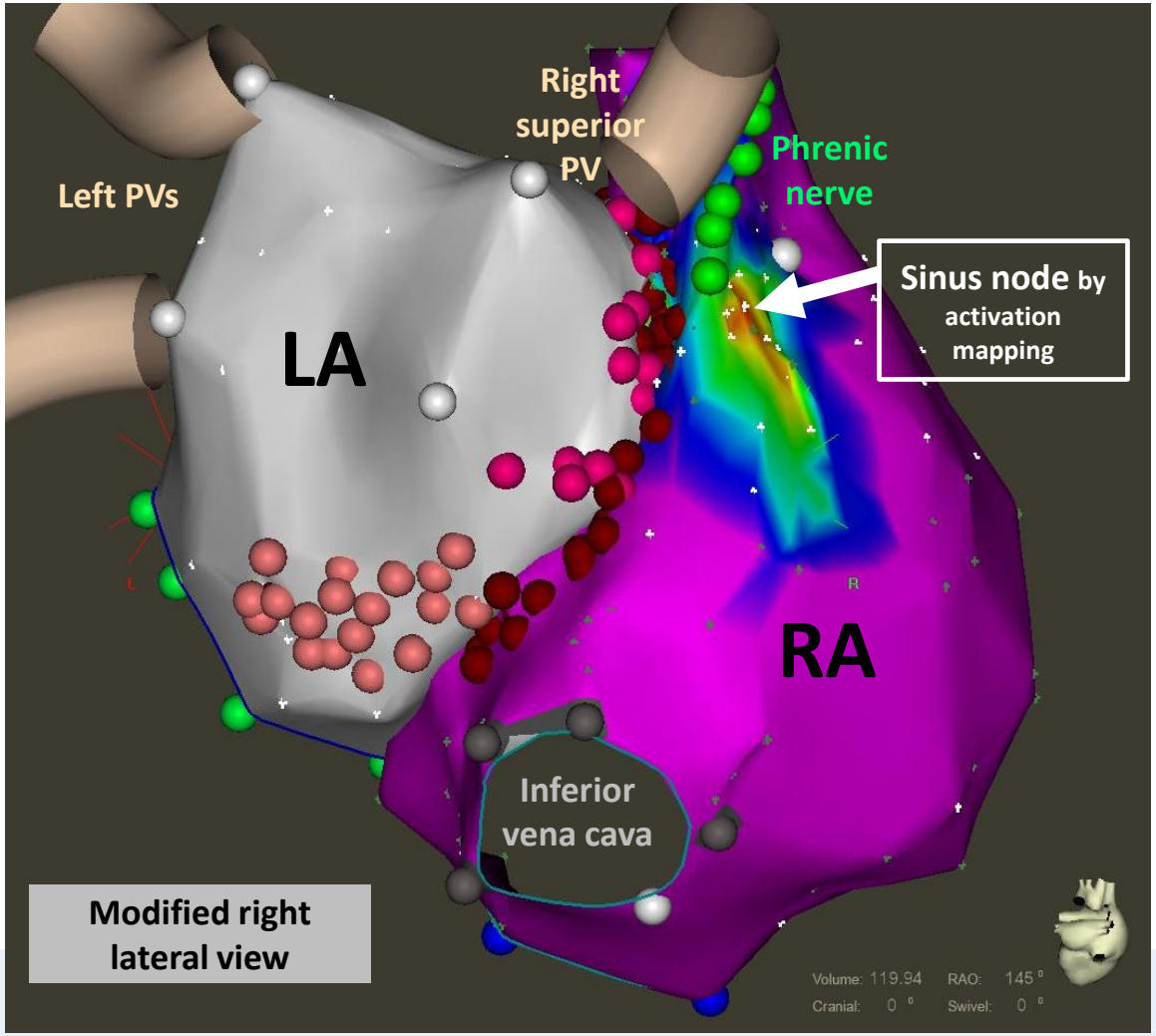
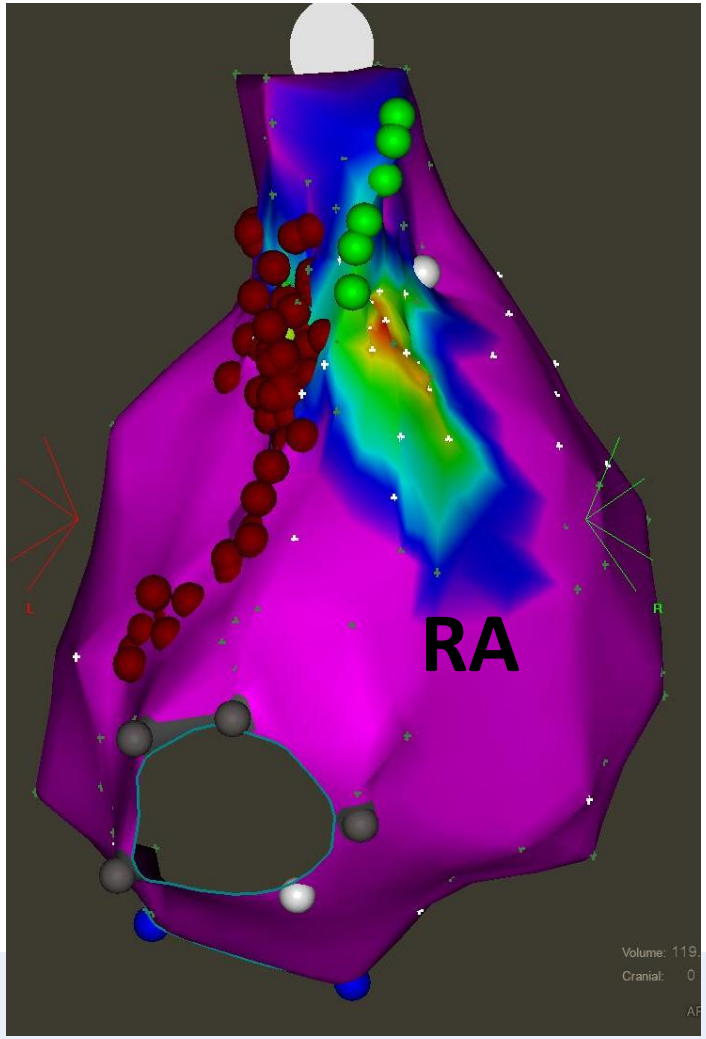
Seeking atrial sweet spots for efficacious denervation of sinoatrial and atrioventricular nodes

Dan Wichterle

Anatomically-guided cardioneuroablation

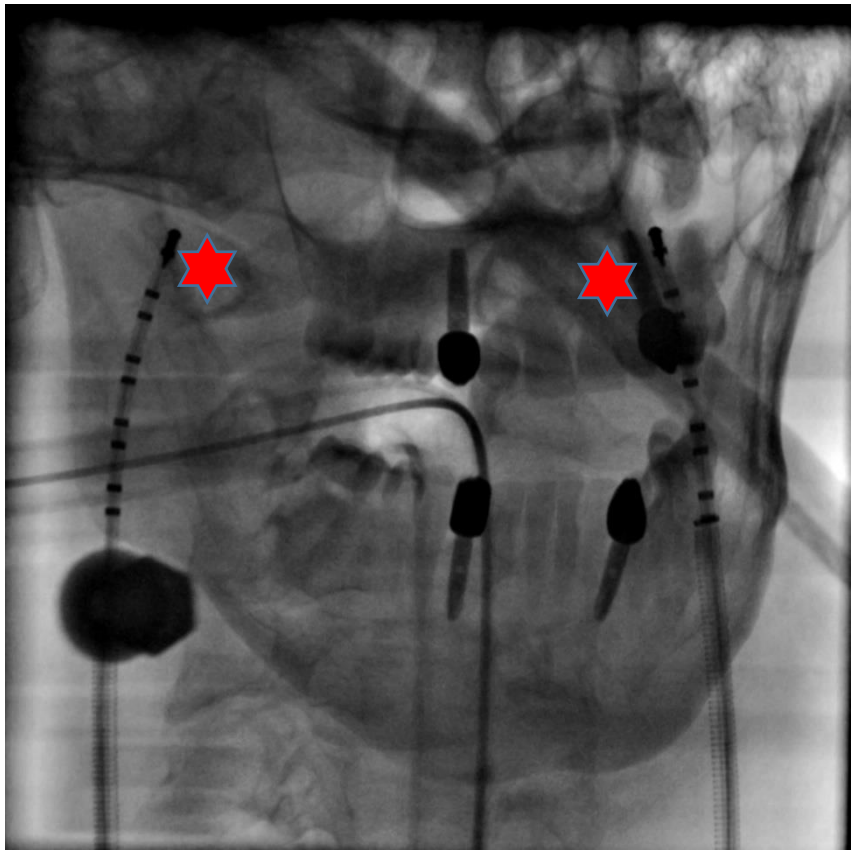
How to minimize the lesion set while preserving durable denervation of SA and AV nodes?

