Introduction: Encircling ipsilateral pulmonary vein (PV) isolation (PVI) has been thought to be a cornerstone of treatment of atrial fibrillation (AF), while few patients have encountered the recurrences. Overweight has been reported to be one of the risk factors associated the recurrence. Recently, the wider area of PVI, i.e., box shaped encircling isolation of 4 PVs and the posterior wall (box PVI) could be expected to obtain better outcome in patients with AF. However, the clinical efficacy for the recurrence in patients performed box PVI remains to be determined.

Methods: We enrolled 242 patients (94 in paroxysmal AF, 50 in persistent AF, and 80 with chronic AF) performed box PVI for the initial treatment for AF, and investigated the following factors associated the recurrences of AF in whom we performed box PVI retrospectively, age, gender, body weight and height, BNP, thyroid function, CHADS2 score, CHA2DS2-VASc score, ejection fraction, left atrial diameter, and comorbidities of hypertension, diabetes, and chronic kidney disease. The mean follow up period was 479.6±365.7 days. We defined cases as the recurrence who showed AF confirmed for more than 30 s by a 24-hour ambulatory ECG monitoring or apparent subjective symptoms.

Result: Seventeen patients out of 242 encountered the recurrences of AF after box PVI. Patients with the recurrence showed heavier weight [64.8kg vs 70.4kg p=0.0247] in proportional hazard model. On the other hand, there were no significant differences in BNP, FT4, CHADS2 score, CHA2DS2-VASc score, ejection fraction, left atrium diameter, hypertension, diabetes, chronic kidney disease. Patients who showed low level of TSH tended to develop the recurrence of AF.

Conclusion: Overweight might be associated with the recurrence of AF after box PVI.