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3. Abstract title

CRT by pacing of right ventricular dorsal site of inflow and anterior outflow for ccTGA.

4.Abstract text

Background

There is insufficient evidence regarding the cardiac resynchronization therapy (CRT) for congenitally corrected transposition of the great arteries (ccTGA). The timing to perform CRT and optimal pacing sites have not been systematically studied. 3D ejection fraction for ccTGA has been proposed to integrate the contraction of the RV in three dimensions: Longitudinal motion, Anteroposterior motion, and Radial motion. We performed CRT for ccTGA with Complete Atrioventricular Block (CAVB) by pacing the RV dorsal site of inflow (dRVI) and anterior outflow (aRVOT).

Method

An 19-year-old man with ccTGA (S.L.L) and Ebstein anomaly implemented tricuspid valve replacement at the age of 11 years. He developed CAVB at the age of 19 years. We decided to implant CRT-P, rather than conventional pacemaker for the prevention of RV dysfunction.

Firstly, we tried to implant transvenous pacing leads on right atrium and left ventricular apex. However, ventricular lead was coincidentally implanted to dRVI via the coronary sinus. During

dRVI pacing, the most delayed contraction was observed in the RV outflow by the echocardiographic speckle tracking, and the most delayed conduction was in the RV outflow (q-RV=104 ms) by the electrophysiological study. By the CRT acute study with dRVI and outflow pacing, the QRS duration was shortened from 187 to 134 msec and RV pressure increased from 107 to 116 mmHg. On the basis of these results, we implanted additional epicardial lead in the aRVOT and completed implantation of CRT-P.

Results

We confirmed the QRS duration was shortened (132 ms) and the contraction delay of the RV outflow disappeared (Image 1). The distance between two ventricular leads (dRVI and aRVOT) was the 86, 35 mm covering longitudinal and anteroposterior direction (93%, 45% of max RV longitudinal and anteroposterior diameter, respectively) (Image 2).

