



香港中文大學醫學院  
**Faculty of Medicine**  
The Chinese University of Hong Kong

# Pulse field ablation

## Early experience in Hong Kong

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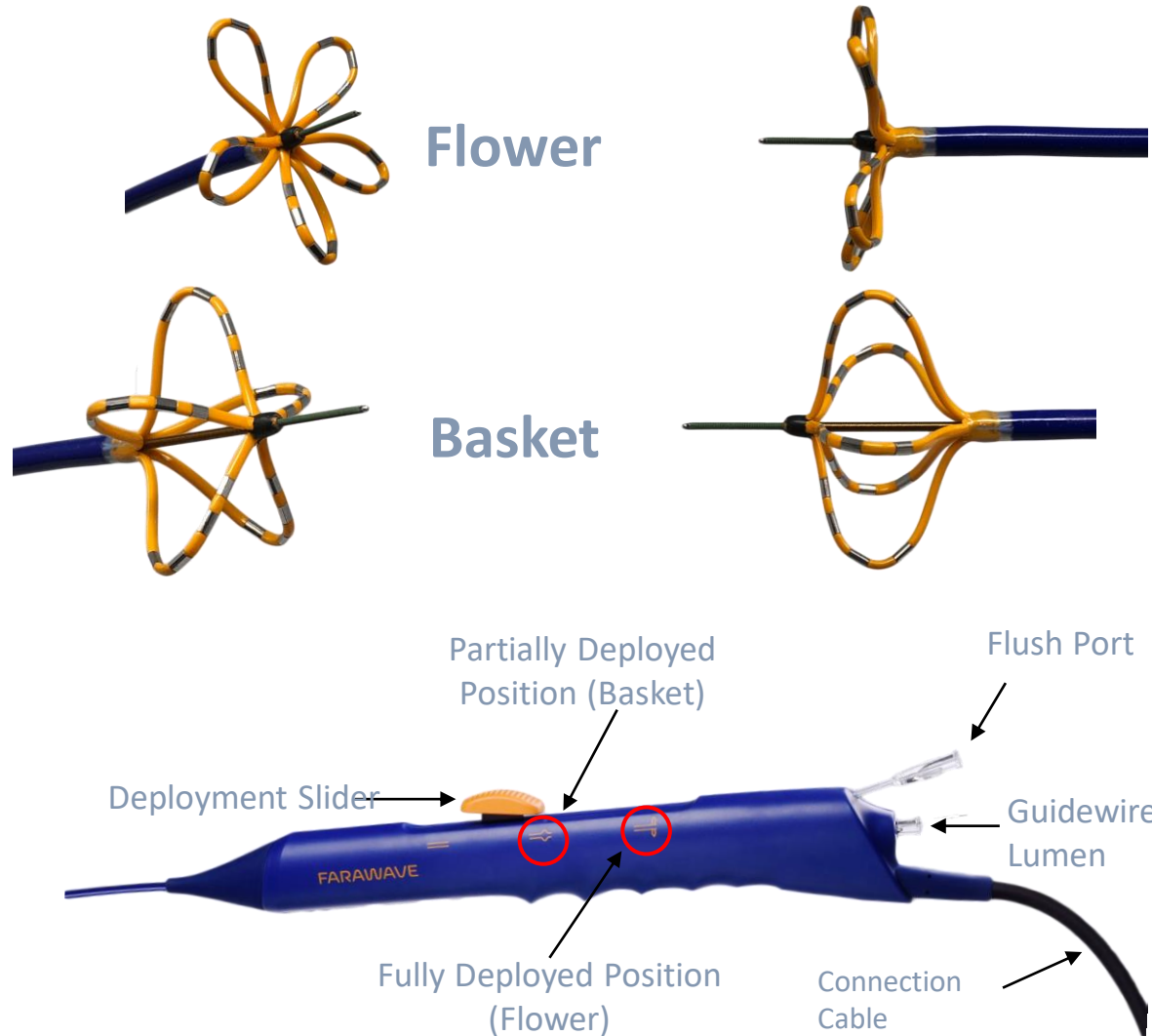
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# Content

- Initial experiences for Brief description of Boston Farapulse PFA system
- Pulmonary vein isolation
- Optimizing contact for energy delivery
- Combined PFA and LAAO procedures
- Posterior wall isolation with PFA
- CTI ablation with PFA

# FARAWAVE PFA Catheter - Features



- Over the wire PFA ablation catheter for one-shot PVI
- 2 sizes:
  - 35 mm & 31 mm
- 5 splines, each with 4 active electrodes
- 3<sup>rd</sup> electrode: EGM recording/  
Pacing capability

# Experience of PFA in Prince of Wales Hospital / Chinese University of Hong Kong

- Started Farapulse PFA procedure 1/11/2022
- Total AF PFA case 36 (as at 31/5/2023)
- All cases done in GA
- 3 Cases done with Rhythmia, 2 cases with Carto, all the rest: fluoroscopy guide
- Combined PFA + LAAO: 11 (6 Watchman, 5 Amulet)

# Experience of PFA in Prince of Wales Hospital / Chinese University of Hong Kong

- Efficacy

- 17 paroxysmal AF (47.2%), 17 persistent AF (47.2%), 2 long persistent AF (5.6%)
- Follow up (mean 126 +/- 75 days, median 127 days)
- AF recurrence: 5 cases (13.8%)
  - 4 in blanking period (11.1%), 1 outside blanking period (2.7%)
- 6 patients with concomitant clinical atrial flutter
  - 5 patients underwent CTI ablation same procedure
    - 4 with irrigated catheter, 1 with farapulse

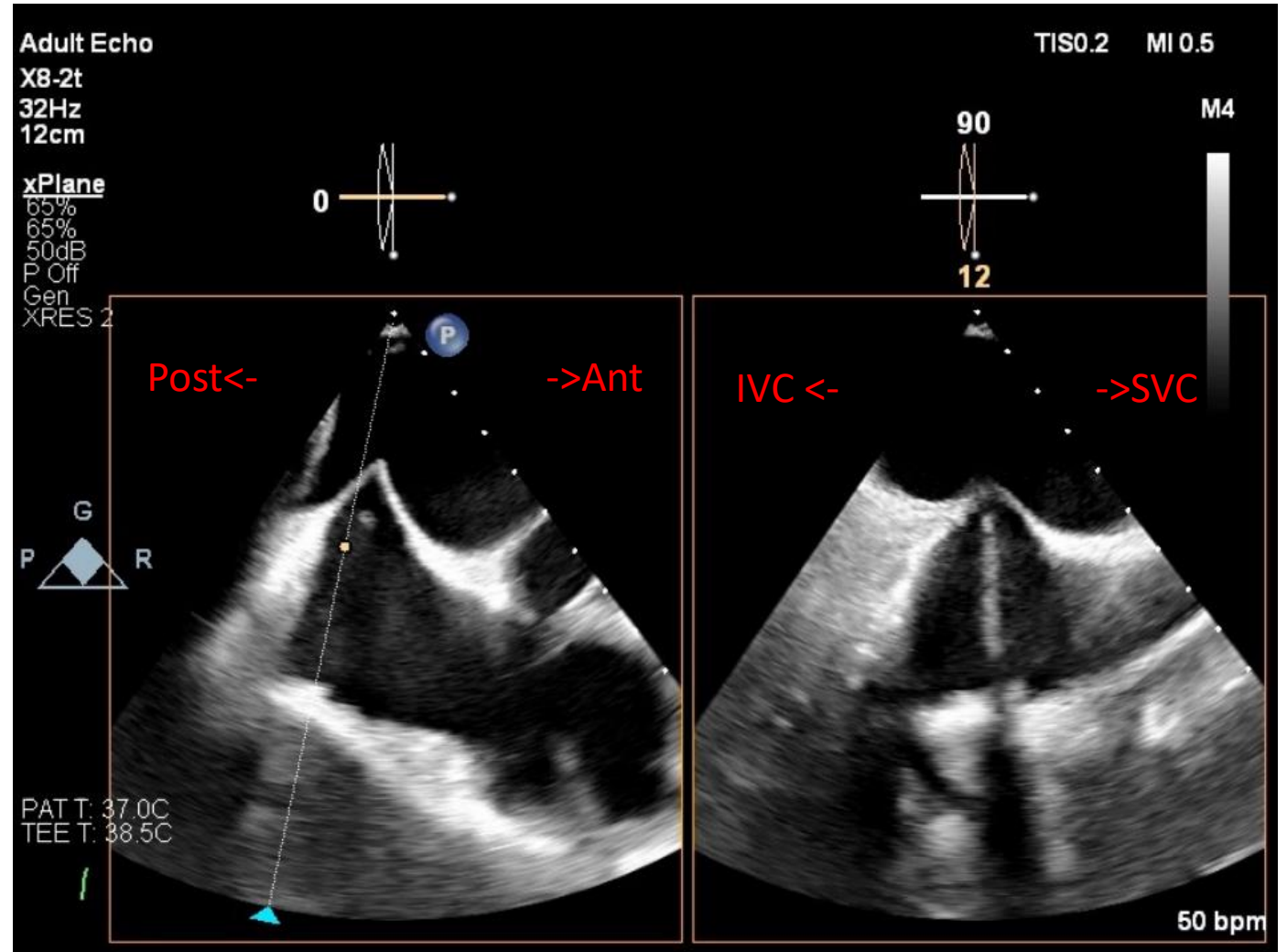
- Safety

- 2 minor and 1 major complications
  - 2 cases of mild wound oozing after discharge requiring AED admission, no pseudoaneurysm or significant hematoma.
  - 1 major complication: hemoglobin drop after combined LAAO and PFA, requiring transfusion, CT show newly diagnosed caecal tumor.
- No esophageal injury, phrenic nerve palsy, pulmonary vein stenosis, pericardial effusion or death

