

Atrial flutter ablation through the azygous continuation in a patient with mirror image dextrocardia and interrupted inferior vena cava

Adèle Greyling*[#] and James Potts[†]

*Netcare Greenacres Hospital, Port Elizabeth, South Africa

[#]Professional Associate, Nelson Mandela University, Port Elizabeth, South Africa

[†]Life St George's Hospital, Port Elizabeth, South Africa

Address for correspondence:

Dr A. Greyling
PO Box 63709
Greenacres
Port Elizabeth
6057
South Africa

Email:

Adelegreyling1@gmail.com

CASE PRESENTATION

A 22-year-old man with mirror image dextrocardia, repaired atrial septal defect (ASD) (pericardial patch closure) and pulmonary stenosis (right ventricular outflow tract conduit) was referred for ablation.

Systemic examination was unremarkable apart from dextrocardia. Electrocardiograph (ECG) showed atrial flutter (AFL) with variable atrioventricular (AV) block. Mirror image dextrocardia, no residual intracardiac shunt, mild PS/PR, normal dimensions and function of both the RV and LV was found on echocardiogram. Interrupted inferior vena cava (IVC) was not previously reported, nor appreciated.

Angiography of the right atrium (RA) was performed prior to ablation to define the anatomy of the cavotricuspid isthmus (CTI). On placing the 6F pigtail angiographic (Cook Inc., Bloomington, IN) catheter, IVC interruption with azygous continuation into the superior vena cava (SVC) was noted. Electrophysiology catheters were introduced via the same route. A duo-decapolar (Halo, Biosense Webster, Diamond Bar, CA, USA) catheter was placed around the tricuspid valve annulus (TVA) via an 8.5F SLO (St Jude Medical, St Paul, MN, USA) sheath. The bidirectional decapolar coronary sinus (CS) catheter (Biosense Webster, Diamond Bar, CA, USA)

ABSTRACT

Arrhythmias are frequent in adult congenital heart disease (ACHD). Most common is cavotricuspid isthmus (CTI)-dependent atrial flutter (AFL), followed by scar (incisions / patches)-related circuits. Radiofrequency catheter ablation (RFCA) is the treatment of choice. Linear radiofrequency (RF) applications are required, usually via a femoral approach.

We describe a case of CTI-dependent AFL ablation by the femoral approach in a patient with dextrocardia and interrupted inferior vena cava (IVC).

SAHeart 2019;16:142-143

could not be advanced further than the high RA and was used as a reference for mapping. A 4mm, irrigated tip, bidirectional ablation catheter (Flexability DF, St Jude Medical, St Paul, MN, USA) was placed in the CS. Three-dimensional image reconstructions were obtained by electroanatomical mapping (Ensite Precision, St Jude Medical, St Paul, MN, USA).

Activation map showed a clockwise atrial flutter around the TVA in the right anterior oblique (RAO) view, mirror image of the usual left anterior oblique (LAO) view. Atriotomy and ASD-patch scars were identified on voltage mapping. Entrainment confirmed a CTI-dependent macroreentrant RA tachycardia, terminating during ablation of the CTI line, further confirming the diagnosis. To prevent future IARTs an ASD to SVC line was drawn and block of the atriotomy scar and CTI line confirmed by differential pacing. On 6-month follow-up he remains in atrial/junctional rhythm with appropriate chronotropic response on stress ECG.

CONCLUSION

AFL ablation with azygous continuation has been reported, ablated via an approach from the internal jugular veins.⁽¹⁾ To our knowledge, ablation via the femoral approach has been reported in 3 other cases;^(2,3,4) and only once in association with dextrocardia.⁽⁴⁾ RFCA is the treatment of choice in AFL and should be attempted even in the face of challenging anatomy.

Conflict of interest: none declared.

