



Prominent Crista Terminalis: A Right Atrial Pitfall

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Abstract

Rotational Intracardiac Echocardiography guidance during transcatheter PFO closure procedure allowed qualitative information consistent with the diagnosis of an incidental prominent Crista Terminalis. The correct diagnosis of this right atrial pitfall zeroed the risk to mistake it for tumor, vegetation or thrombus, avoiding needlessly costly additional investigations.

Keywords: Intracardiac echocardiography; Prominent crista terminalis; Patent foramen ovale; Transcatheter closure

Short Communication

Thirty nine years-old female, severe aura migraineur, past history of fibromyalgia and minor thrombophilic disorder, suffered from an unexplained ischemic stroke with positive neuroimaging. Transthoracic/Transesophageal Echocardiography (TTE/TEE) confirmed the presence of Patent Foramen Ovale (PFO) with septum premium hypermobility in the absence of Eustachian valve or other anatomical variants. Contrast-enhanced transcranial Doppler was positive for severe right-to-left shunt *via* PFO. Following discussion in the heart & brain team, catheter-based PFO closure was planned. After local anesthesia and mild sedation, closure procedure was performed as usual in our experience under fluoroscopic monitoring and Rotational Intracardiac Ultrasound (RIU) guidance by the mechanical 9F/9 MHz 360° scan probe (Ultra ICE™, EP Technologies, BSC, CA, USA). Pre-procedural long-axis four-chamber and axial planes Ultra ICE views (Figure 1A, 1B) showed incidentally an abnormal free atrial mass located at the junction between the trabeculated right atrial appendage and the right atrium's smooth surface (Supplementary Video S1). RIU enabled qualitative information consistent with the diagnosis of a prominent Crista Terminalis (CT) [1-3]. Post-procedural axial plane Ultra ICE views and saline contrast study (bubble test) (Figure 1C, 1D)

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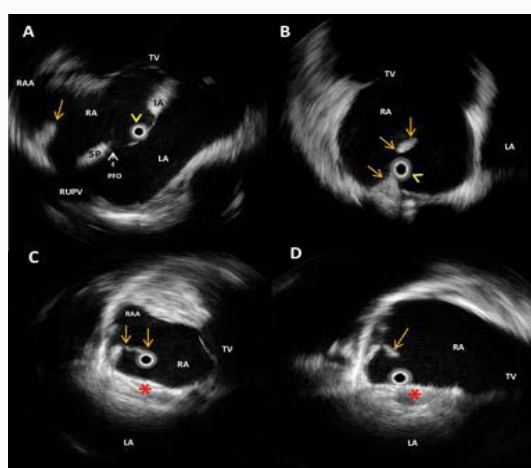


Figure 1: Rotational Intracardiac Echo by Ultra-ICE (mechanical 9F/9 MHz 360° scan probe). Pre-procedural long-axis four-chamber (A) and axial plane (B) showing the interatrial septum with its inferior–anterior and superior–posterior rims and the Patent Foramen Ovale. The prominent Crista Terminalis (CT) (orange arrow) appears as a prominent thick structure, at the junction between the posterior smooth wall and the anterolateral trabeculated portion of the right atrium, keeping contact in the axial plane with the Ultra ICE catheter (yellow arrowhead) located at the center of the images. Post-procedural axial planes (C, D) showing the correctly positioned Figulla Flex II PFO device (red asterisk) and CT (orange arrows) keeping contact mostly during systole with the Ultra ICE catheter without impingement/interference with the device.

RUPV: Right Upper Pulmonary Vein; RA: Right Atrium; RAA: Right Atrial Appendage; LA: Left Atrium; TV: Tricuspid Valve; SP rim: Superior-Posterior rim; IA rim: Inferior-Anterior rim; PFO: Patent Foramen Ovale

(Supplementary Video S2) confirmed correct device position without interference with CT and the abolition of the right-to-left shunt (Supplementary Video S3).

Prominent CT is a rare anatomical variant which represents one of the most frequent sources of focal atrial arrhythmias [4]. Even if it is a frequent finding in magnetic resonance, its appearance prevalence in TTE/TEE is unknown. The correct diagnosis of this right atrial pitfall by intracardiac echocardiography in our case zeroed the risk to mistake it for tumor, thrombus or vegetation, avoiding needlessly costly additional investigations.

Author Contributions

Conceptualization: Eustaquio Maria Onorato; Data Curation: Eustaquio Maria Onorato, Luca Grancini; Writing and original draft preparation: Eustaquio Maria Onorato, Paolo Olivares; Writing, review and editing: Antonio L Bartorelli. All authors have read, edited and reviewed the manuscript.

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