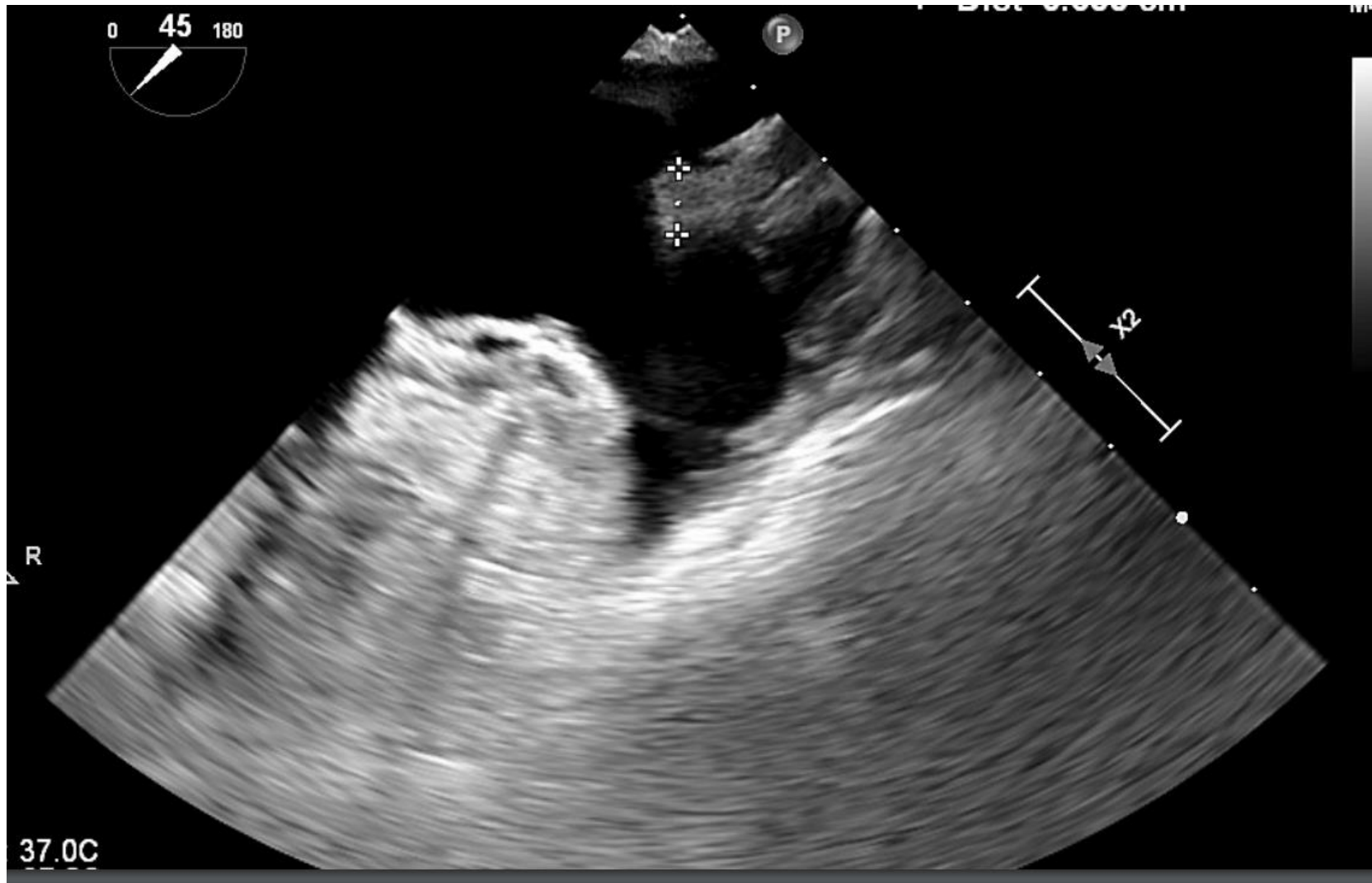
Combined PFA and LAAO  
procedures

# Combined PFA + LAAO

- All 11 patients only require single transseptal puncture for PFA and LAAO
- Aiming of trans-septal puncture at mid to low fossa, mid in anteroposterior aspect



# Ridge swelling after PFA with unknown significance



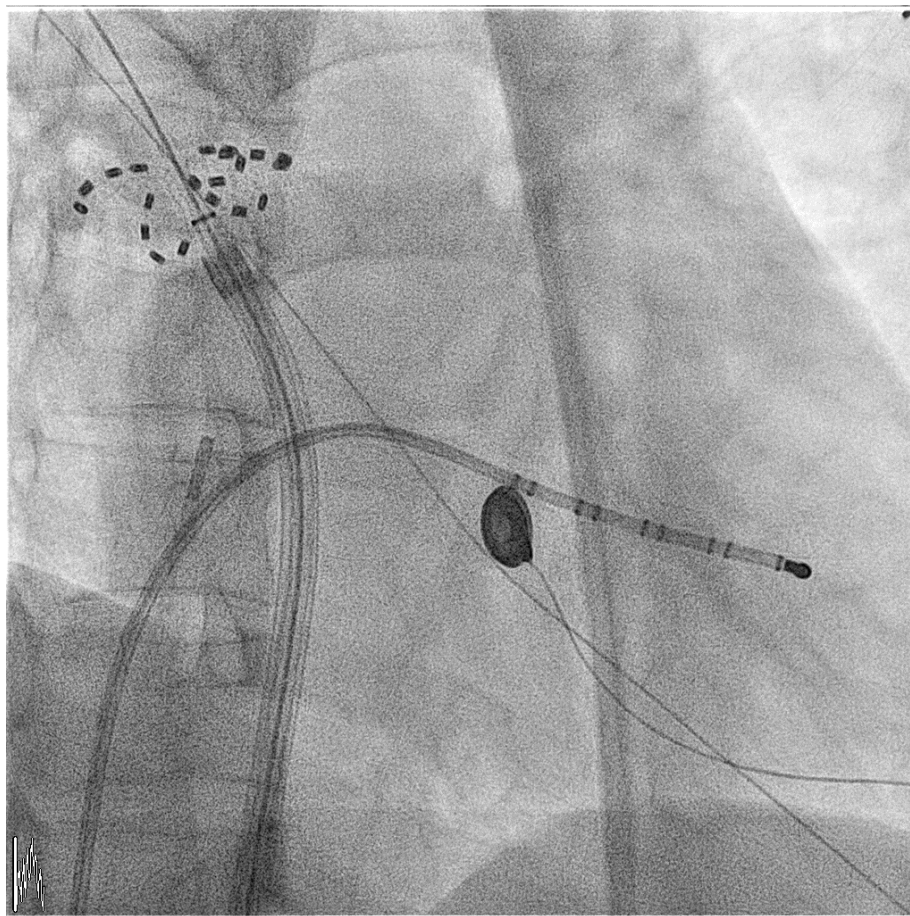


Optimizing contact of PFA  
catheter to LA

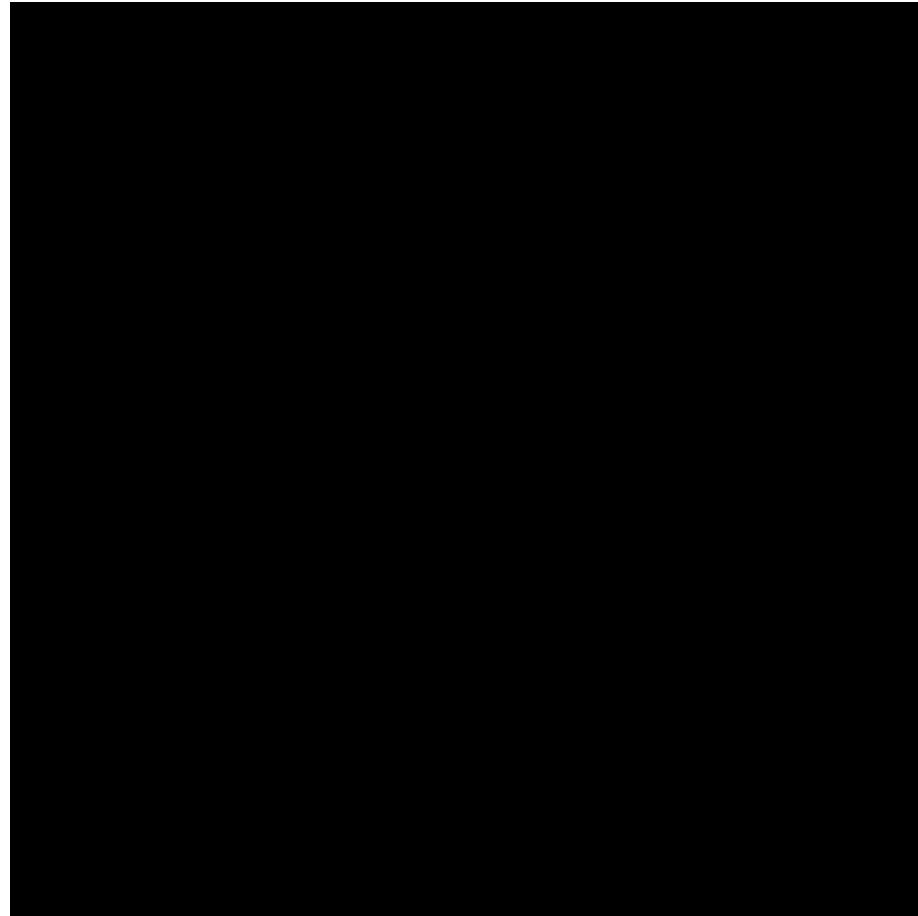
Optimizing contact – bending of “pedals”  
backward



