Reconnections across ablation lines result in macro-reentrant atrial tachyarrhythmias. We examined the incidence and clinical impact of mitral isthmus line (MIL) reconnections in patients returning for redo after PVI.

Methods: 220 AF pts underwent PVI and MIL ablation was randomly assigned to 52/98. Results: MIL was confirmed intact initially in 28/52 pts. At redo, 8/28 MIL had reconnected, and 3/8 had inducible mitral annular flutter (MAF). Conversely, 24 with failed MIL ablation at the first procedure had a higher probability of MAF at redo (p=0.02). Hence, 12/32 with incomplete/reconnected MIL had MAF compared to 0/20 pts with intact MIL at redo (p=0.002). 13/46 initially randomized to no MIL had inducible MAF at redo compared to 12/52 assigned to MIL ablation initially (p=0.56). Logistic regression analysis revealed longer ablation times for MIL was a positive predictor for future MIL reconnection.

Conclusions:
1. Reconnections of 1/3 MIL occurs early after an initial PVI procedure in patients requiring redo; 2. Incomplete lines were associated with higher risk of MAF than complete lines at the first procedure; 3. Reconnected or intact lines are not associated with more MAF than no lines; 4. Longer ablation times predict increased risk of future reconnection.

Keywords: mitral isthmus line ablation, atrial fibrillation ablation, mitral isthmus atrial flutter