

Pulse Field Ablation in Irish Atrial Fibrillation: Patient characteristics, safety, and single operator experience from the first 50 cases.

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Introduction

Pulse Field Ablation (PFA) is an exciting novel technology in the field of Atrial Fibrillation (AF). The technology delivers high amplitude electrical pulses with tissue specificity to target myocardium. This technology offers the potential to improve the safety profile and reduce the procedure duration of AF ablation.

Methods

The first 50 cases using the Farawave PFA ablation catheter (Farapulse PFA System, Boston Scientific) from a single operator were included. All patients underwent ablation under general anaesthesia with transoesophageal echocardiogram and uninterrupted anticoagulation. Ultrasound was used to obtain femoral access.

Patient Characteristics (N=50)	
Age (yrs)	62 (32 - 81)
Male	37 (74%)
HTN	14 (28%)
CCF	5 (10%)
IHD	3 (6%)
Stroke	2 (4%)
Diabetes	2 (4%)
Antiarrhythmic Medications	
▪ Amiodarone	10 (20%)
▪ Dronedronone	6 (12%)
▪ Flecainide	5 (10%)
▪ Sotalol	5 (10%)
▪ Mexiletine	1 (2%)
▪ None	24 (48%)
Type of Atrial Fibrillation	
▪ Paroxysmal	22 (44%)
▪ Persistent	28 (56%)
Index Procedure	42 (84%)
Type of Ablation	
▪ PVI Only	29 (58%)
▪ PVI and Posterior Wall isolation	18 (36%)
▪ Posterior wall isolation only	1 (2%)
▪ PVI, Posterior Box and Mitral Isthmus line	2 (4%)
Electro-anatomical Mapping used	37 (74%)
Fluoroscopy time (min)	11 (4-26)

Results

The cohort included 74% male patients with an average age of 62 (32 – 81). The majority of patients had persistent atrial fibrillation (56%), with amiodarone being the most used anti-arrhythmic drug pre-procedure.

Electroanatomic mapping using the CARTO 3 mapping system (Biosense Webster) and multielectrode mapping catheter (Pentaray, Biosense Webster) was used in 74% of cases. Acute procedural success was achieved in all 50 patients. Pulmonary vein isolation only (PVI) was performed in 58% of patients, with 42% undergoing additional substrate ablation on the posterior left atrial wall. A mitral isthmus ablation for intra-procedural mitral flutter was safely performed in two patients. (Figure 1)

The mean fluoroscopy time was 11 minutes (4-26) and was strongly correlated with case number, with a reduction in overall screening time observed with increasing experience. (Figure 2)