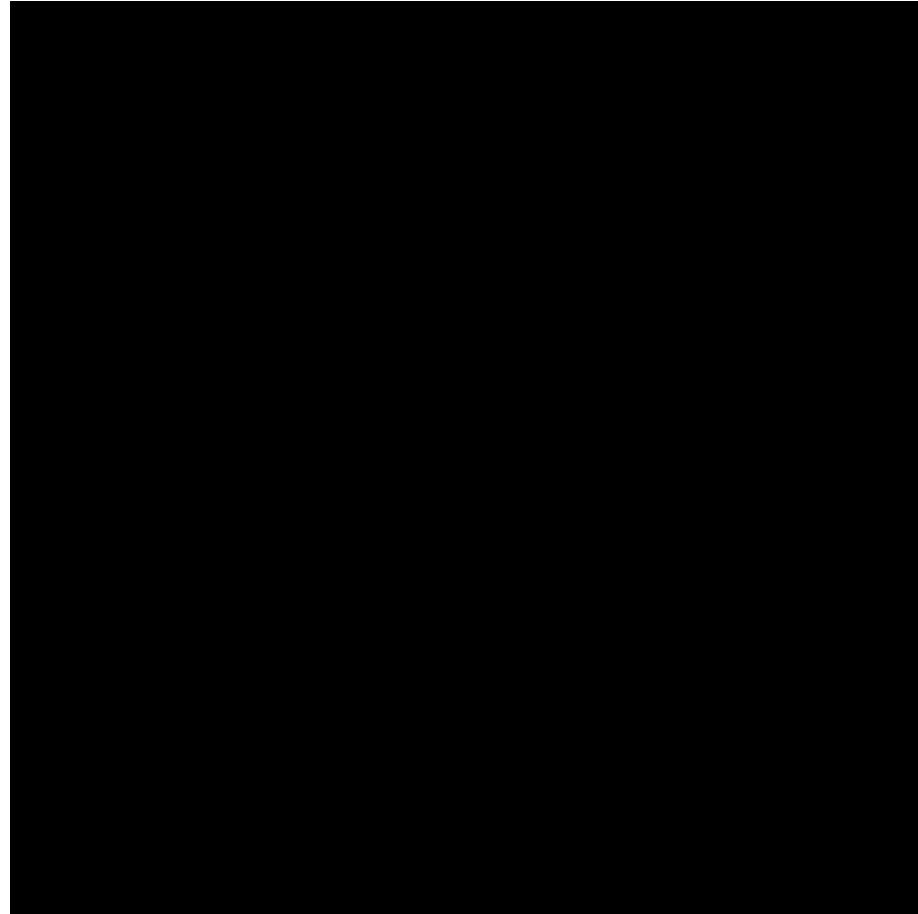
# RSPV Position?



Contrast to visualize contact



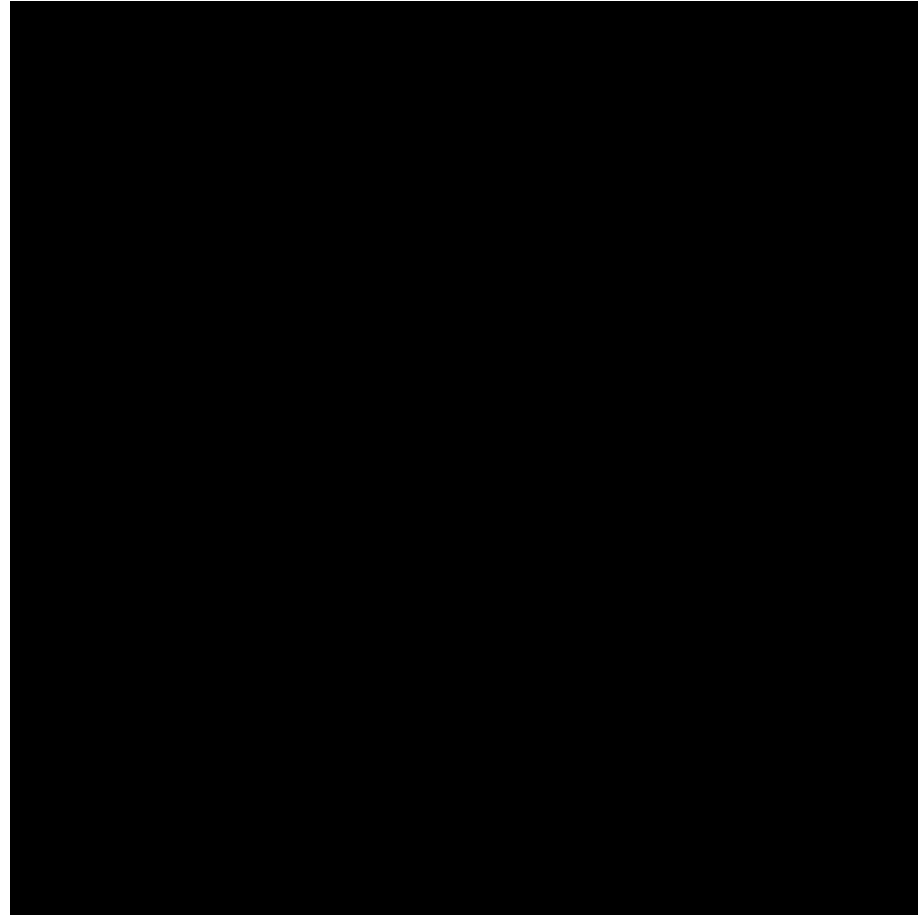
Pedals rotating out from the RSPV



After rotating the pedals out



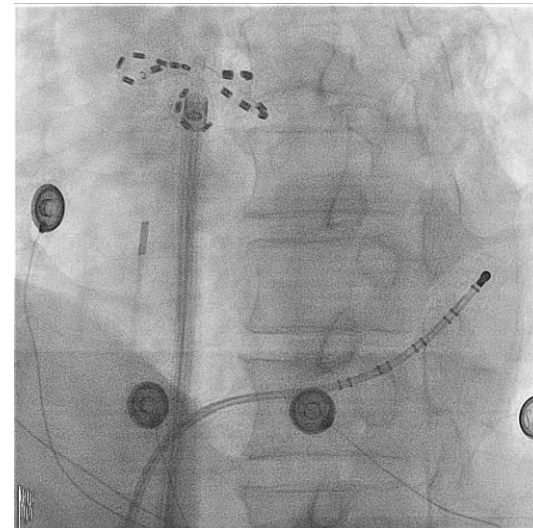
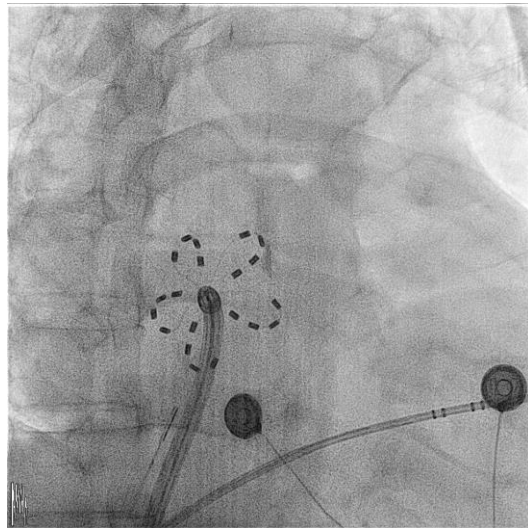
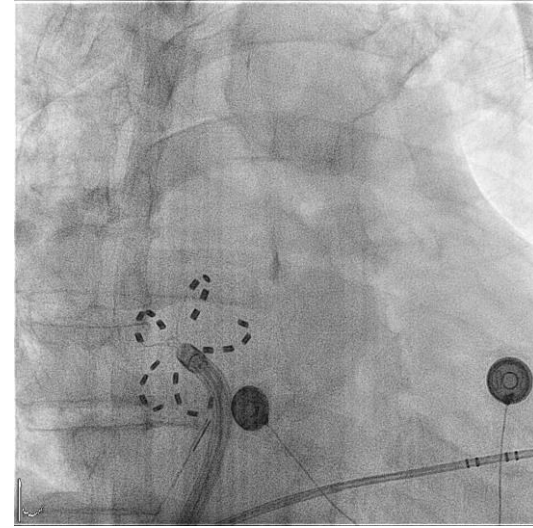
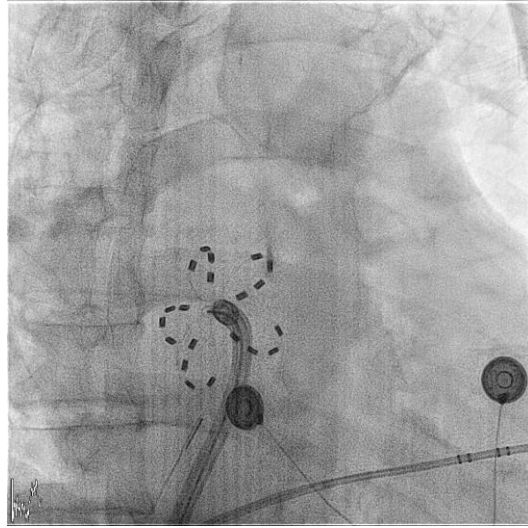
Push to optimize contact



