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Electrophysiology Study & Radio Frequency Ablation in Arrhythmias - Experience from a Peripheral Govt Medical College

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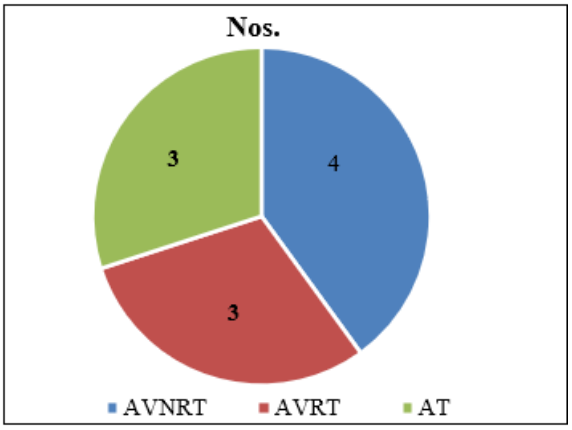
Abstract: ***EPS & RFCA is gaining wide acceptance for not only AV nodal based re-entrant tachycardias but also atrial arrhythmias. RFA FOR REGULAR NARROW QRS SUPRAVENTRICULAR TACHYCARDIAS, AVNRT (60%), AVRT (30%), AT (10%) Cure rate with RFA: 95% for AV node dependent tachycardias and 80% for AT***

Keywords: EPS, RFCA, AVNRT, AVRT, AT

1. Case Series

Experience at Chengalpattu GMC
Started our Cardiac EP RF workshops in 2023, We pool patients for the Elective EPS RFA procedure, We have conducted "3 EPS RFA" workshops so far, Total 10 patients have benefitted from the procedures



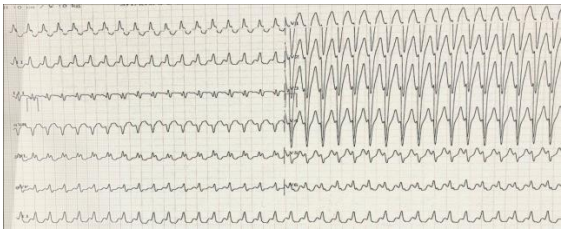
Characteristics of SVTs ablated
AVNRT: 4 pts.
All were Typical Slow-fast type
AVRT: 3 pts.
3 WPW
Left lateral AP
Right free wall AP
Mahaim tachycardia
AT: 3 pts.
Right atrial free wall
CS-os
RA Crista

Salient features of the 3d RFA workshops
All pts. underwent procedures under 3d electro-anatomical mapping, 100% acute success rates; No recurrences in 12-month follow up, No Major complications, Vascular complications- 1 person- hematoma manually.

One case example
32-year male, Recurrent tachycardia, Wide QRS tachycardia, LBBB morphology