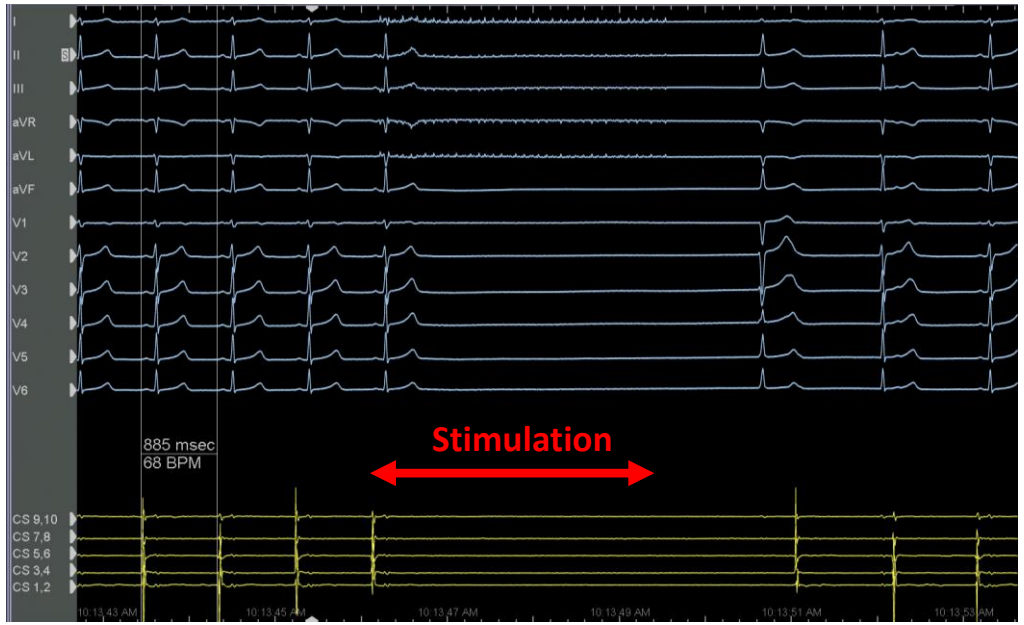


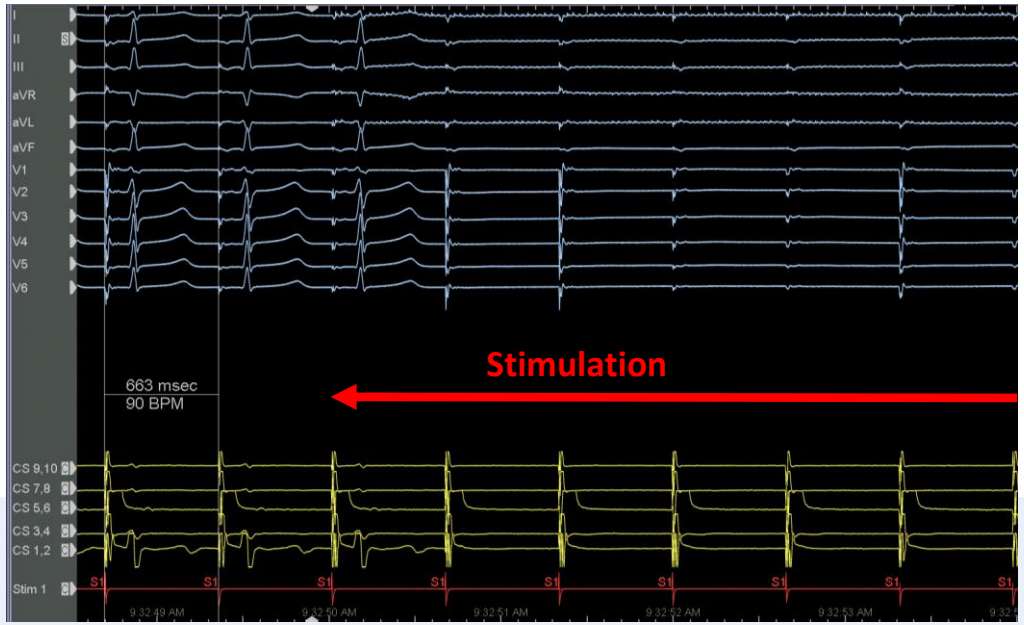


Extracardiac high-frequency (right / left) vagal nerve stimulation

Frequency: 50 Hz
Output: 1 V/kg (<70 V)
Pulse width: 0.05 ms

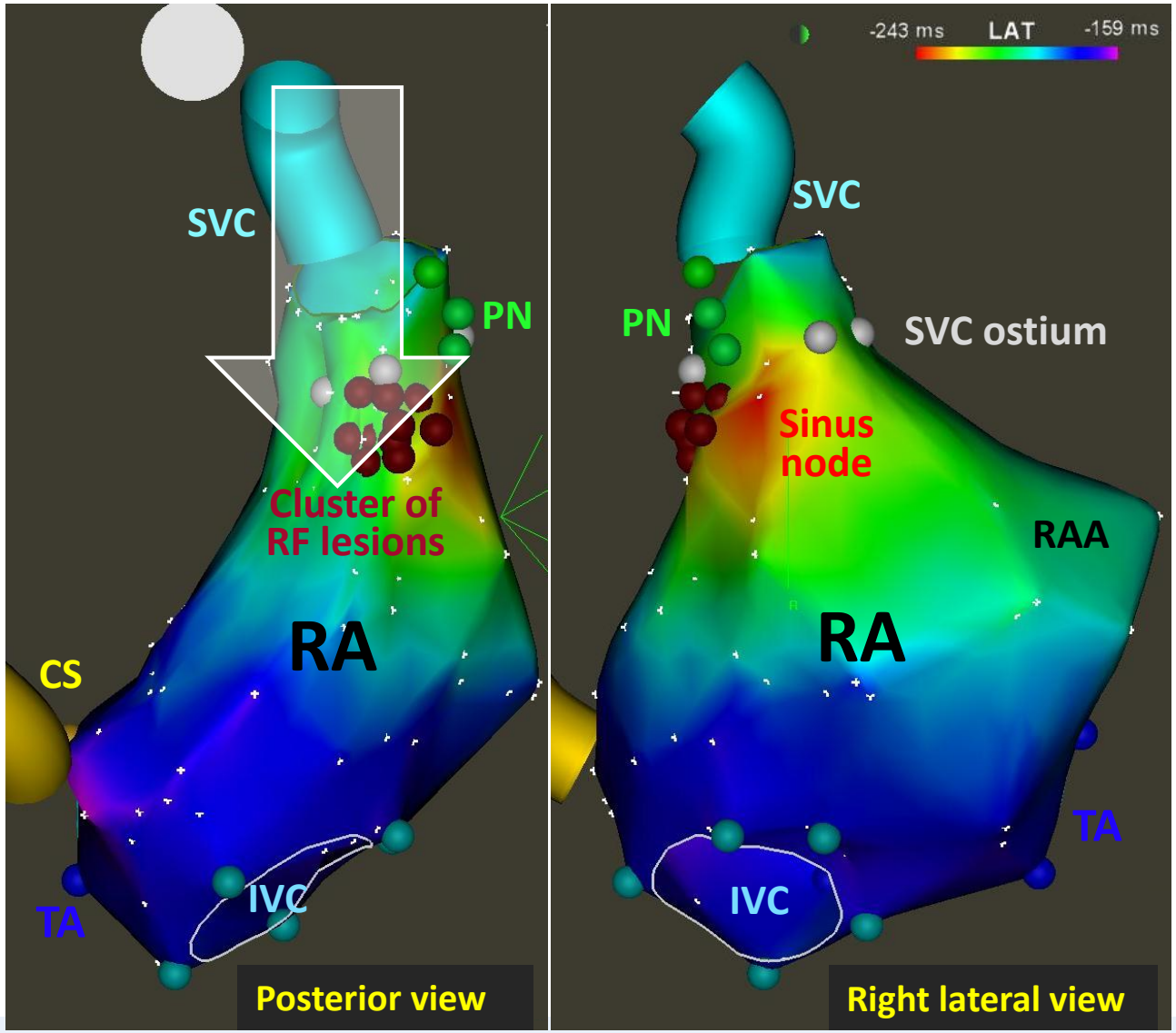






Pachon JC et al. JACC-EP 2015;5:451-60

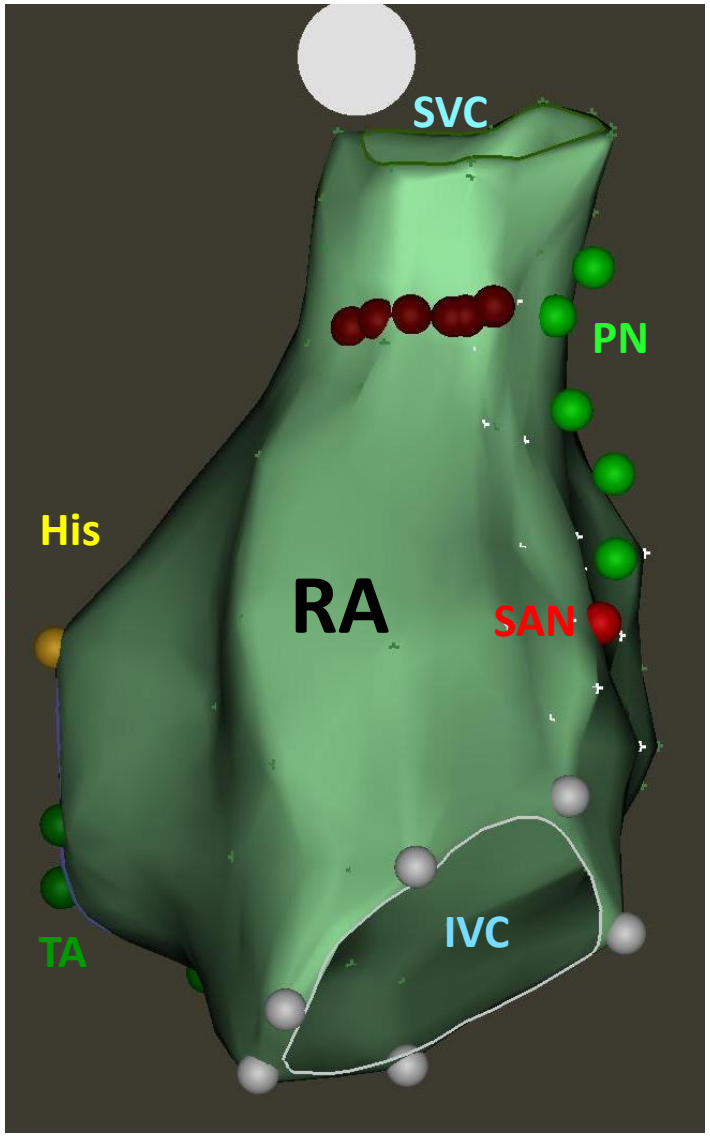
Empirical ablation cluster for SA node denervation