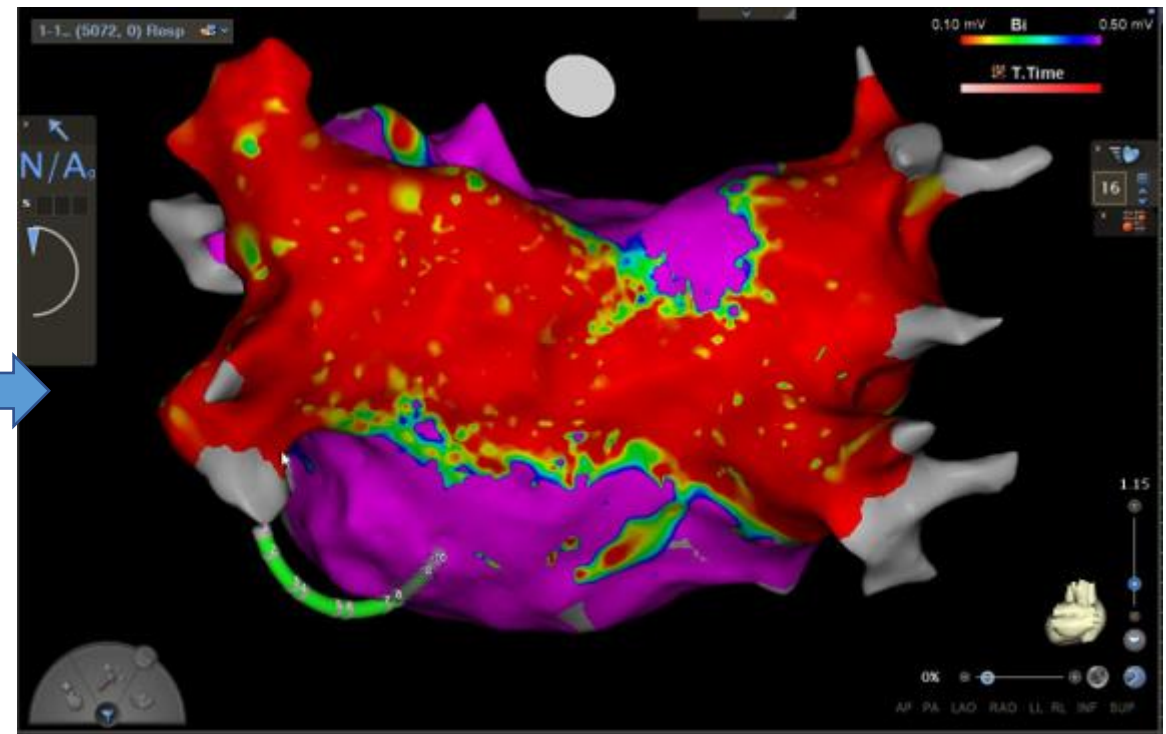
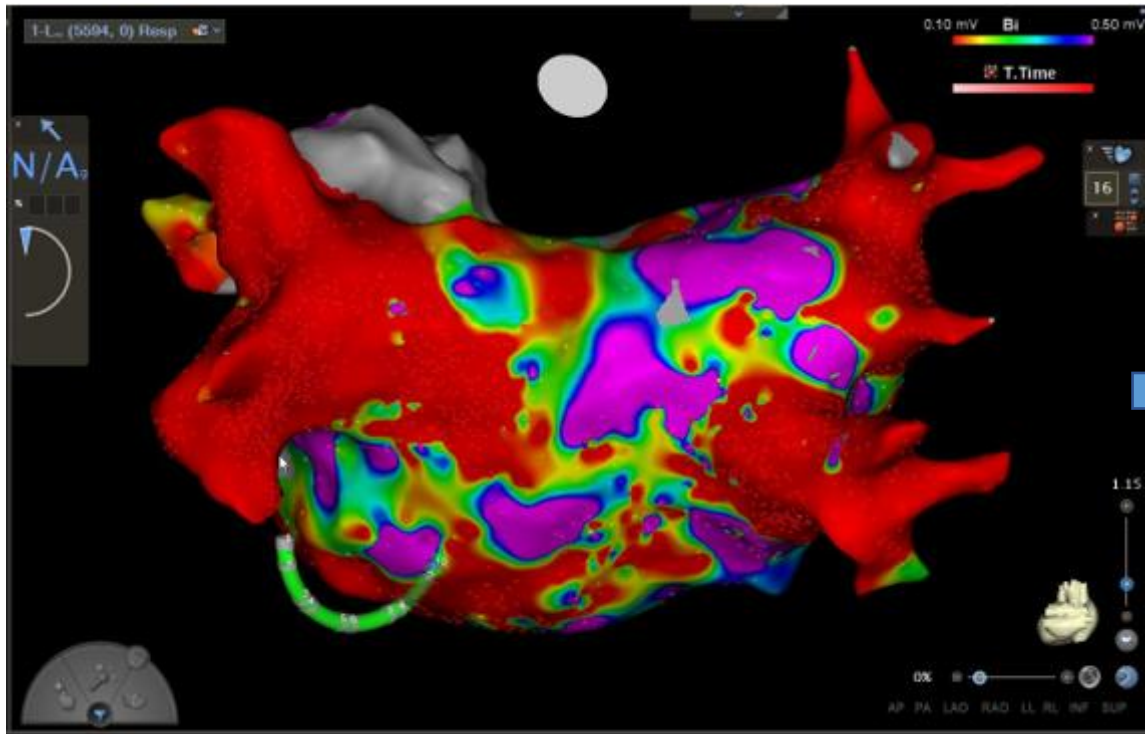
Posterior wall isolation with PFA