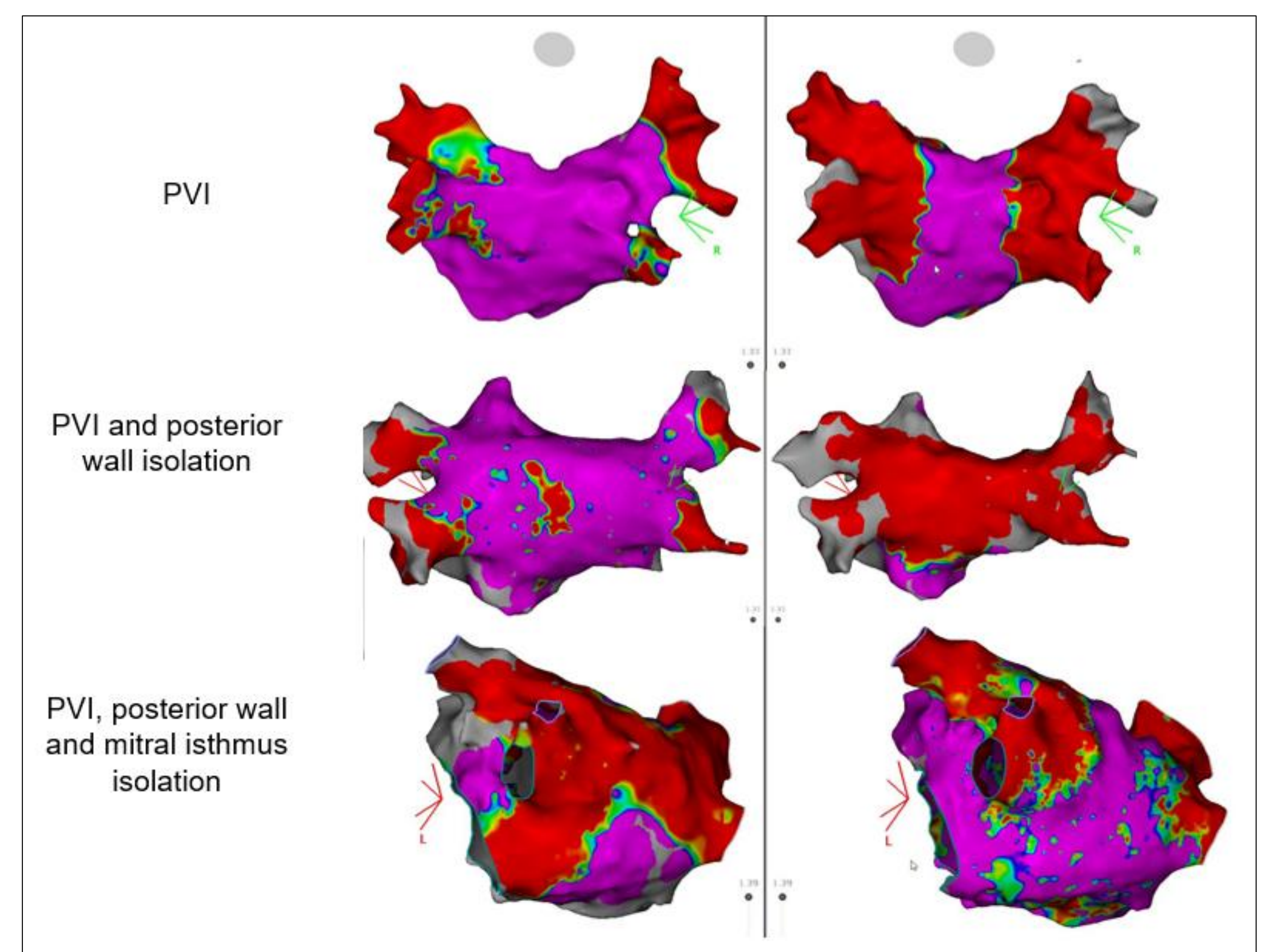


Figure 1 Left atrial electroanatomic maps pre and post PFA ablation. Displaying lesion sets. (PVI = Pulmonary Vein Isolation)

Results continued

There were no major complications of pericardial tamponade, TIA, stroke, vascular injury, oesophageal injury, phrenic nerve injury or death. All patients were discharged the following day. 49 of the 50 patients were in sinus rhythm at time of discharge.

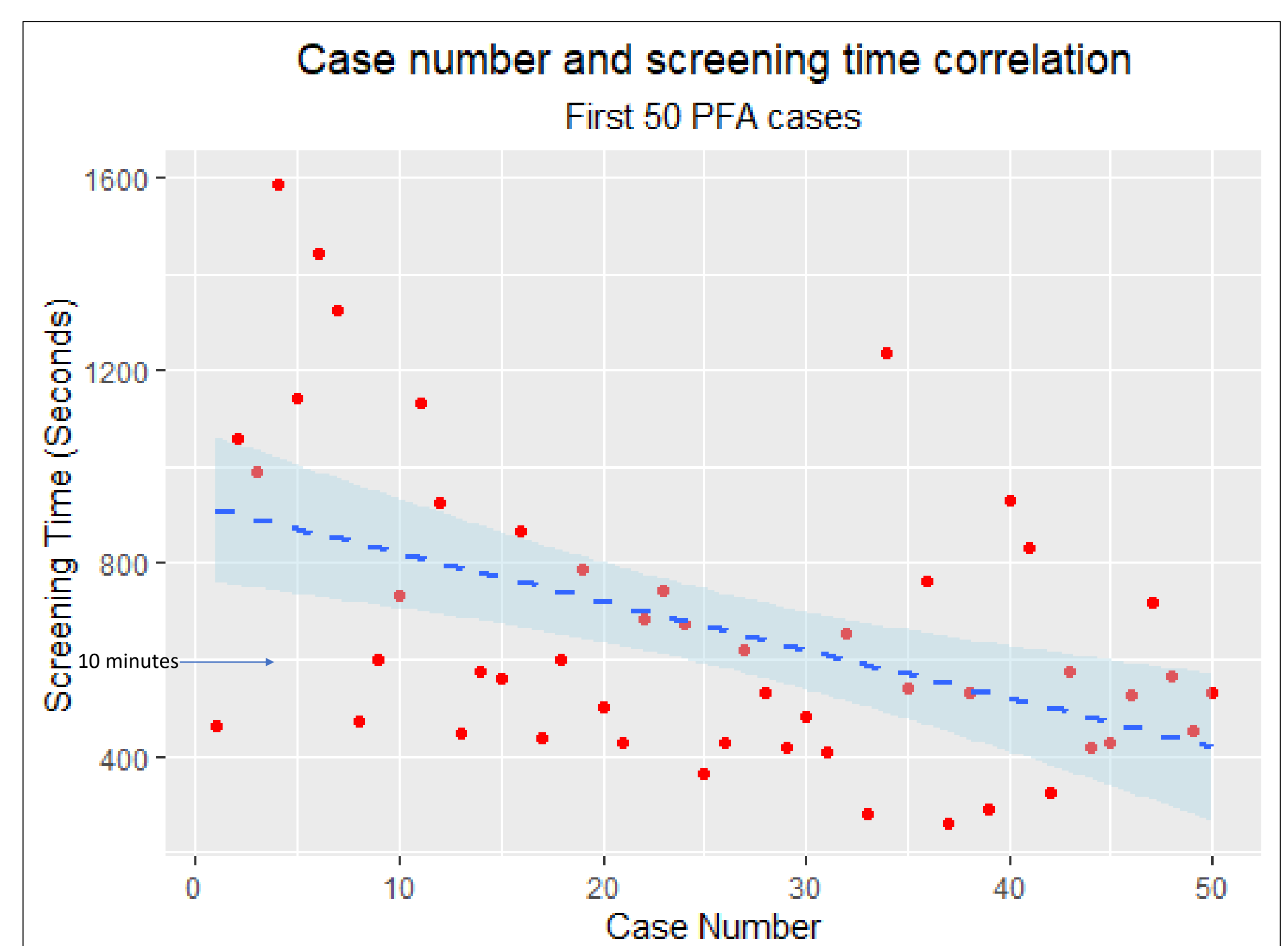


Figure 2 Correlation of case number and fluoroscopic screening time. (PFA = Pulse Field Ablation)

Conclusions

Real world experience of a single operator using the Farawave PFA ablation catheter has demonstrated that PFA is a safe and efficient method to achieve pulmonary vein isolation. In combination with electroanatomic mapping, additional left atrial substrate ablation was performed safely. Reductions in fluoroscopy time were observed throughout the study

The majority of patients in this cohort had persistent atrial fibrillation, with the most widely used anti-arrhythmic drug being amiodarone. As ablation procedures continue to improve, we may see a trend toward earlier ablation in the clinical course of atrial fibrillation.