=0.18), sepsis (p=0.56), or mortality (p=0.16).

Conclusion:
In this pilot trial of high acuity LT patients, iCRRT was feasible and safe. These data will inform the design of a large trial to define the role of iCRRT during LT.

References:
ClinicalTrials.gov: NCT01575015.