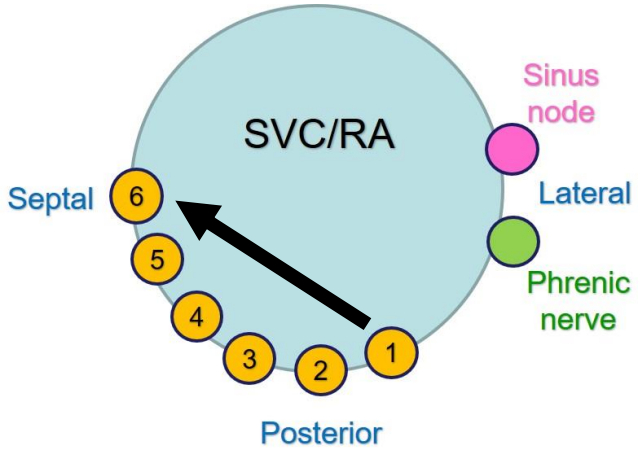


Kranio-caudal direction of autonomic nerves entering the heart along the great vessels

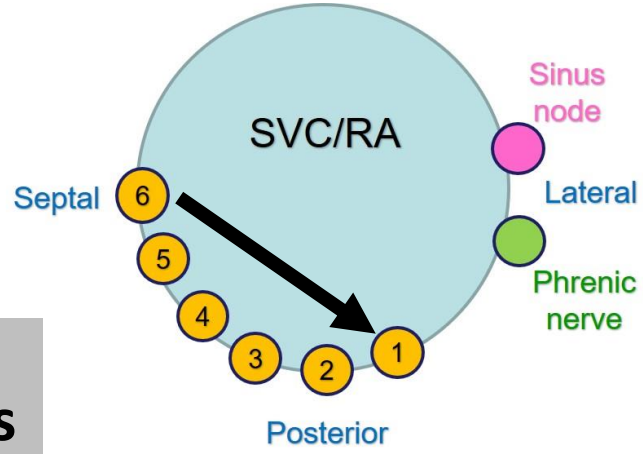
Stiavnicky et al. Europace 2020;22(11):1741

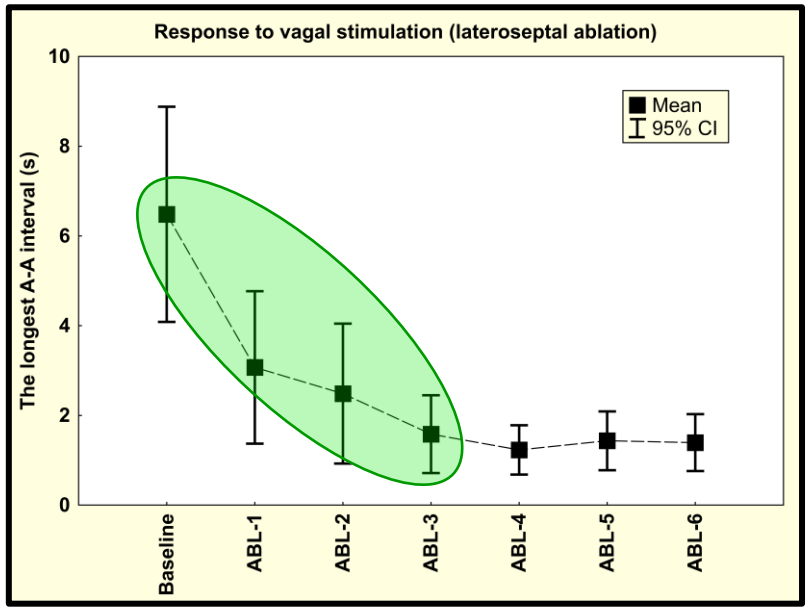
SA nodal denervation: right atrial approach only