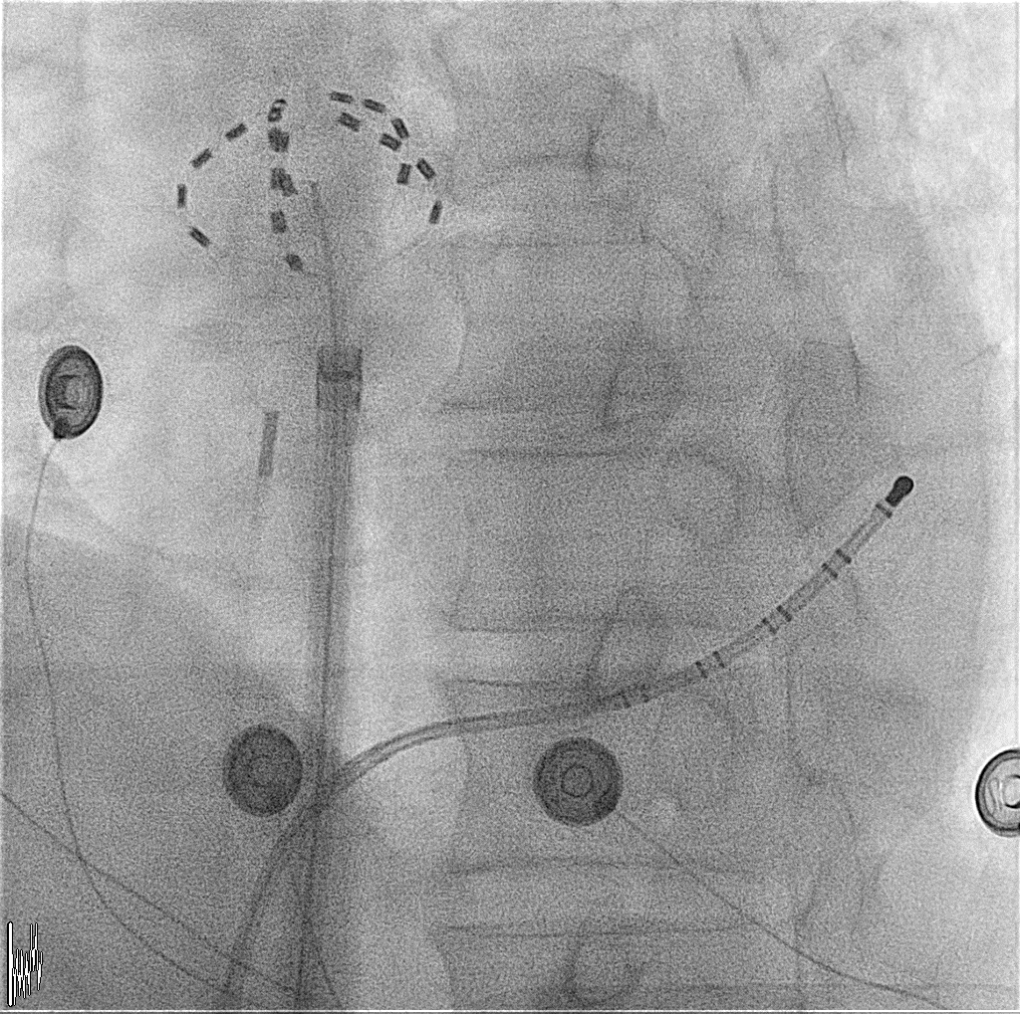
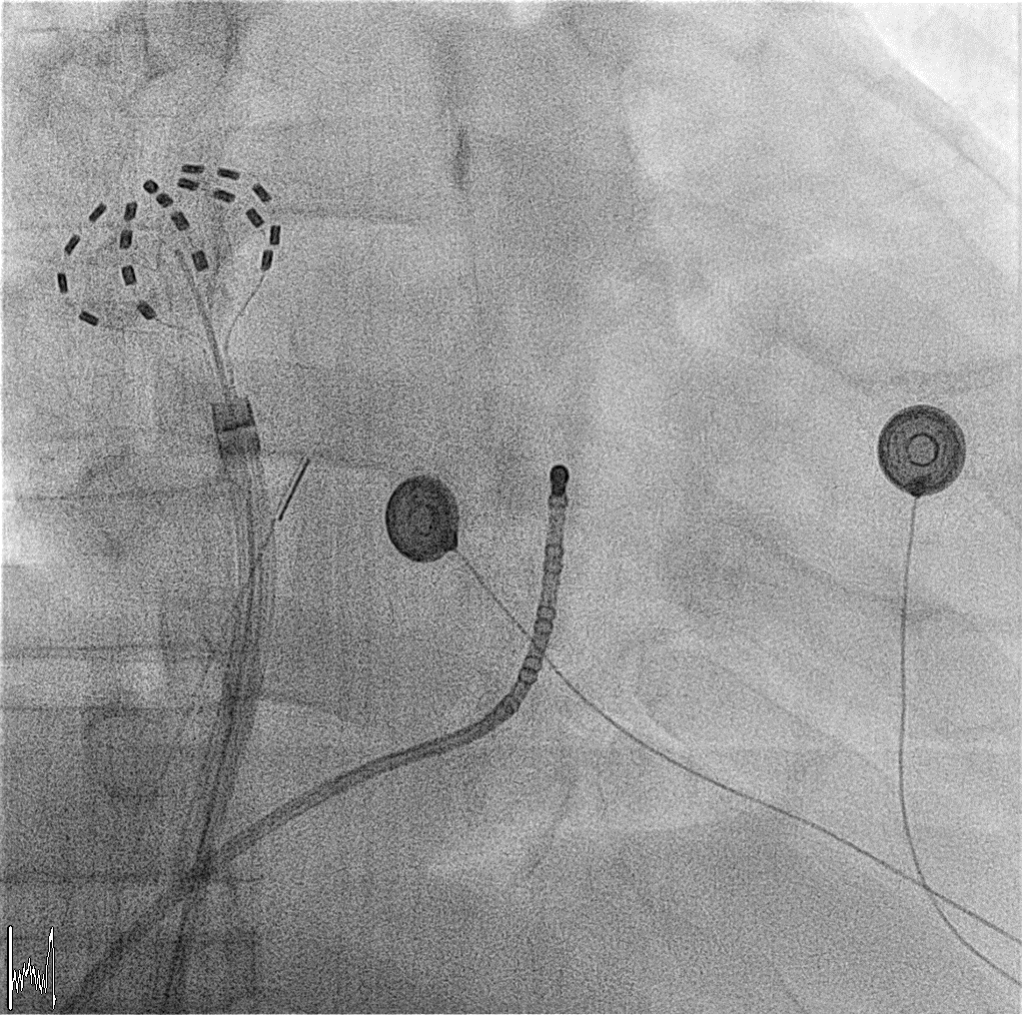
Posterior wall isolation (RAO) : each site 2 application at flower pose