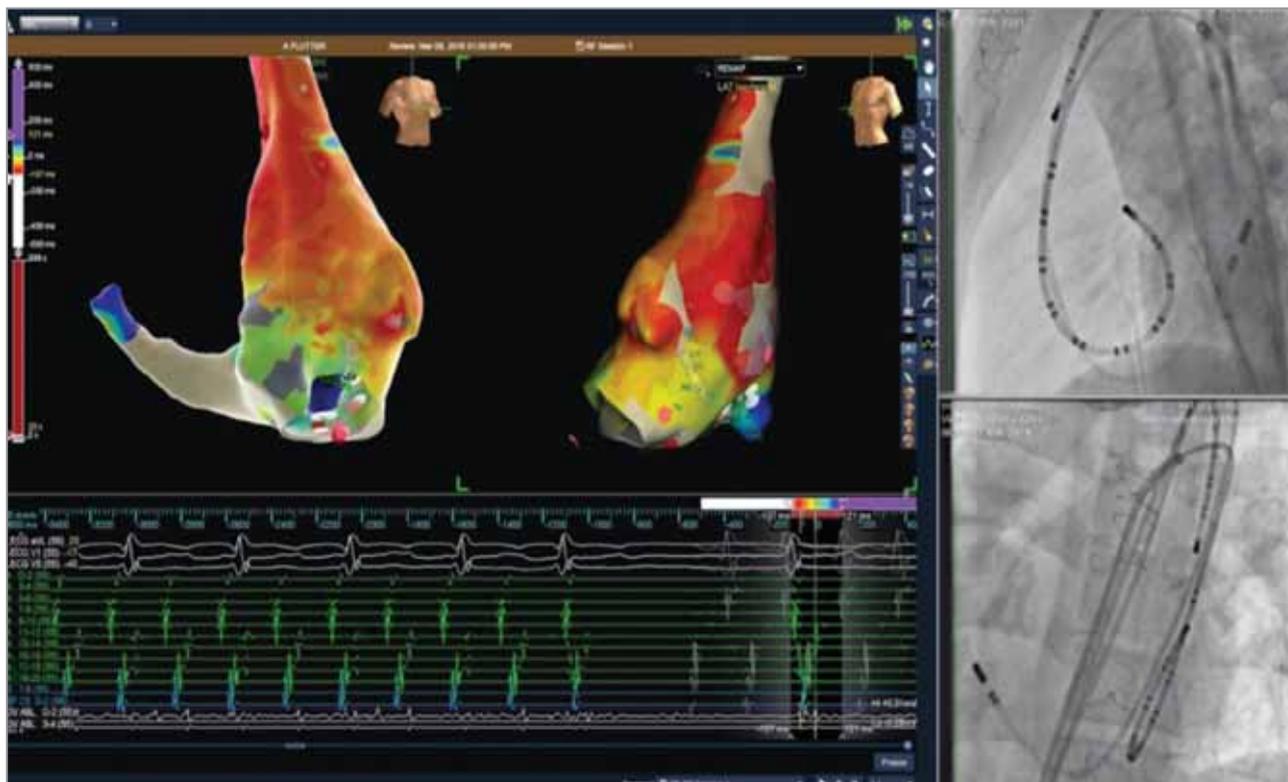


FIGURE 1: Activation map with termination of tachycardia during ablation. Lateral and anteroposterior views on fluoroscopy with catheters brought in via the femoral approach through the azygous continuation and superior vena cava into the right atrium. The halo catheter is on the tricuspid valve annulus, coronary sinus catheter in the superior right atrium and ablation catheter in the coronary sinus.

REFERENCES

1. Traykov V, Marchov D, Kirova G, Gelev V. Catheter ablation of typical atrial flutter with superior approach in a patient with inferior vena cava interruption. *Clinical Case Reports* 2017;5(11):1834-36.
2. Guenther J, Marrouche N, Ruef J. Ablation of atrial flutter by the femoral approach in the absence of inferior vena cava. *Europace* 2007;9:1073-34.
3. Perez-Silva A, Merino JL, Peinado R, Lopez-Sendon J. Atrial flutter ablation through the azygous continuation in a patient with inferior vena cava interruption. *Europace* 2011;13:442-43.
4. Vurgun KV, Candemir B, Altin AT, Akyürek Ö. Management of scar-related atrial flutter in a patient with dextrocardia, inferior vena cava interruption, and azygous continuation. *Anatol J Cardiol* 2018;19:148-51.