Introduction:
Continuous renal replacement therapy (CRRT) with Regional citrate anti-coagulation (RCA) is increasingly being used as a treatment modality in critically ill patients. There is limited experience of use of citrate anticoagulation patients with acute liver failure and acute on chronic liver failure who pose a tough challenge of being at a higher risk for bleeding. An institutional protocol was formulated for use of commercially available citrate solutions and the same was studied to assess filter life and safety of citrate in liver disease. The primary objective was to assess safety of citrate anticoagulation in liver disease.

Methods:
This study was a single centre, prospective, non-randomized, single arm, observational study. All adult patients, with acute liver failure and acute on chronic liver failure requiring CRRT were included. Blood ionized calcium levels of 0.9 to 1.1mmol/l was targeted throughout the therapy and total to ionized calcium ratio of less than 2.4 was maintained. RCA was stopped if the ratio was more than 2.4 for 2 consecutive assessments. Incidence of citrate accumulation and toxicity were assessed. Average filter life was also assessed. Metabolic parameters, electrolytes and strong ion gap were followed till 24 hours after completion on CRRT.

Results:
A total of 25 patients were included in the study. Nineteen patients of acute on chronic liver failure and 6 patients of acute liver failure underwent CRRT with RCA. Baseline average serum bilirubin, lactate and INR were 11.8 mg/dL, 6.4 mmol/L and 2.1 respectively. The average filter life was 50 hours 3 minutes. Citrate accumulation took place in (n=13) patients and RCA had to be stopped for ( n=6) patients due to the same. None of the patients had evidence of citrate toxicity.

Conclusion:
Citrate anticoagulation was well tolerated in patients with acute liver failure in patients with or without pre-existing chronic liver disease on CRRT.