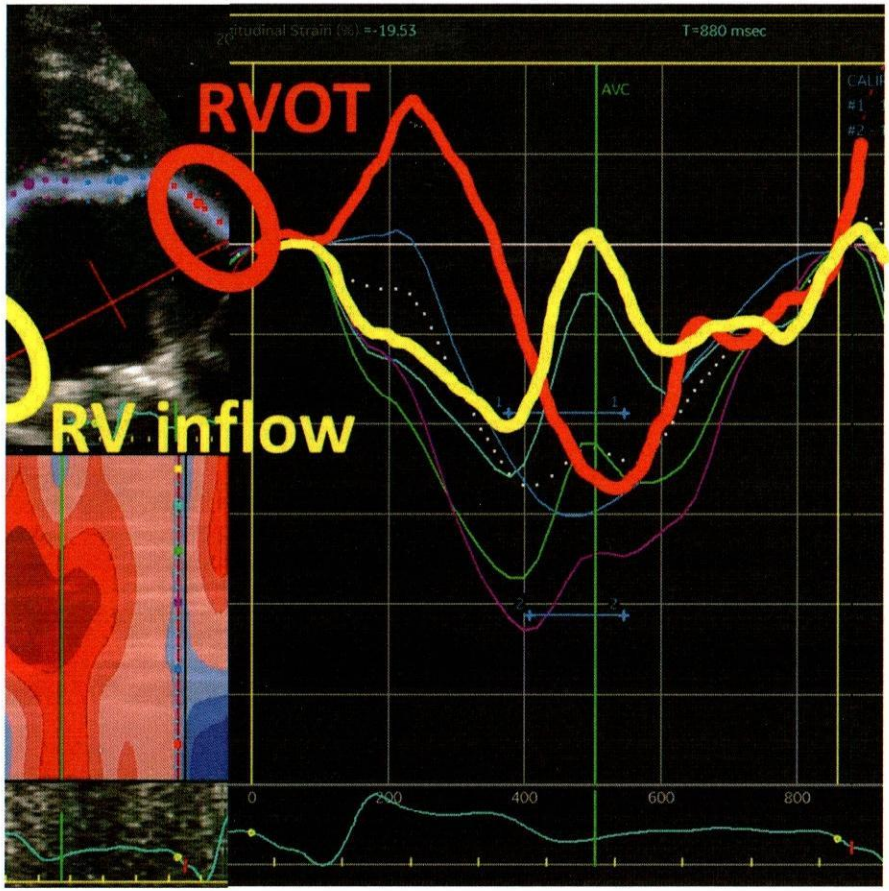
Conclusion

The effective CRT in this case was characterized by pacing dRVI and aRVOT with covering RV in the longitudinal and anteroposterior direction. Separate two point pacing in on the dRVI and aRVOT, which assists the contraction in the two dimension, is considered an ideal position of CRT pacing for ccTGA.

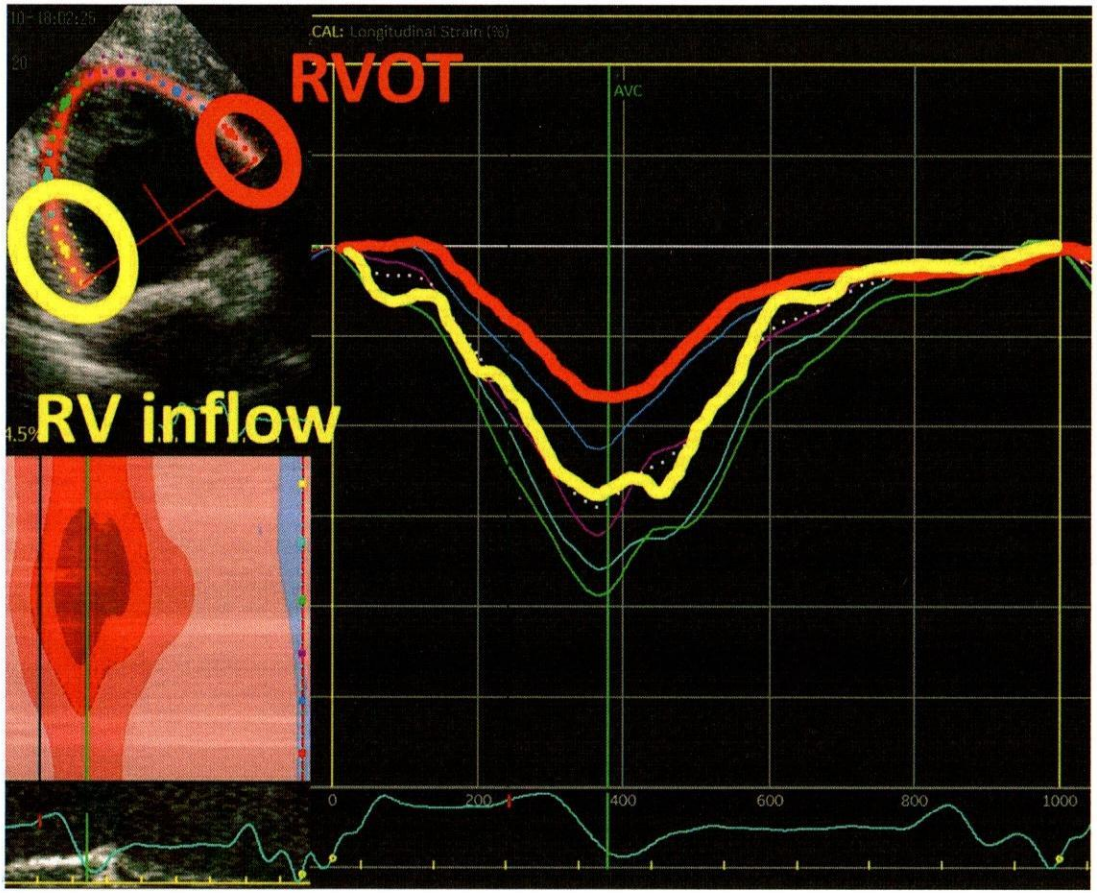
(338 words)