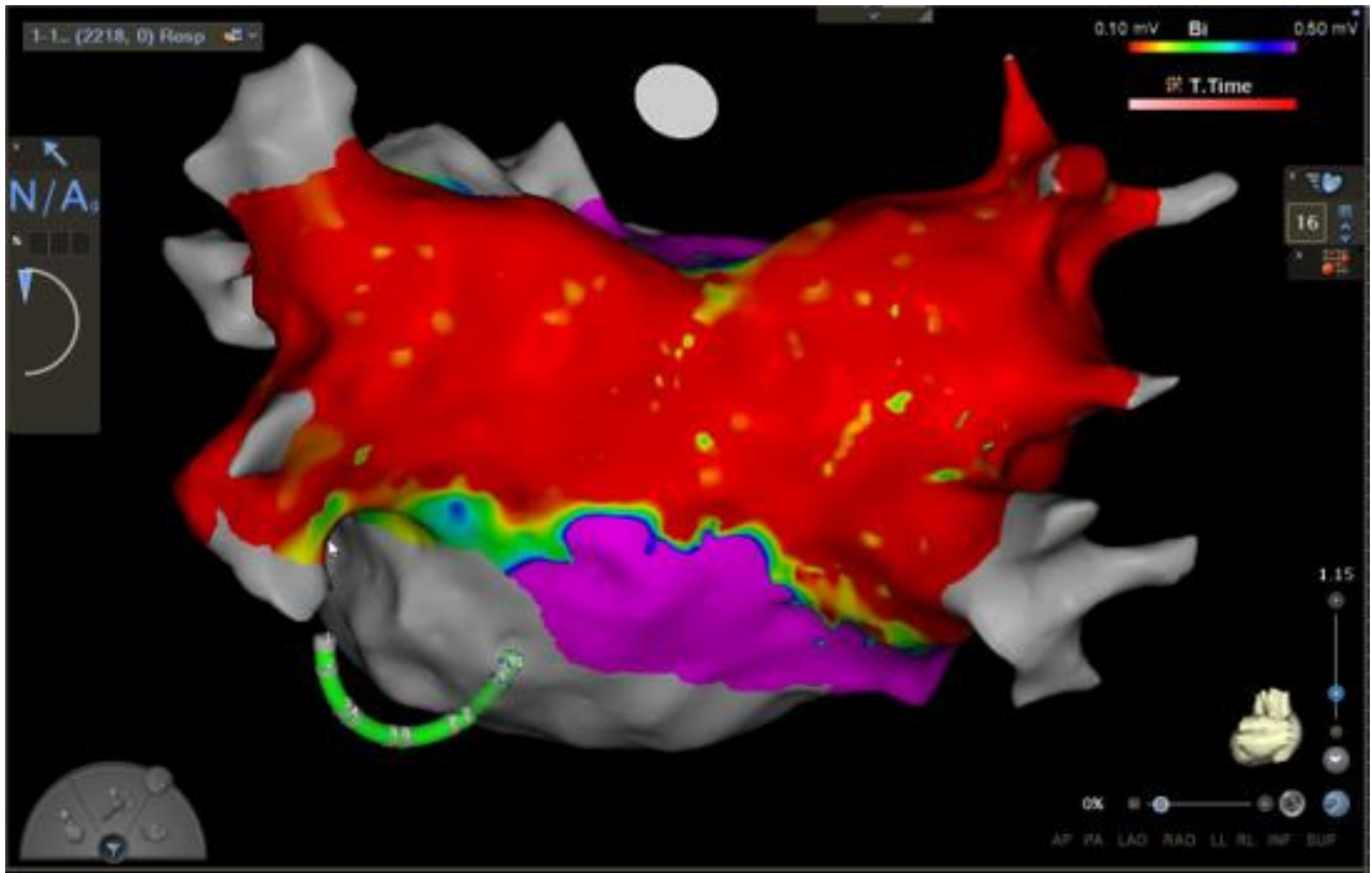


# Persistent AF, Pre and post voltage map

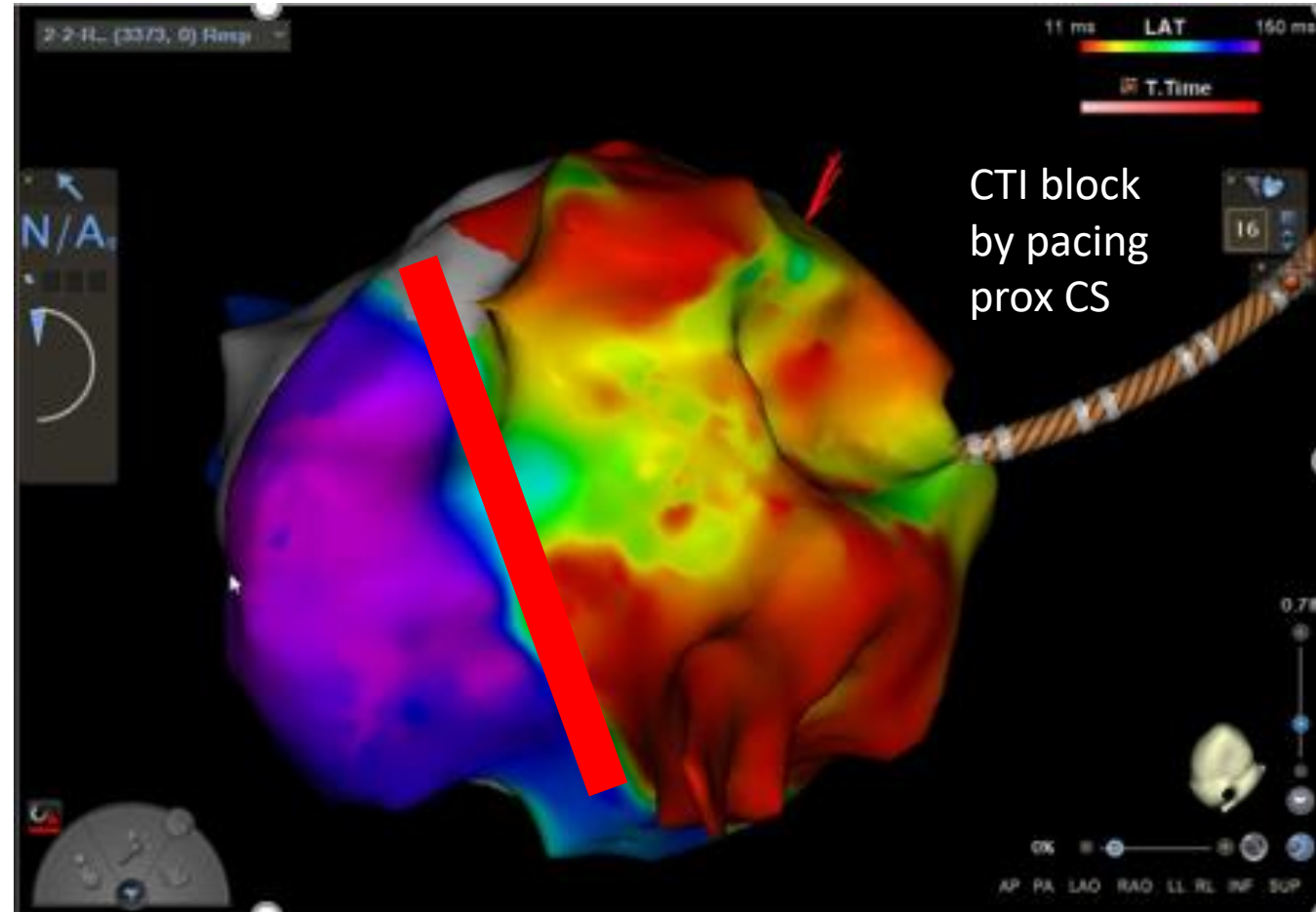
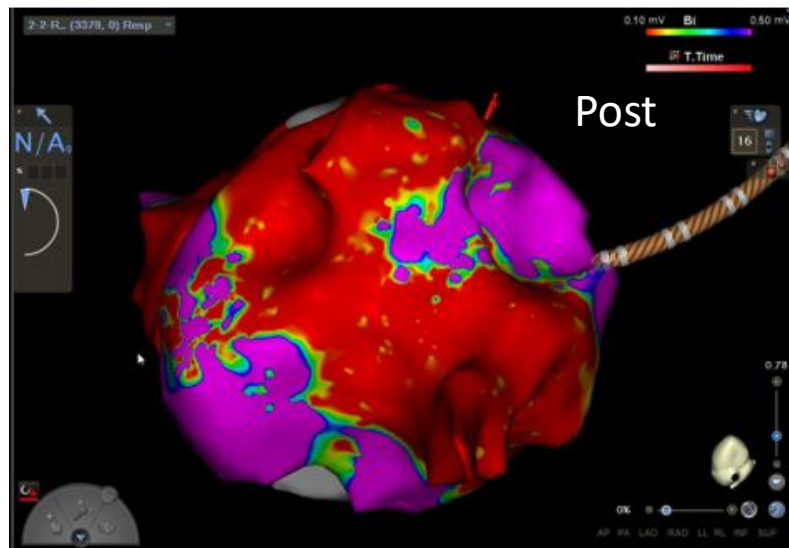
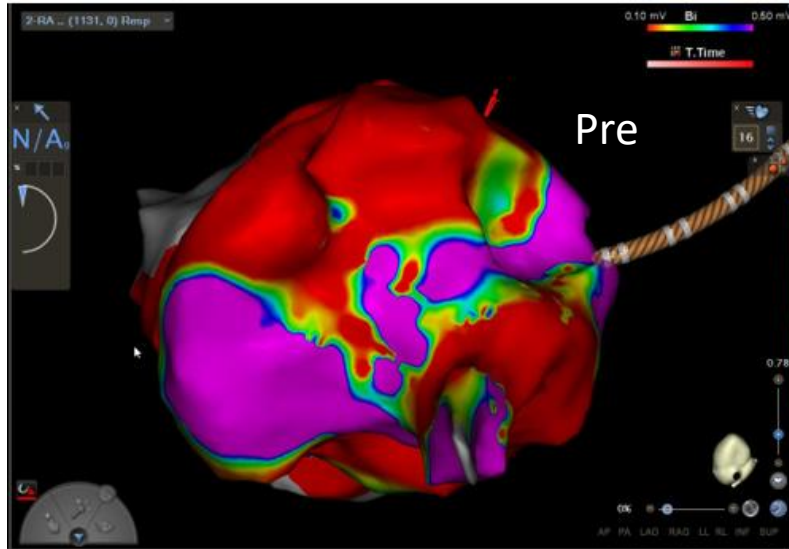


# Addition applications at right upper posterior wall

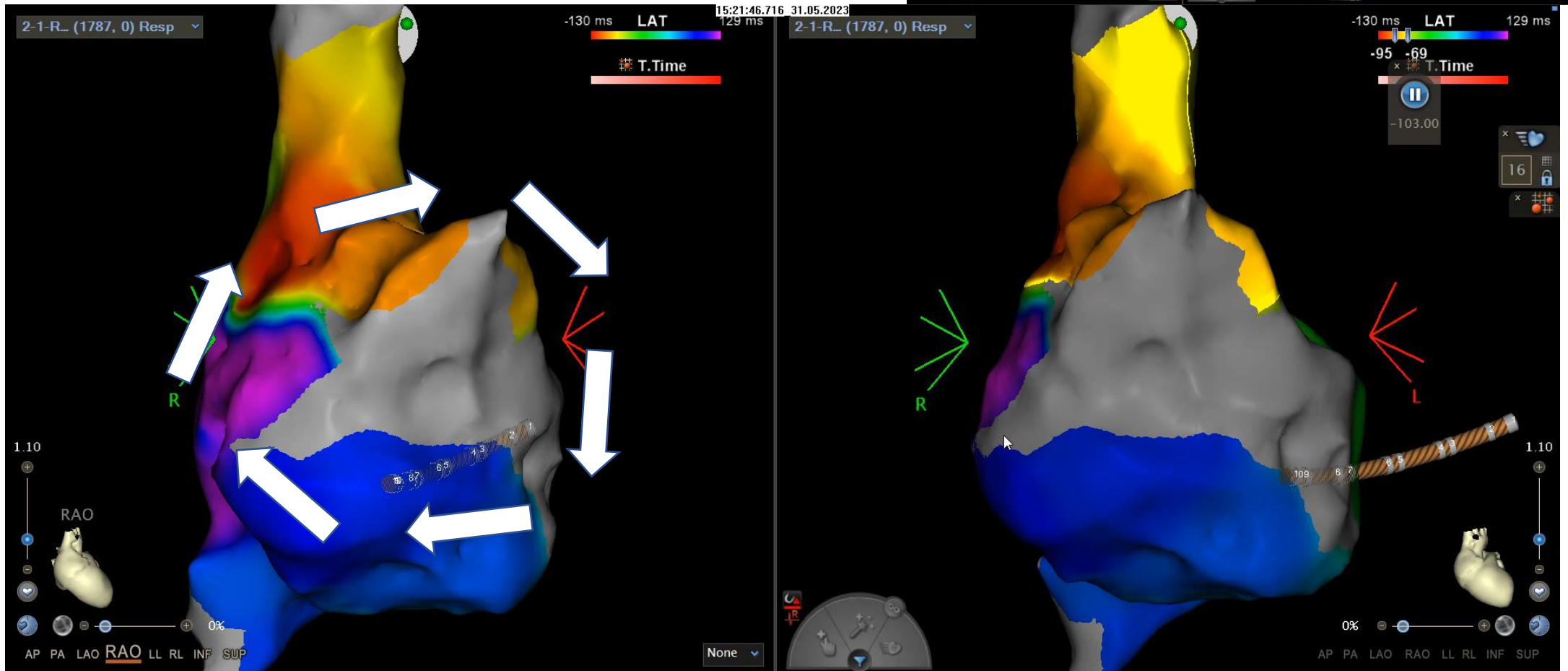
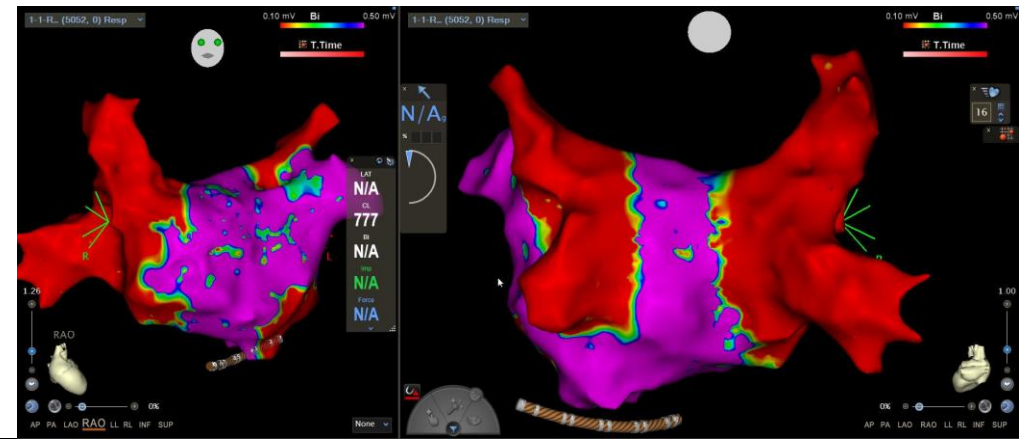