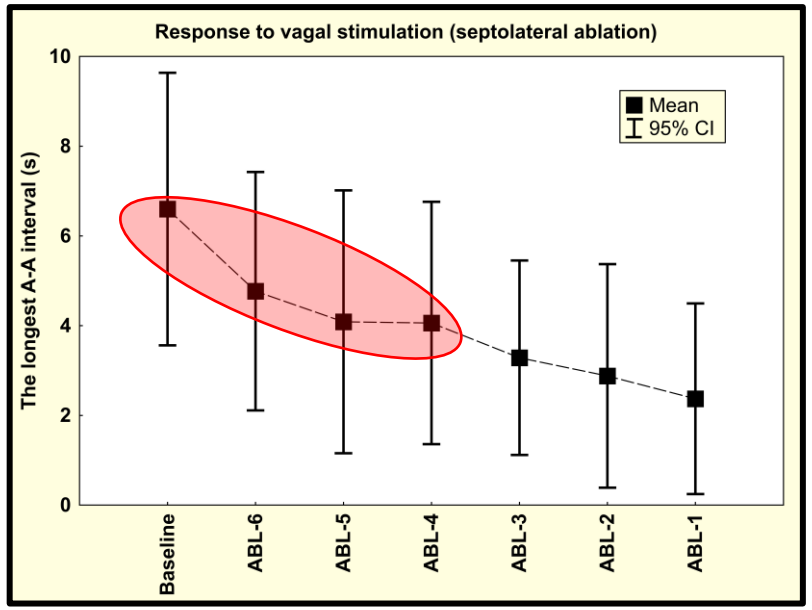




8 + 8 patients

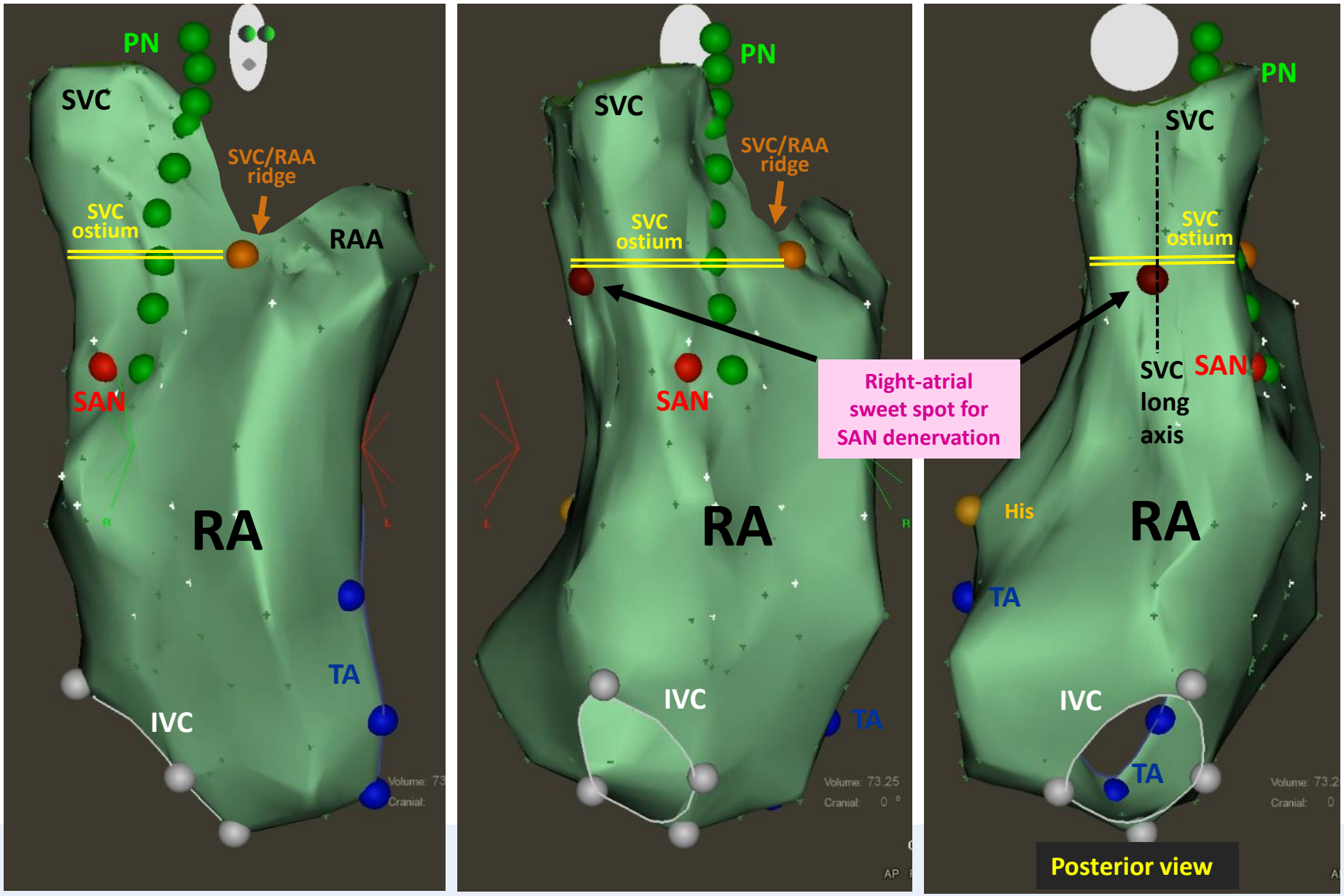




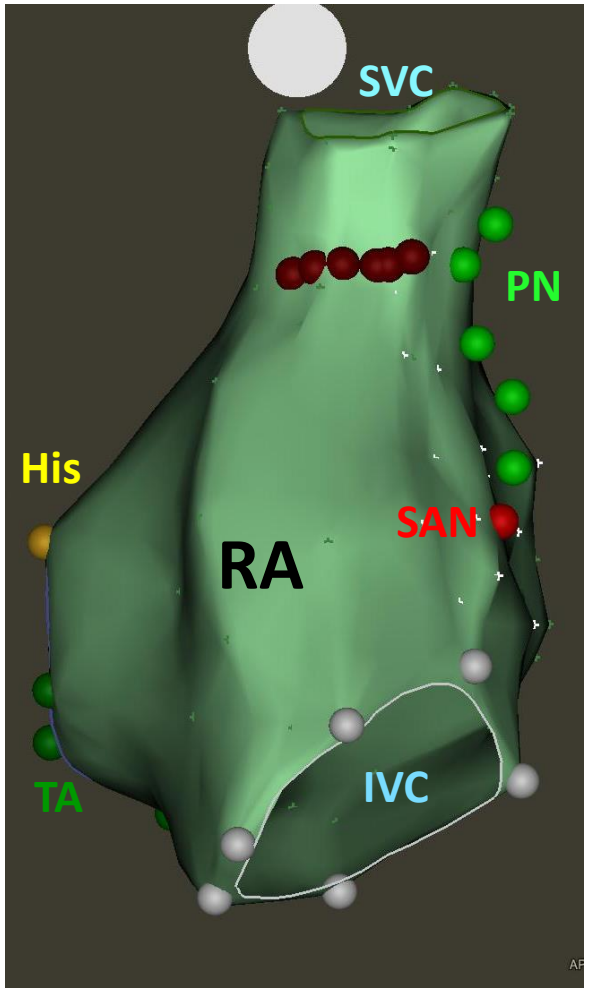


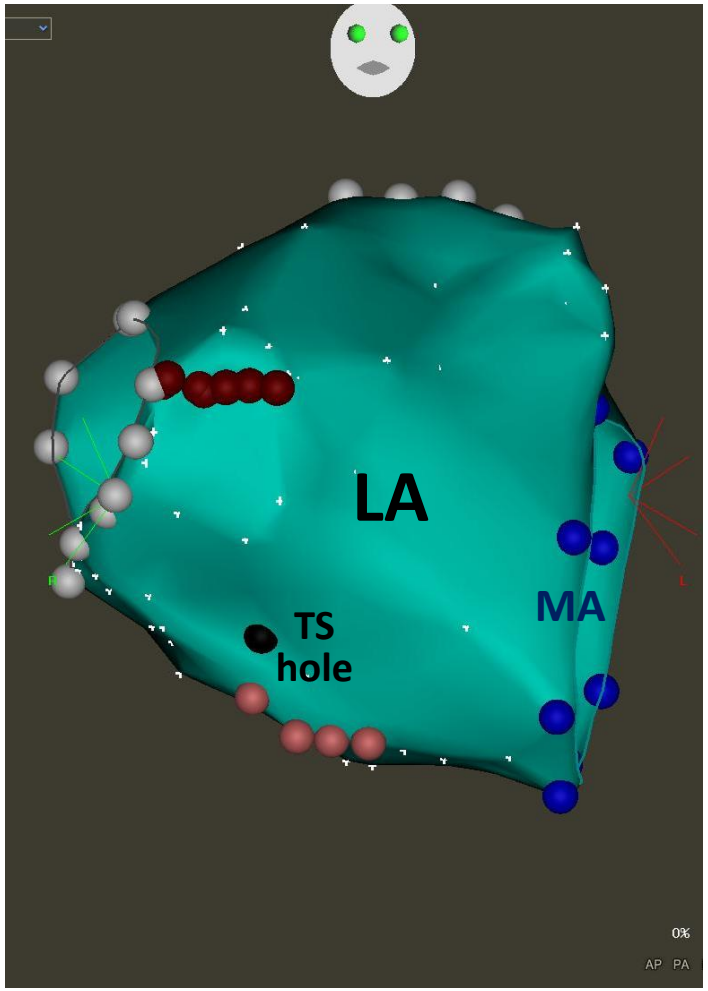
Wichterle et al. HRS congress 2020 (abstract)

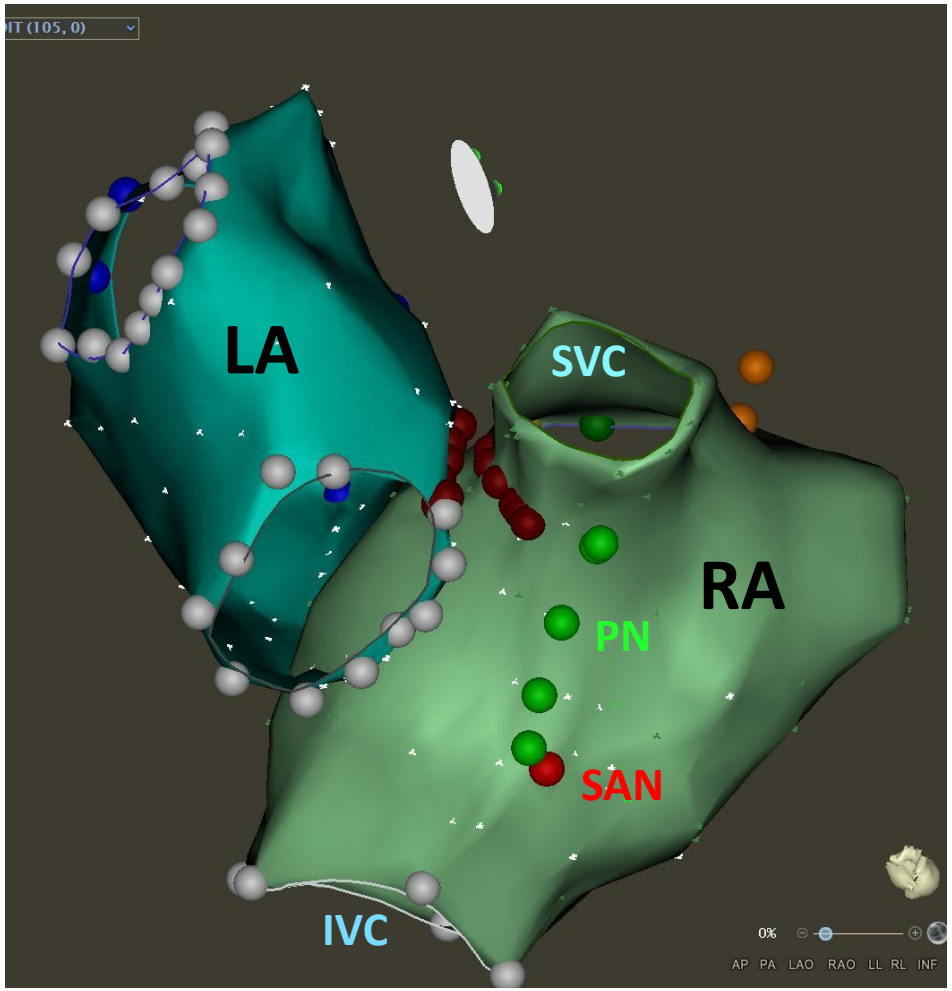
SA nodal denervation: right-atrial sweet spot



SA nodal denervation: biatrial approach







Wichterle et al. EHRA congress 2021 (abstract)

