Introduction: Although zero-fluoroscopy radiofrequency catheter ablation for atrial fibrillation (AF) have been getting popular, there are difficulties in changing the existing procedural protocol. The feasibility and safety of the procedures conducted during the learning period of zero-fluoroscopy AF ablation were investigated.

Methods: A total of 50 serial AF cases, including conventional fluoroscopy-guided 20 cases and the next 30 cases attempted to be treated without fluoroscopy were analyzed. Each 10 serial cases were grouped as fluoroscopy guided period, and period 1 to 3 in chronological order. In all zero-fluoroscopy tried cases assisted with an intracardiac echocardiography device with a 3-dimensional electroanatomical system, fluoroscopy equipment was prepared and used whenever necessary, without restriction.

Result: Complete zero-fluoroscopy procedure was achieved at the 6th case during the learning period. During period 1, the total procedure time slightly increased in, but afterwards procedure time was continuously decreased, and it became significantly shorter in period 3 than previous fluoroscopy guided period. Any additional use of fluoroscopy during the transitional period 1 and 2 was mainly for transseptal puncture and diagnostic catheter placement into coronary sinus. Pulmonary vein isolation was achieved in all 50 patients. There was one moderate pericardial effusion in zero-fluoroscopy tried group, and one puncture site hematoma in fluoroscopy-guided group.

Conclusion: During the learning period, complete zero-fluoroscopy ablation of AF could be achieved in the 6th case, and all steps of the zero-fluoroscopy procedure were feasible and safe. Fluoroscopy equipment backup might be useful during the learning period for beginners in the zero-fluoroscopy procedure.