Introduction:
Ultrasound guidance may improve the success rate of vascular cannulation. There is lack of data regarding the utility of USG guided arterial cannulation in critically ill patients in shock. We aim to compare the impact of using real time ultrasound guidance versus palpation method in achieving arterial catheterization in critically ill patients in hypotension.

Methods:
A single center, prospective, randomized trial was performed among 100 critically ill patients aged >18 years, with hypotension (or requiring vasopressor infusion) and on not previous cannulated radial arteries. Patients were randomized in a ratio of 1:1 to the ultrasound group or palpation group. Under aseptic precautions, arterial puncture was performed using appropriate sized Leader Cath (Vygon, Ecquen, France), under real time USG guidance using short-axis out-of-plane view with bevel down. Data were recorded and compared between two groups. The unpaired Student’s t-test or Mann-Whitney U test were used for continuous variables, and the uncorrected Chi-squared or Fisher’s exact test were used for proportions.

Results:
A total of 100 patients with hypotensive shock requiring radial artery catheterization were randomized into palpation (n = 51) and ultrasound (n = 49) groups. First pass success rate was significantly higher in ultrasound group as compared to palpation group (83% vs 41%, p<0.0001). Cannulation time was significantly shorter in ultrasound group (72.9 vs 88.7, p<0.05). Early complications were significantly higher in palpation group compared to ultrasound group (14.6% vs 5.2%, p<0.001).

Conclusion:
In critically ill patients with hypotension (or requiring vasopressors), ultrasound guidance improved first pass success rate, shortened the cannulation time and reduced the rate of early complications in radial artery catheterizations.