SA nodal denervation: biatrial approach

12 + 12 patients

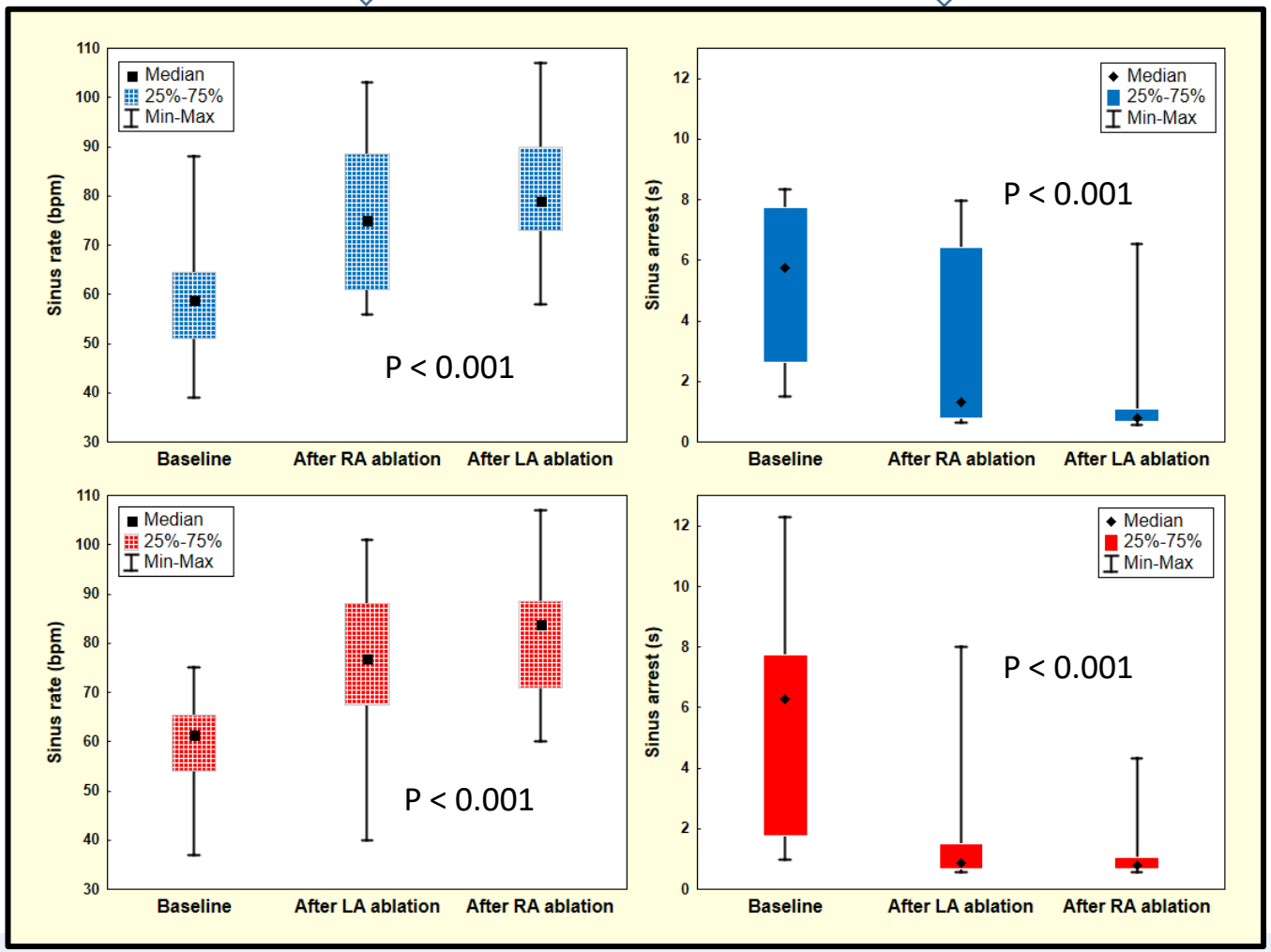
Sinus rate

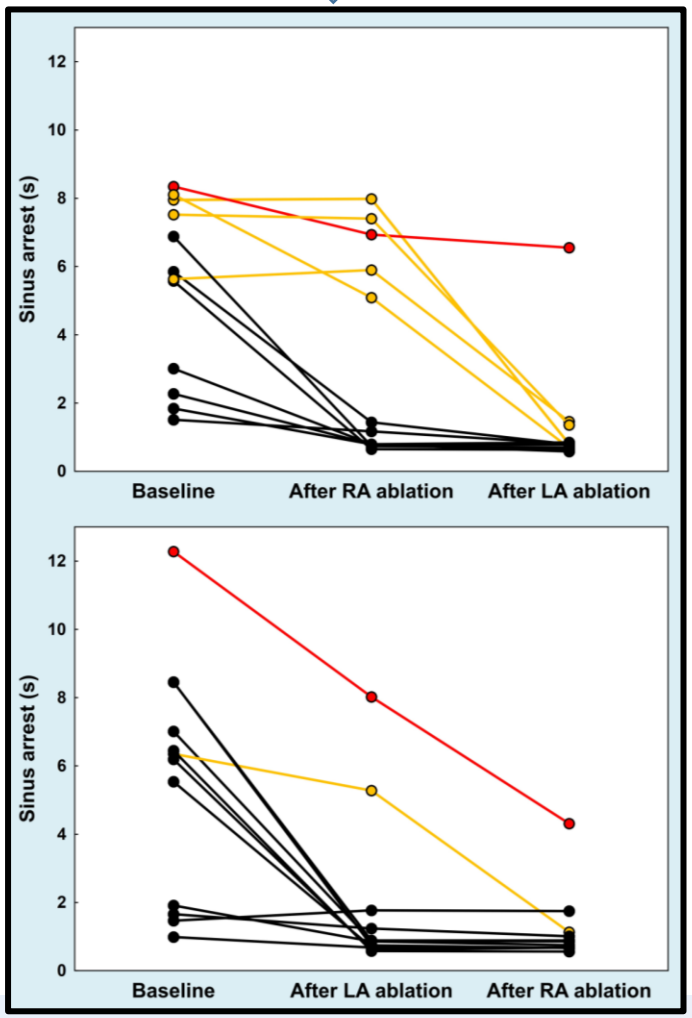
Sinus arrest during vagal stimulation

Sinus arrest during vagal stimulation

RA first

LA first

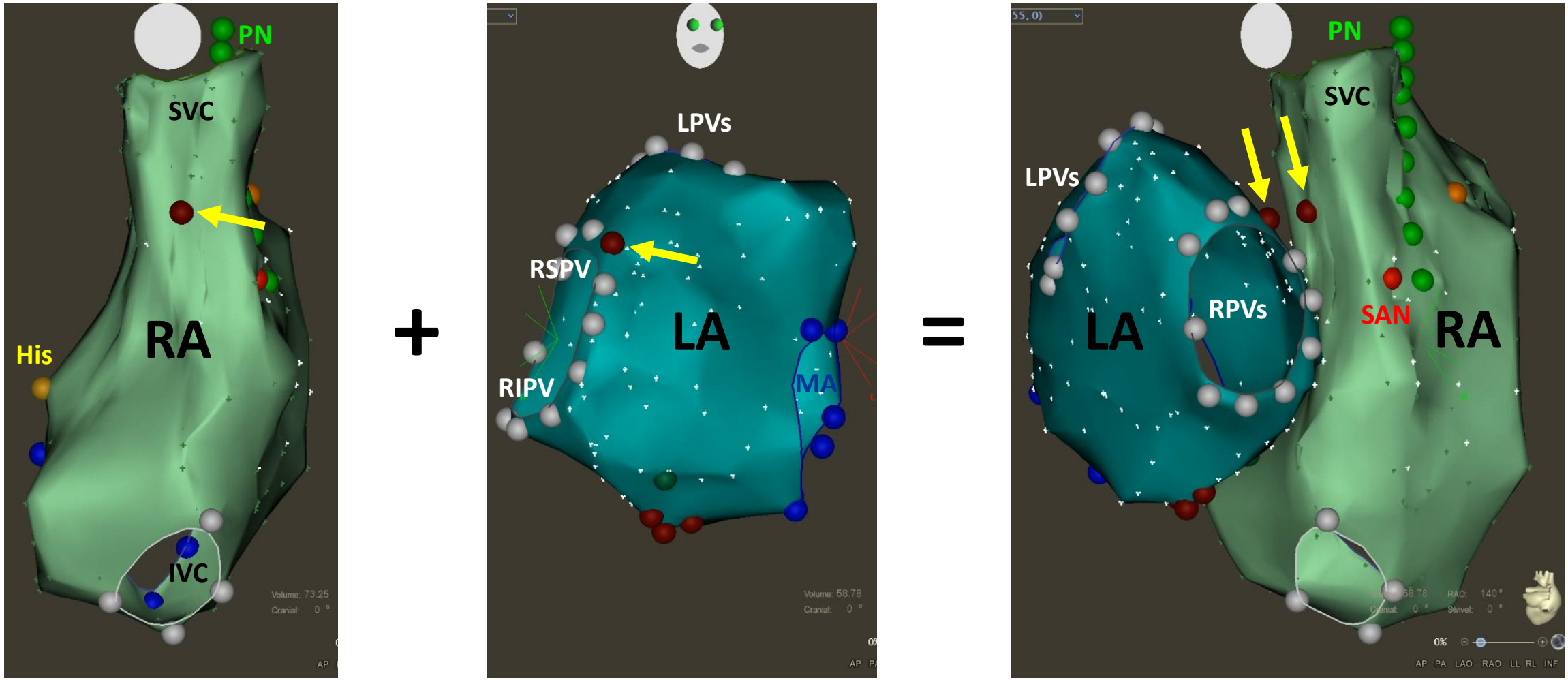




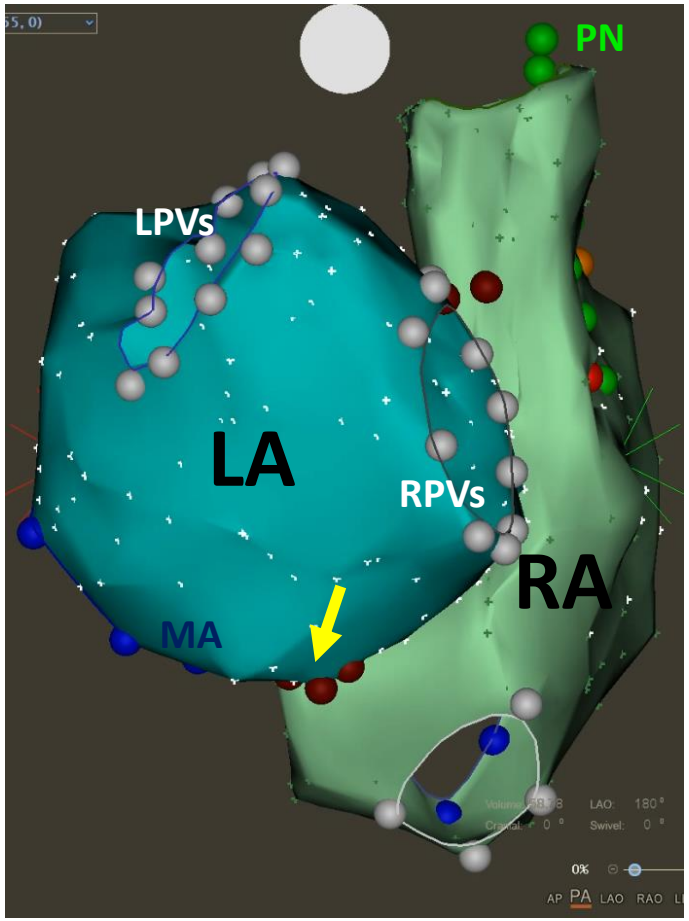