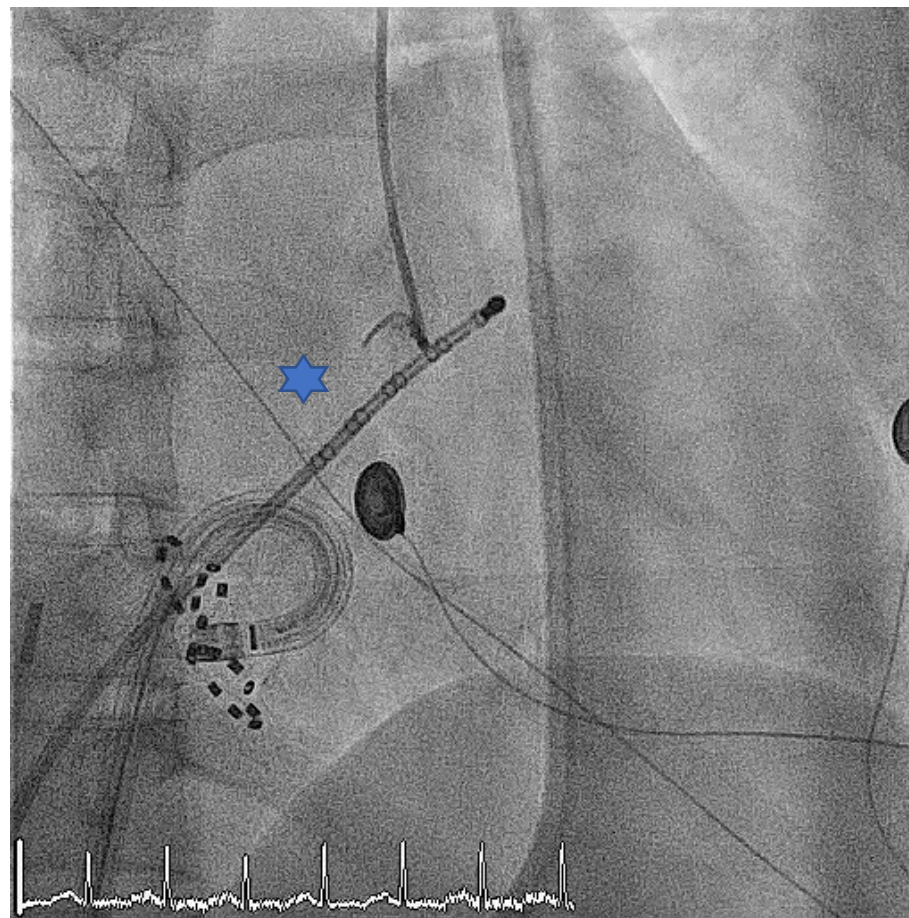
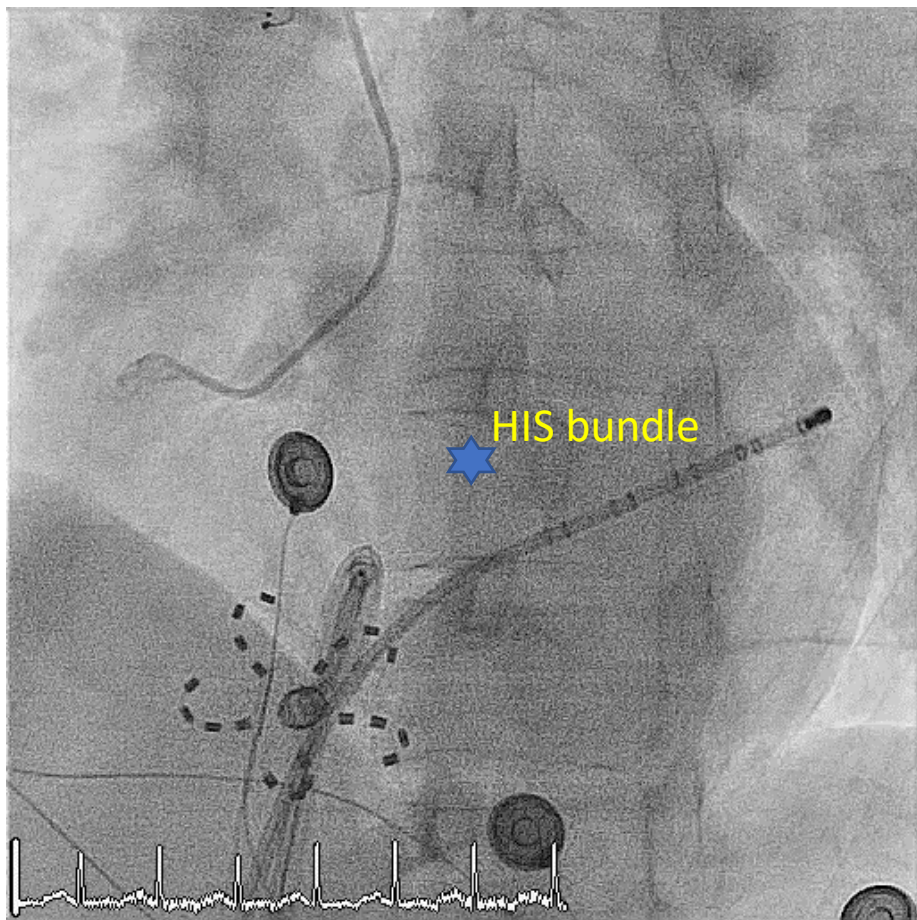
# CTI ablation Carto Mapping



