**Introduction**: the optimal radiofrequency (RF) power for atrial fibrillation (AF) ablation remain unclear. We evaluated the safety and efficacy of 50W RF power during AF ablation with using Ablation Index (AI).

**Methods**: we evaluated 17 patients, including 5 patients not using any contact medium, with paroxysmal (n=3) or persistent (n= 14) AF undergoing initial AF ablation. RF was delivered for reaching AI>370 at posterior wall and AI> 400 at anterior wall. The part of esophageal were performed by 50W RF ablation within 5 seconds. Internal esophageal temperature was monitored dynamically.

**Result**: First pass isolations for the left and the right pulmonary veins (PV) were 100% and 82.3%, respectively. The number of RF tags to enclose the PV was 34 ± 9. The time of applying a RF tag was 10.2 ± 3.8 seconds except the part of esophageal. Procedure and PV isolation times were 70.5 ± 12.7 min and 12.0 ± 4.4 min, respectively. There was no adverse event, including pericardial effusion, pericarditis, esophageal injury. Maximum esophageal temperature was 42.6°C, but it fell below 40°C as 20 seconds passed.

**Conclusion**: high power short duration RF ablation for AF using AI is safe and effect with a high rate of first pass isolation and short procedure times.