**Introduction**: Atrial fibrillation (AF) often coexists with atrial septal defects (ASD). Although transcatheter ASD closure and radiofrequency catheter ablation (RFCA) for AF are recognized as the first-line therapy, its combined therapeutic effect on AF recurrence is unclear. The aim of the current study was to investigate the clinical impact of ASD closure following RFCA on AF recurrence.

**Methods**: Forty-two ASD patients (17 males and 54 ± 20 years old) were enrolled and classified into three groups: ASD occlusion-sinus rhythm (ASO-SR) (n = 26), No AF history prior to ASD closure; ASO-AF-RFCA (n = 11), RFCA was performed due to AF history before ASD closure; and ASO-AF-antiarrhythmic drug (ASO-AF-AAD) (n =5), AF was treated with AAD before and after ASD closure. AF occurrence among the 3 groups was evaluated.

**Result**: Kaplan-Meier analysis showed that ASO-SR and ASO-AF-RFCA groups showed a lower AF occurrence ratio than ASO-AF-AAD group during the 14 ± 9 months follow-up periods (P = 0.013) as shown in Figure. AF occurrence in ASO-SR and ASO-AF-RFCA groups was comparable (P = 0.480). Bi-atrial reverse remodeling, such as decrease in left atrial volume index (P = 0.049) and right atrial area (P = 0.046), and significant decrease in high sensitivity C-reactive protein levels (P = 0.049) were identified in ASO-AF-RFCA group, but not in ASO-AF-AAD group.

**Conclusion**: A combination of the two percutaneous therapies was proven to be effective and induced atrial reverse remodeling in association with inflammatory reaction.