Fisher exact test P=0.37

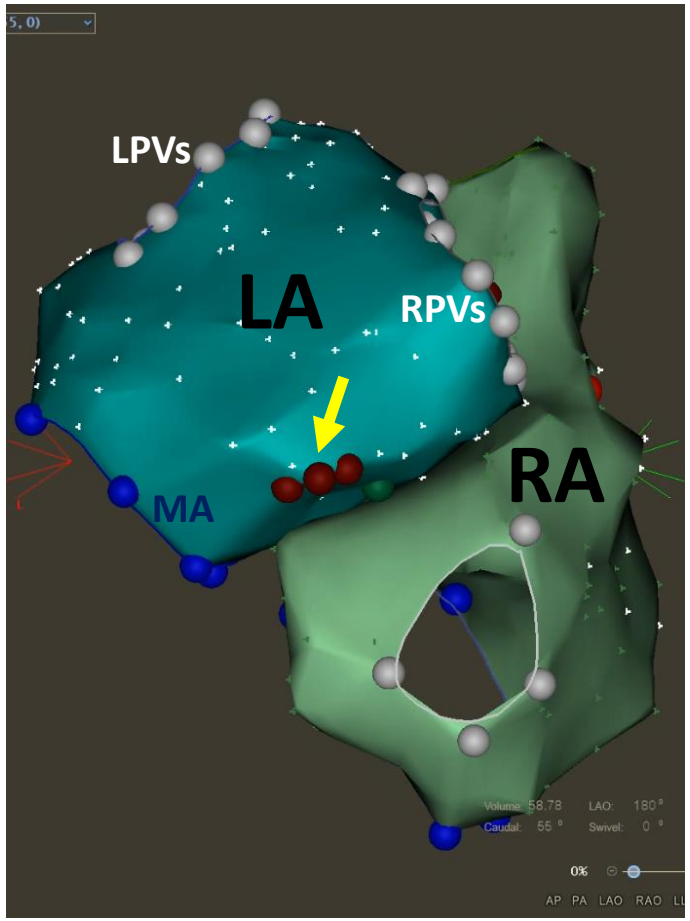
Wichterle et al. EHRA congress 2021 (abstract)

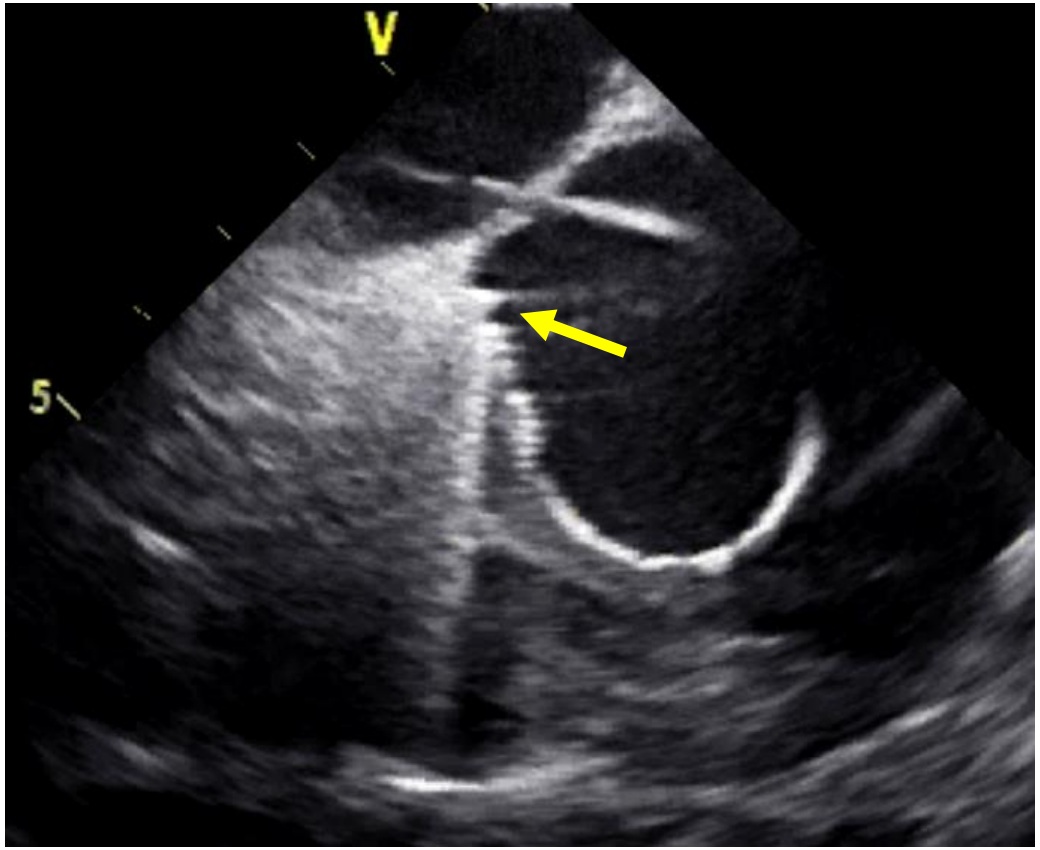
SA nodal denervation: minimized right- and left-atrial approach



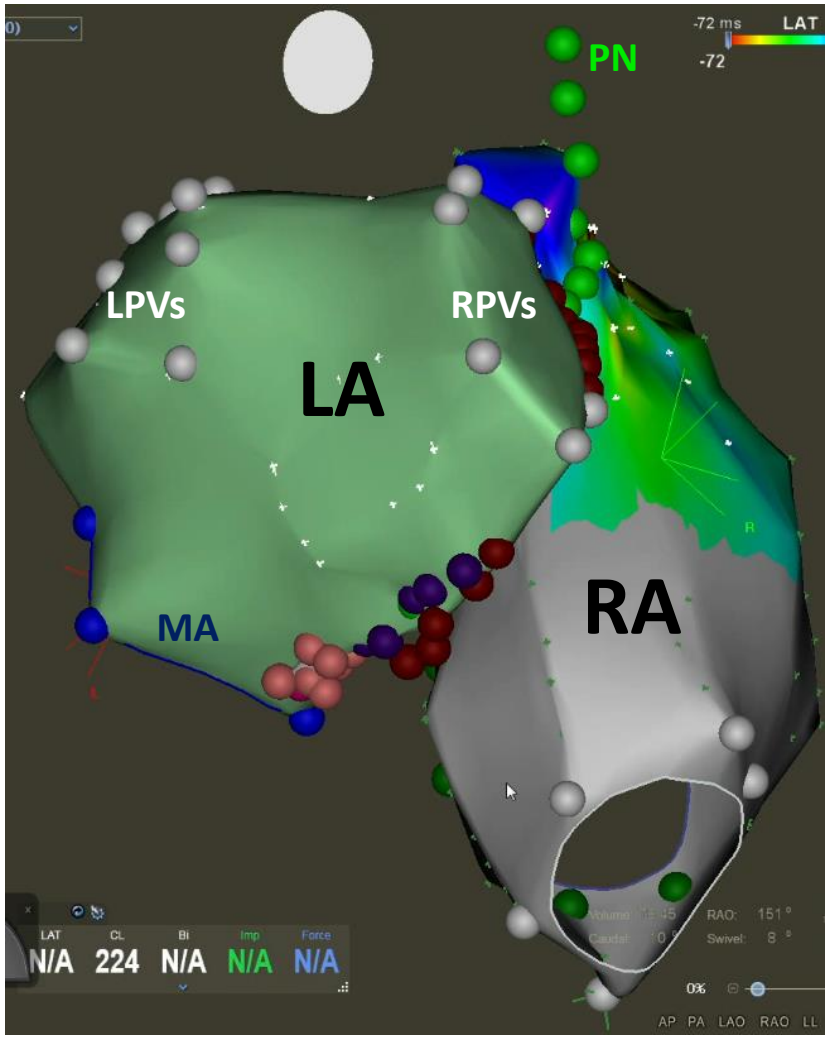
AV nodal denervation: left-atrial sweet spot