Differential Diagnosis

1) SVT with aberrancy
2) Mahaim tachycardia
3) VT



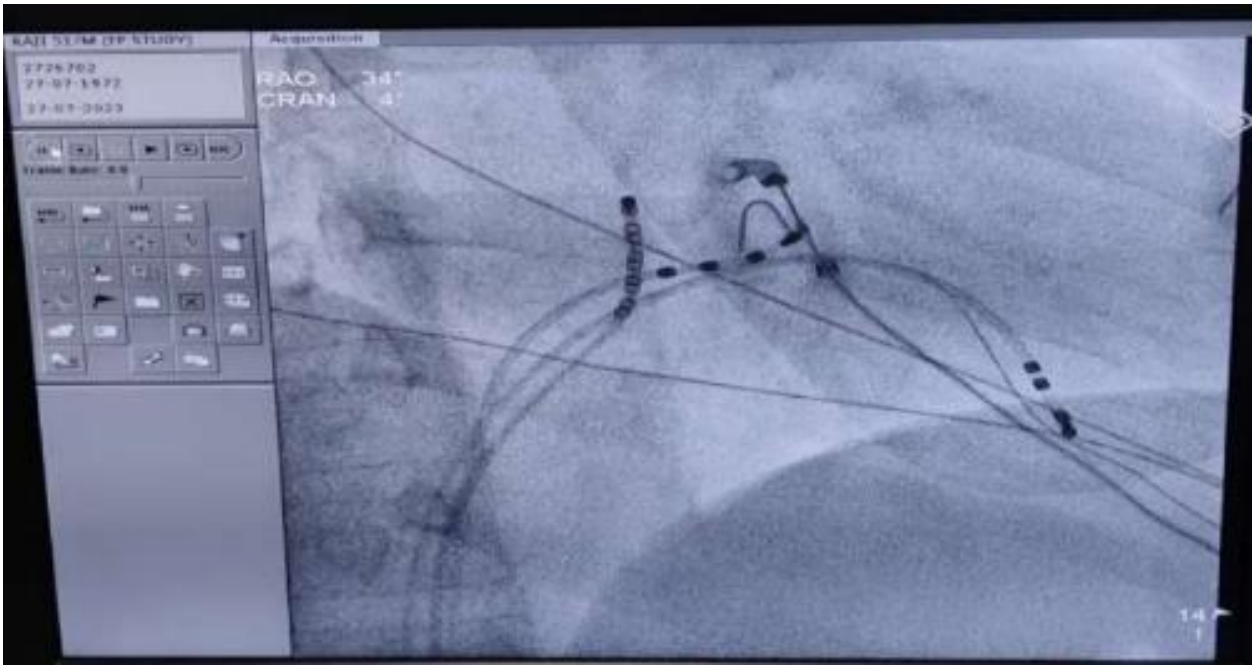
Vascular Access:
Right groin:2X6F Rt Femoral vein;1x6F femoral artery line.

Hardware:
6F His quadripolar catheter; 6F RV quadripolar catheter;6F RA decapolar catheter; 6F decapolar catheter;SR-0 sheath; 3D irrigation catheter; NavX precision guidance.

Anticoagulation
Heparin total of 3000U administered ACT was maintained>200 sec.

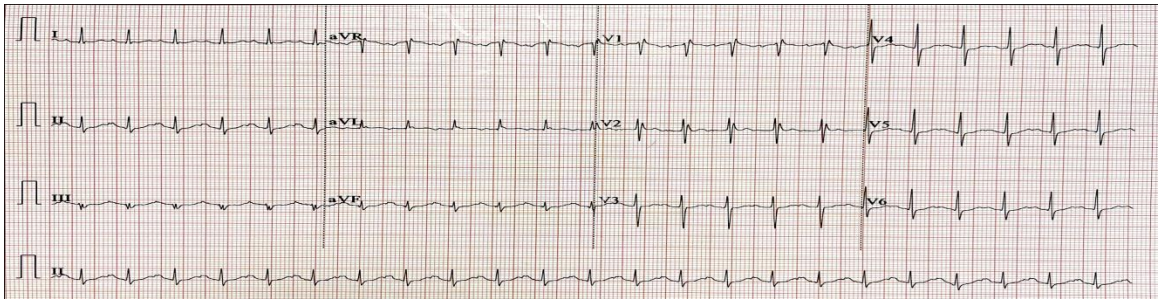
EP Study:
Performed with incremental and programmed extra stimuli from ventricular and atrial catheters.