The echocardiographic speckle tracking

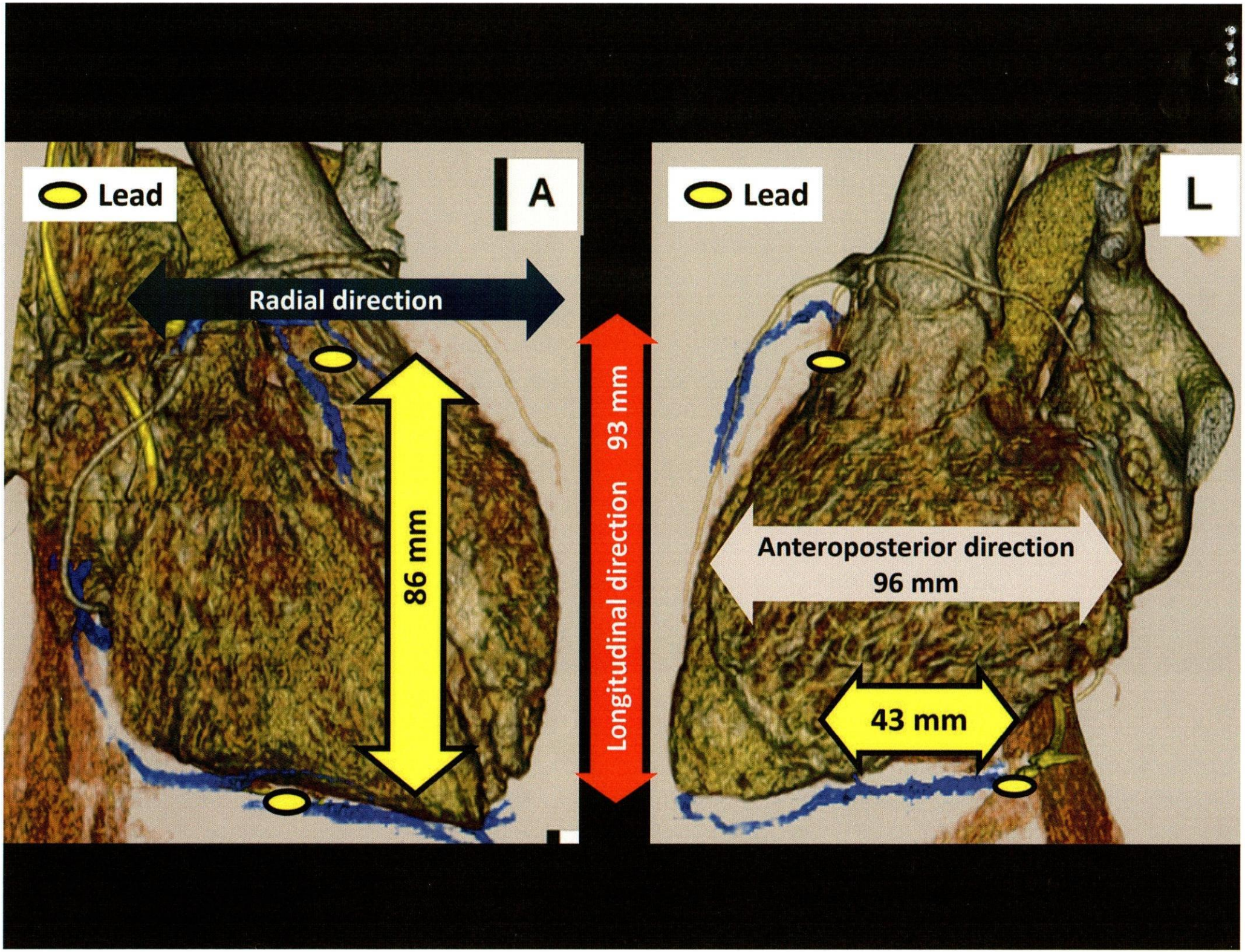
Pre CRT



Post CRT



he contraction delay of the RV outflow was disappeared.


Lead
A
Radial direction
86 mm
Longitudinal direction 93 mm
Lead
L
Anteroposterior direction
96 mm
43 mm