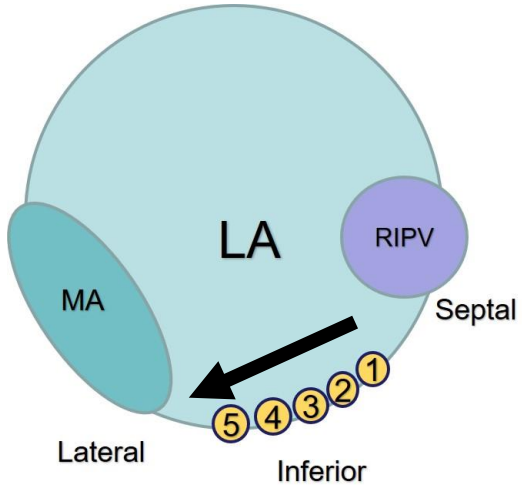




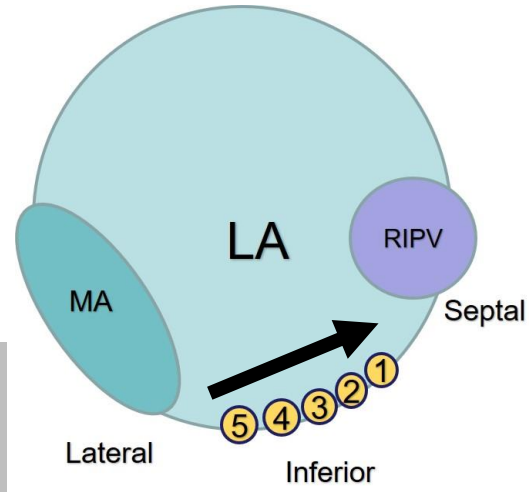


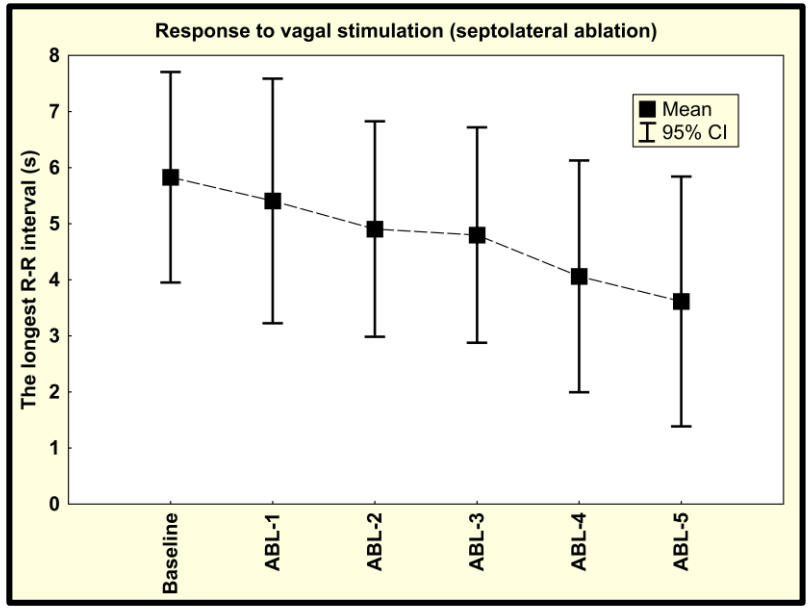
AV nodal denervation: left atrial approach