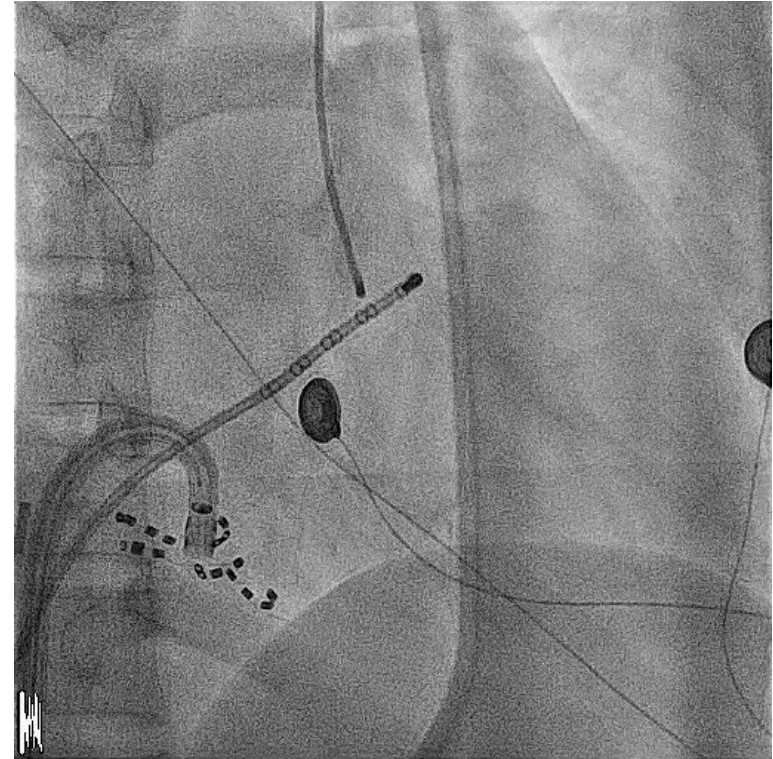
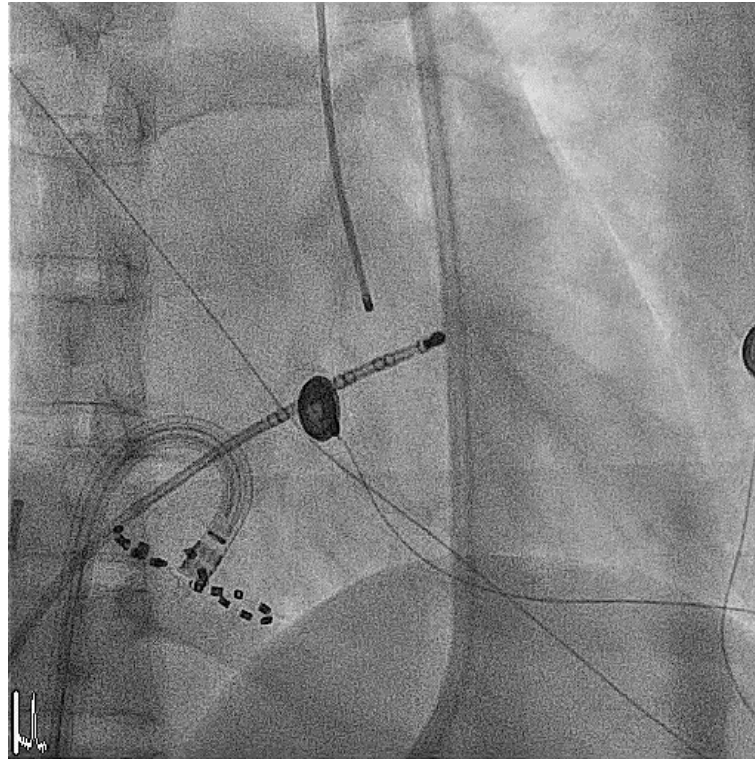
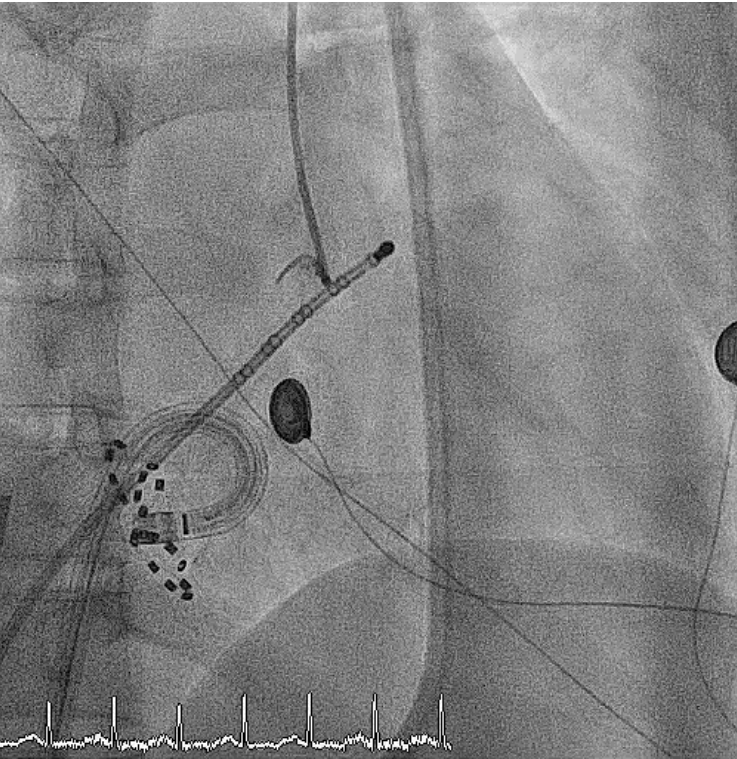
# Clockwise CTI dependent flutter after PVAI



# CTI ablation

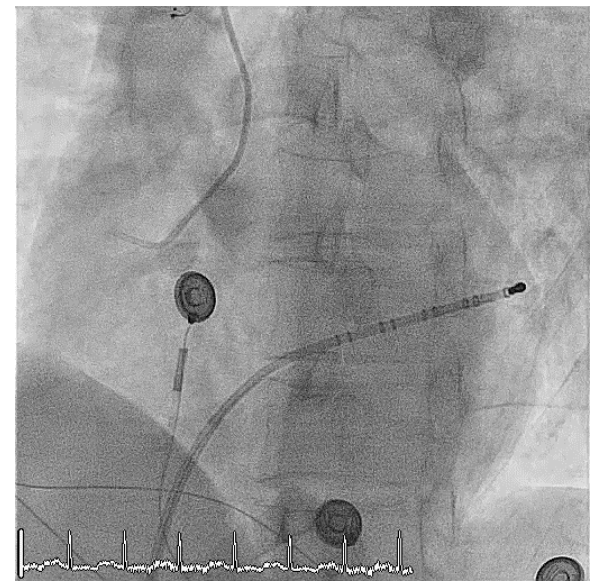
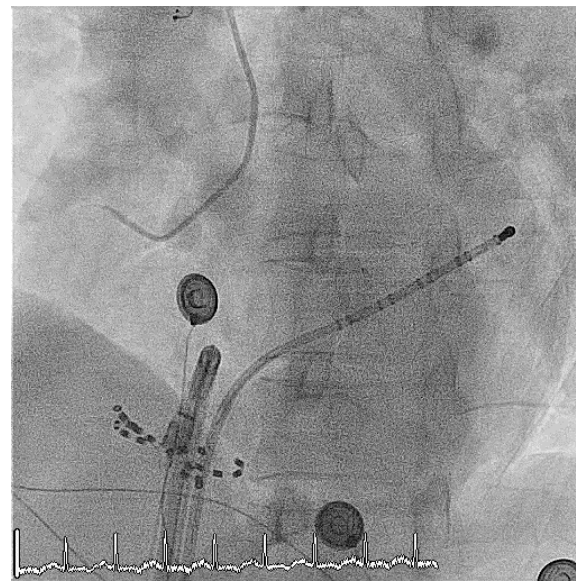
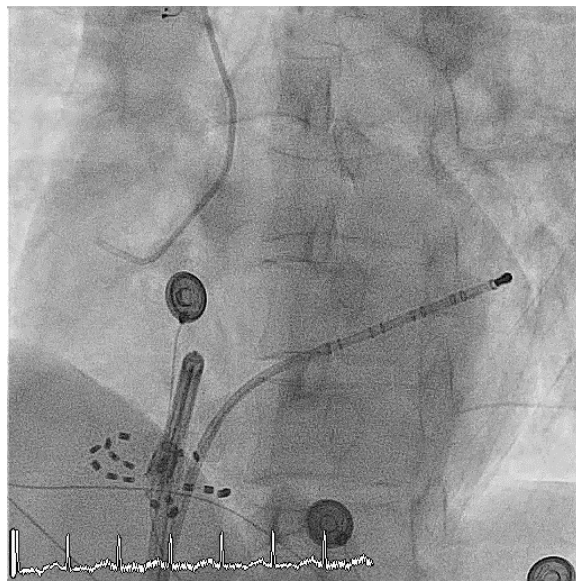
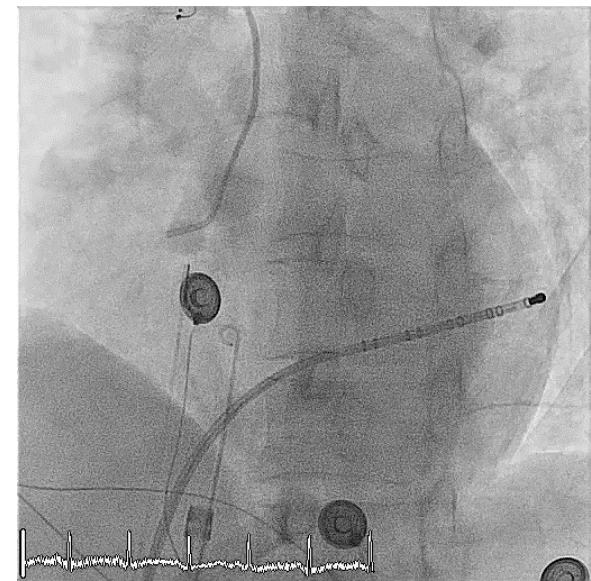


CTI ablation (3 application at each sites, total 3 sites)





# Mild coronary spasm during CTI ablation (despite pretreatment with TNG 150microgram IC)



# Future research needed

- How to improve of PFA outcome especially in patients with persistent AF?
  - Ablation beyond pulmonary vein
- Whether coronary spasm will have any long term sequelae?
- Development of PFA catheter for ventricular arrhythmia ablation

# Conclusion

- Pulse field ablation is an effective and safe energy for AF pulmonary vein isolation
- Combined PFA and LAAO is feasible
- Posterior wall isolation with PFA catheter is feasible and easily done
- Ablation near coronary artery will result in coronary spasm, which can be attenuated by pretreatment with nitroglycerine (TNG).

Thank you

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