**Introduction**: Left atrial pressure had been proven to play a crucial role in atrial remodeling in animal experiment. We try to find out optimal left atrial pressure cut-off value to predict left atrial remodeling process.

**Methods**: Fifty AF patients underwent left atrial pressure (LAP) measurement through long sheath after successful ablation. Then we performed left atrial substrate mapping in sinus rhythm (SR), and mean left atrial voltage were calculated.

**Result**: There was a negative correlation between LAP and LA voltage ($r=-0.567, P=0.001$). Its ROC curve revealed optimal cut-off value to predict left atrial voltage is 14.1 mmHg, with sensitivity of 63.5% and specificity of 93.5%.

**Conclusion**: Increased LAP can intensify LA fibrosis and remodeling process. LAP > 14.1 mmHg have a good prognosis value for low left atrial voltage.