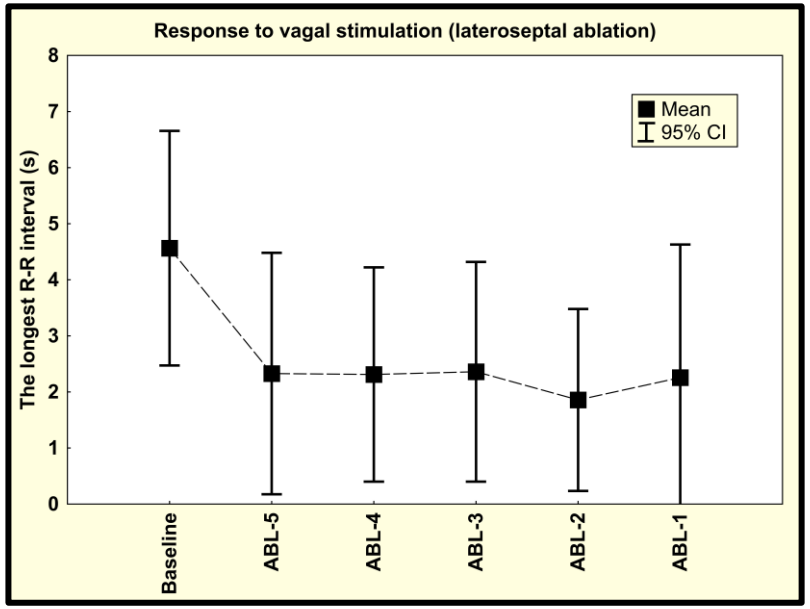




8 + 8 patients

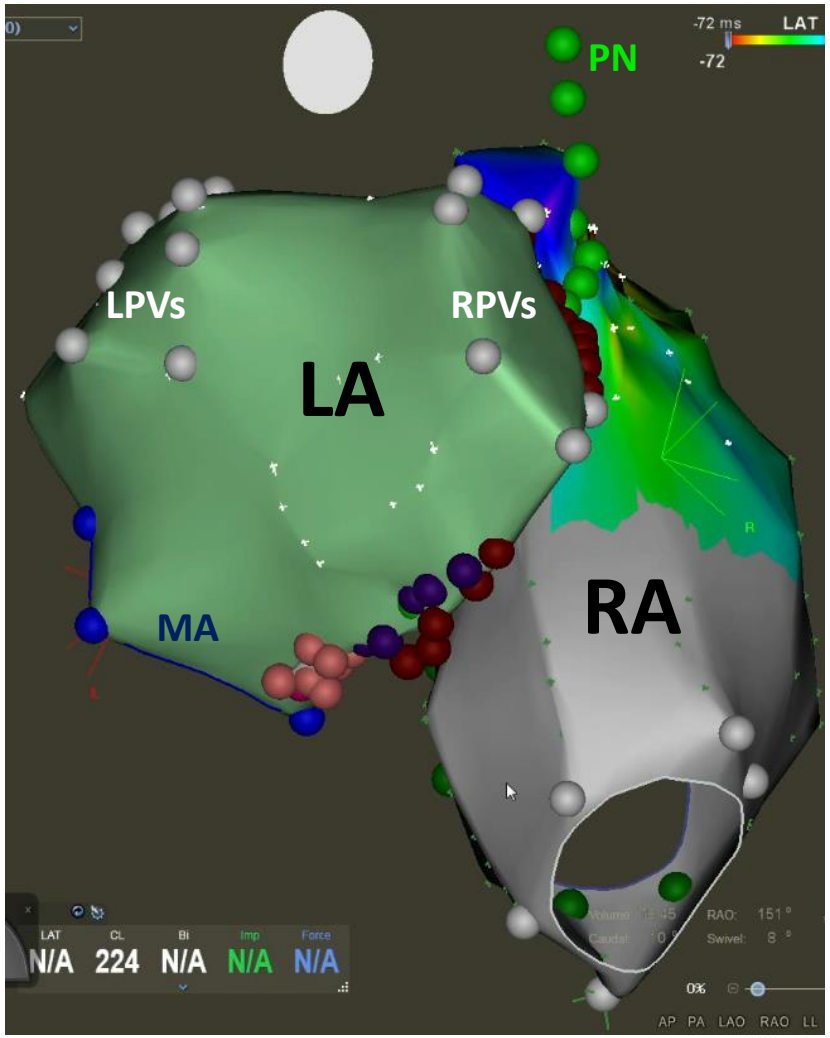


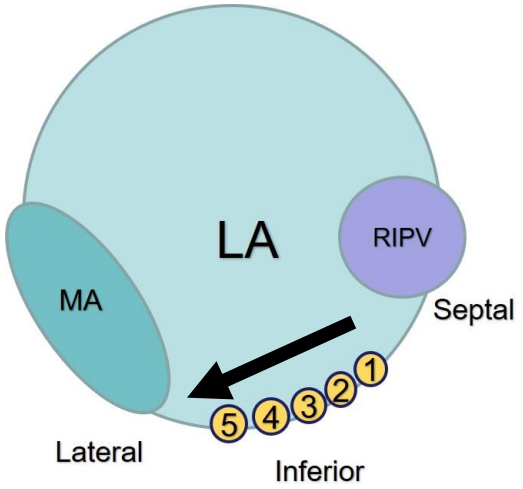


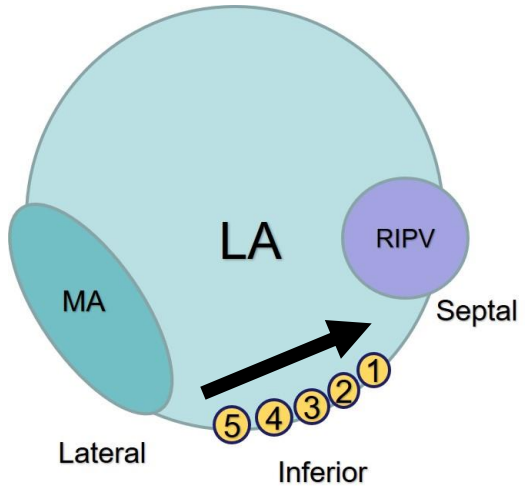


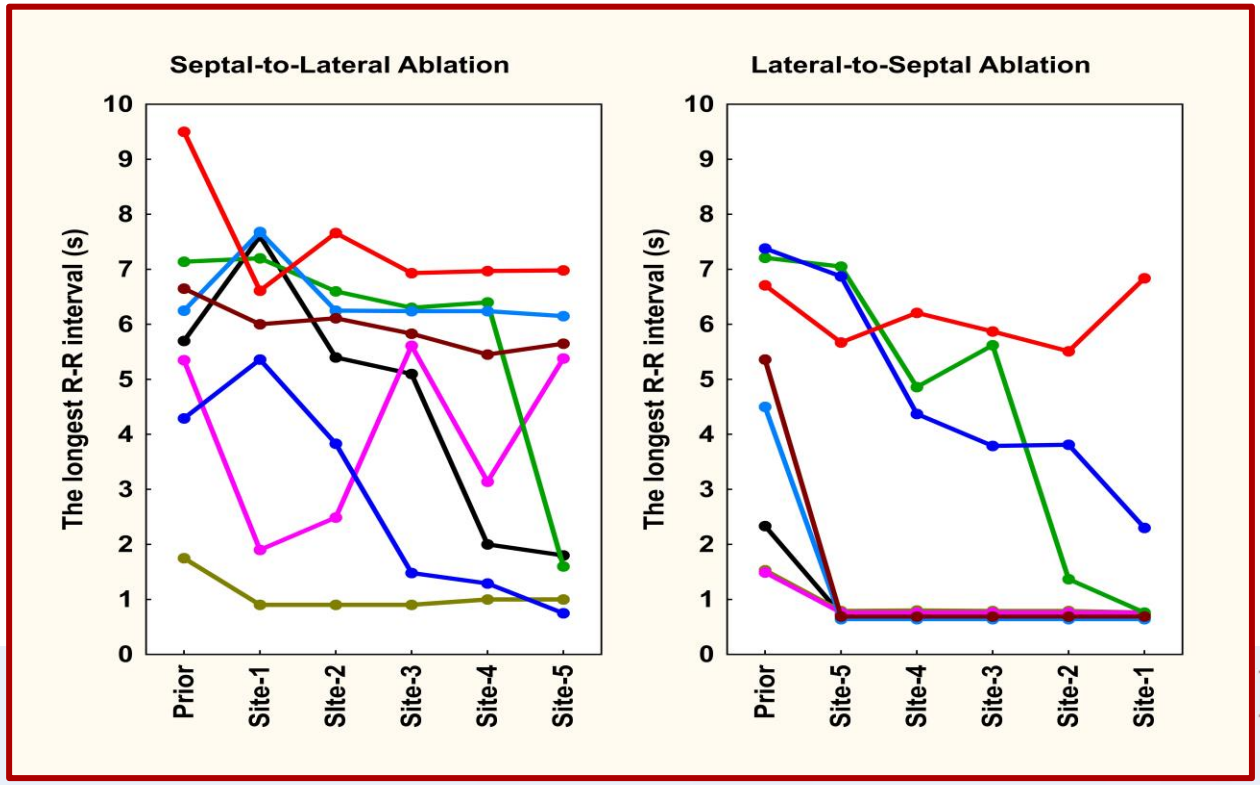
Jansova et al. ESC congress 2020 (abstract)

AV nodal denervation: left atrial approach









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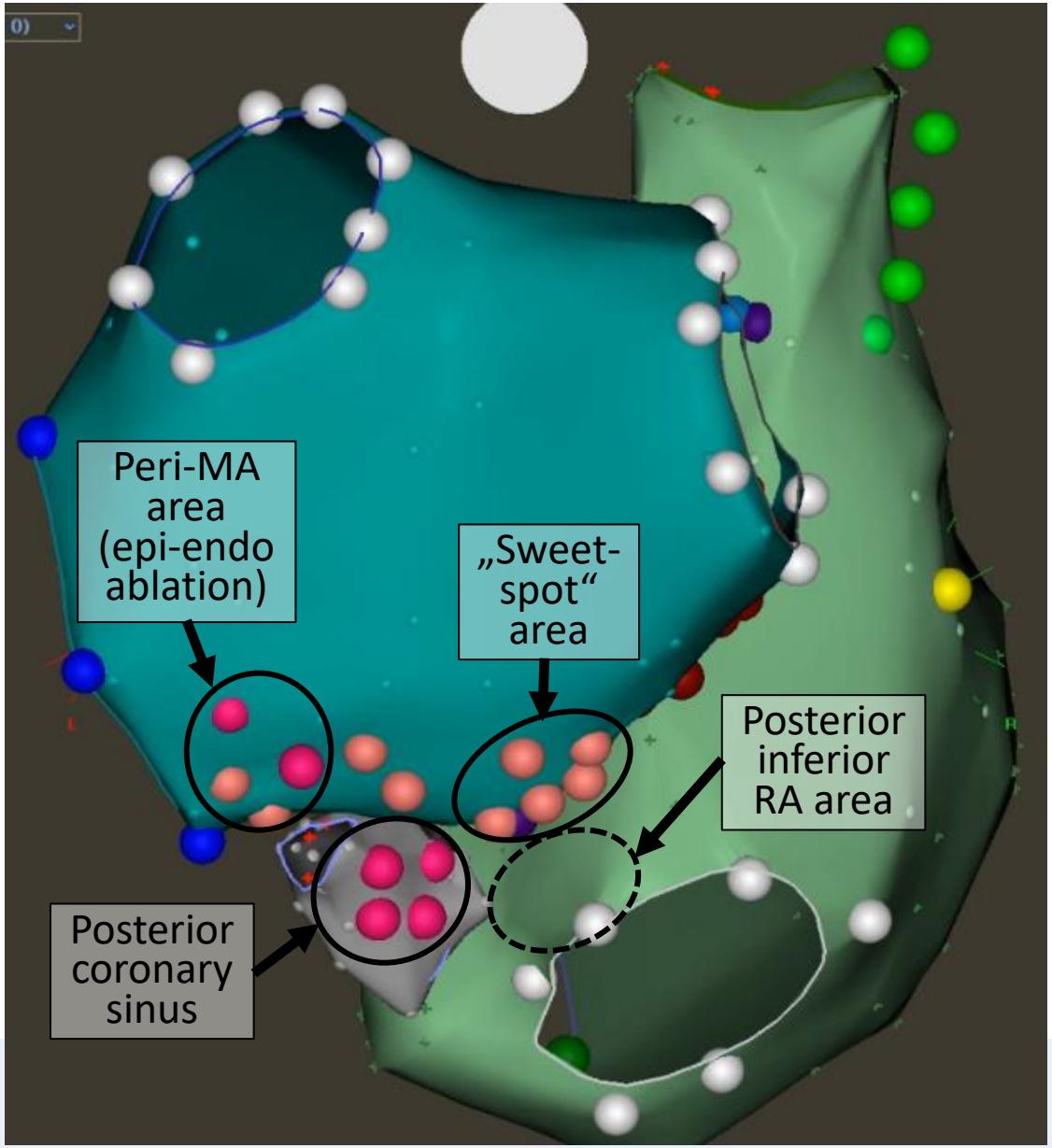
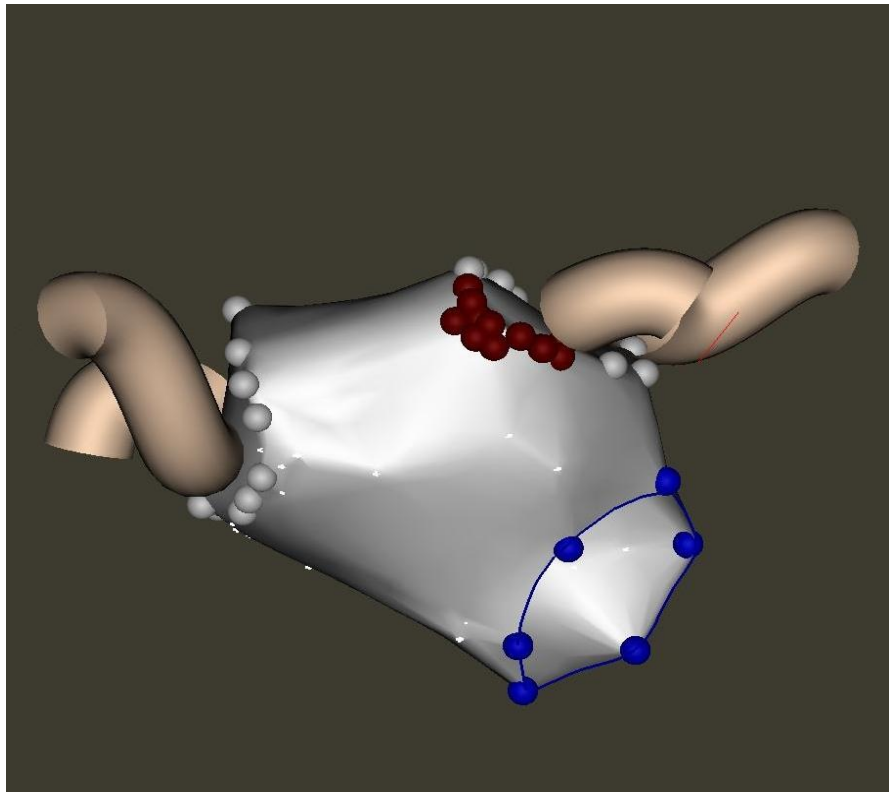
Challenge of AV nodal denervation





Superior left ganglionic plexus ablation is sometimes helpful in denervation of AV node

Jansova et al. ESC congress 2019 (abstract)

Thank you !

wichterle@hotmail.com
dan.wichterle@ikem.cz