Fluoro Image

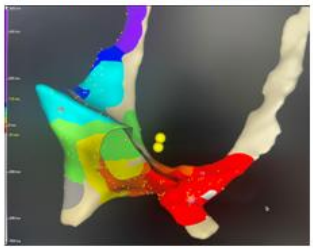


	51 Male	48 Female	68 Male	38 Male	46 Male	70 Female	55 Male	35 Male	47 Female
Clinical Presentation	Refractory and recurrent tachycardia	Refractory and recurrent tachycardia	Refractory and recurrent tachycardia	Refractory and recurrent tachycardia	Refractory and recurrent tachycardia	Refractory and recurrent tachycardia	Refractory and recurrent tachycardia	Refractory and recurrent tachycardia	Refractory and recurrent tachycardia
Electro Physiology Study	Left Lateral accessory pathway	Typical AVNRT	Typical AVNRT	Right Free Wall accessory pathway	Typical AVNRT	Typical AVNRT	Right Artial free Wall	CS-OS	RA Crista
RFA	Successful	Successful	Successful	Successful	Successful	Successful	Successful	Successful	Successful
Post Procedure ECHO	No Effusion Normal LV Function	No Effusion Normal LV Function	No Effusion Normal LV Function	No Effusion Normal LV Function	No Effusion Normal LV Function	No Effusion Normal LV Function	No Effusion Normal LV Function	No Effusion Normal LV Function	No Effusion Normal LV Function

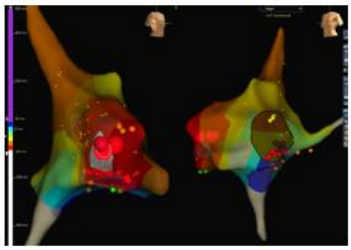
ECG in a patient with Crista-origin Atrial tachycardia



CS AT in a patient with LSVC

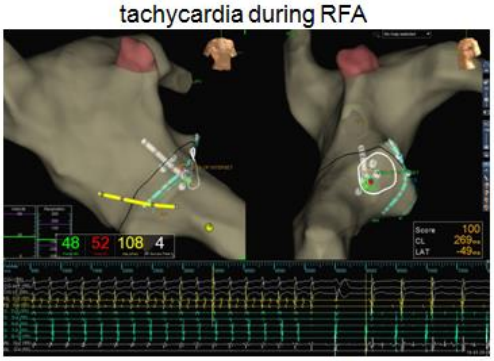


RA Free wall AT

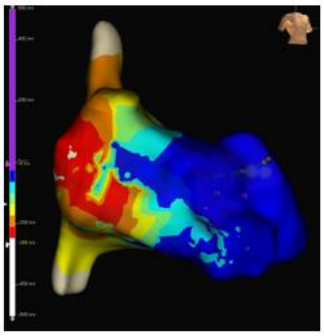


Slow pathway ablation in Typical AVNRT

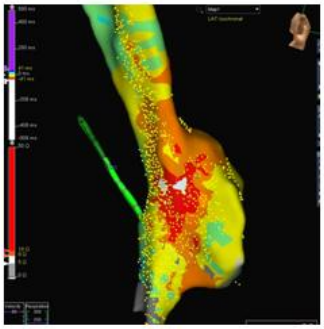
Left lateral AP- ORT- termination of tachycardia during RFA

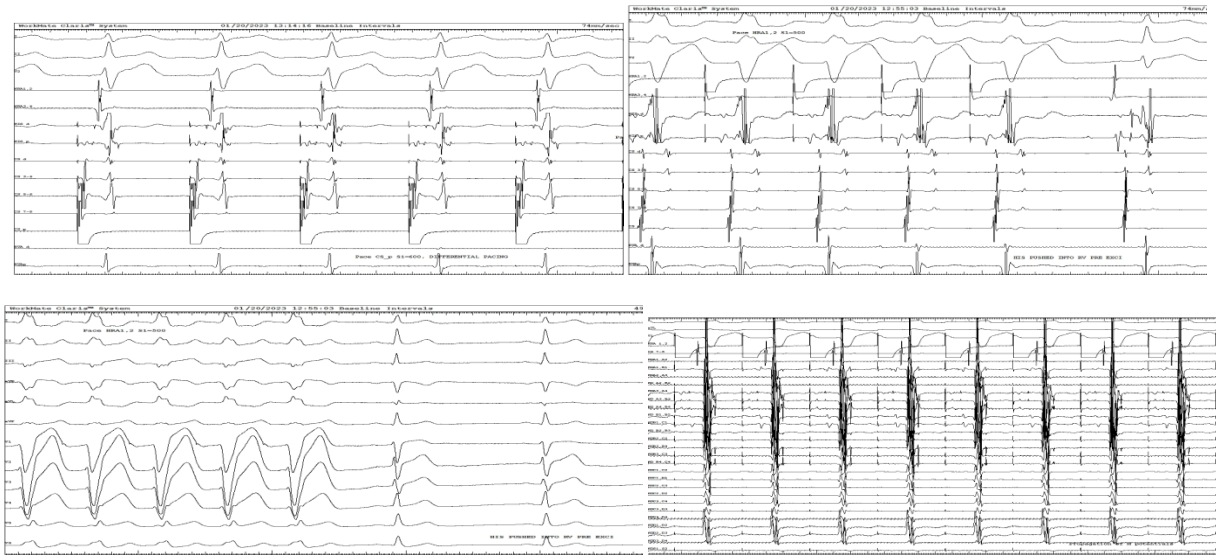


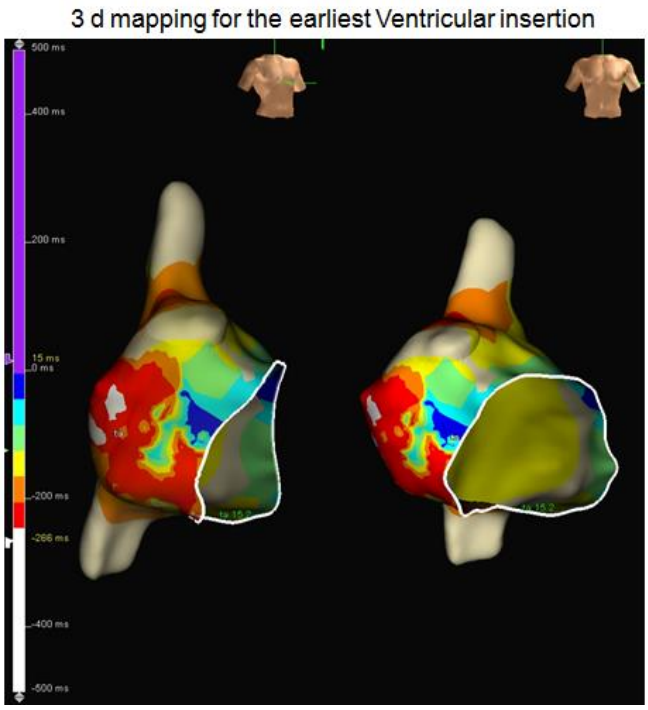
Mahaim tachycardia

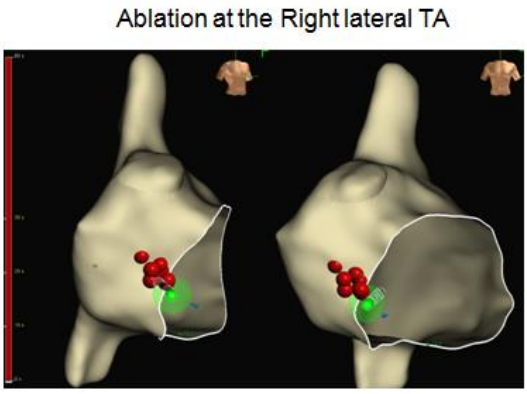


Crista AT

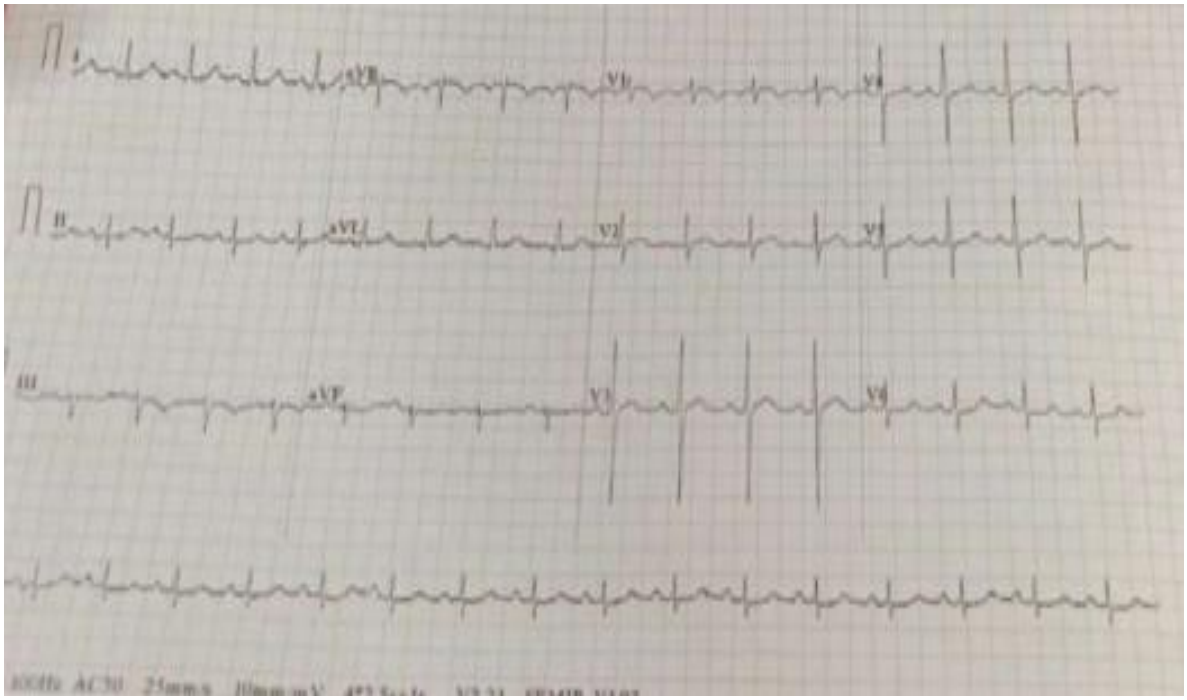








Post Ablation ECG



2. Discussion

- Mahaim fibers generally insert onto rt bundle branch. Generally have LBBB, Apical end lies close to try to tricuspid annulus and conducts slowly (like AV node property)
- Distal portion of fibers inserts into distal rt bundle branch or apical region of PV
- No retrogate conduction (only antidromic AVRT)
  Preexcited tachy has LBBB pattern,long AV interval and short AV interval

3. Clinical Perspective

- Mahaim pathways are decrementally conducting connections between the right atrium or the AV node and the right ventricle in or close to the right bundle branch.
- The baseline QRS is normal or displays different degrees of manifest pre-excitation with left bundle branch block morphology.
- Programmed atrial pacing leads to obvious manifest preexcitation following an increase in A-V interval along with shortening of H-V interval at shorter pacing cycle lengths, and right bundle electrogram preceding

His bundle activation during antegrade pre-excitation and reentrant tachycardia.

- Catheter ablation is accomplished by identifying the proximal and distal insertions and, ideally, the recording of a proximal pathway potential at the tricuspid annulus or a distal one on the right ventricular free wall.

4. Conclusion

- RFCA of accessory pathways can be challenging especially when it presents with wide QRS tachycardia with a LBBB morphology.
- Thorough knowledge of the electrophysiological mechanisms of SVTs is paramount.
- Rare forms of accessory pathways with decremental conduction should always be in mind when we approach such patients.
- 3D mapping definitely helps in appreciation of mechanisms of tachycardia along with anatomical correlation and usually is a must tool when dealing with such uncommon forms of SVT.

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