

Cryoablation In Congenital Junctional Ectopic Tachycardia Acute Efficacy And Safety Profile; And Long-term Clinical Outcome

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Introductions:

- ❖ Congenital junctional ectopic tachycardia (JET) is a rare arrhythmia that is resistant to antiarrhythmic pharmacotherapy and may cause cardiomyopathy.
- ❖ Radiofrequency ablation of JET provides good success but there is a higher risk for atrioventricular (AV) block.
- ❖ We aim to report safety and efficacy of cryoablation (cryo) of JET, with a long-term follow up period of up to 4 years

Methods:

- ❖ Four children (median age 5.5 ± 1.7 years, median weight 19.4 ± 1.1 Kg) with documented JET by 12 lead ECG (Figure 1) and/or Holter monitoring (Figure 2) underwent invasive electrophysiology study and cryoablation.
- ❖ Detailed invasive electrophysiology study was performed to confirm the diagnosis of JET.
- ❖ Utilizing a 6mm tip catheter full cryo lesions were applied.
- ❖ Catheter positions were guided by conventional fluoroscopy right anterior oblique (RAO) and left anterior oblique (LAO) views (Figure 3 and 4).
- ❖ Cryoablation lesions were applied during continuous intracardiac recording of the tachycardia (Figure 5).
- ❖ The cryolesions targeted to temperature of -60° to -75° Celcius for 3-4 minutes were applied after cryo-mapping at -30° C for 30 seconds at each location around the AV nodal sepal region.
- ❖ Atrial pacing was performed during lesion formation to monitor AV conduction.
- ❖ Cessation or slowing by $> 20\%$ of the JET rate was used as a marker for success (Figure 6).
- ❖ All patients underwent regular clinical follow-ups.
- ❖ Holter monitoring was performed at 1, 3, 6, and 12 months.

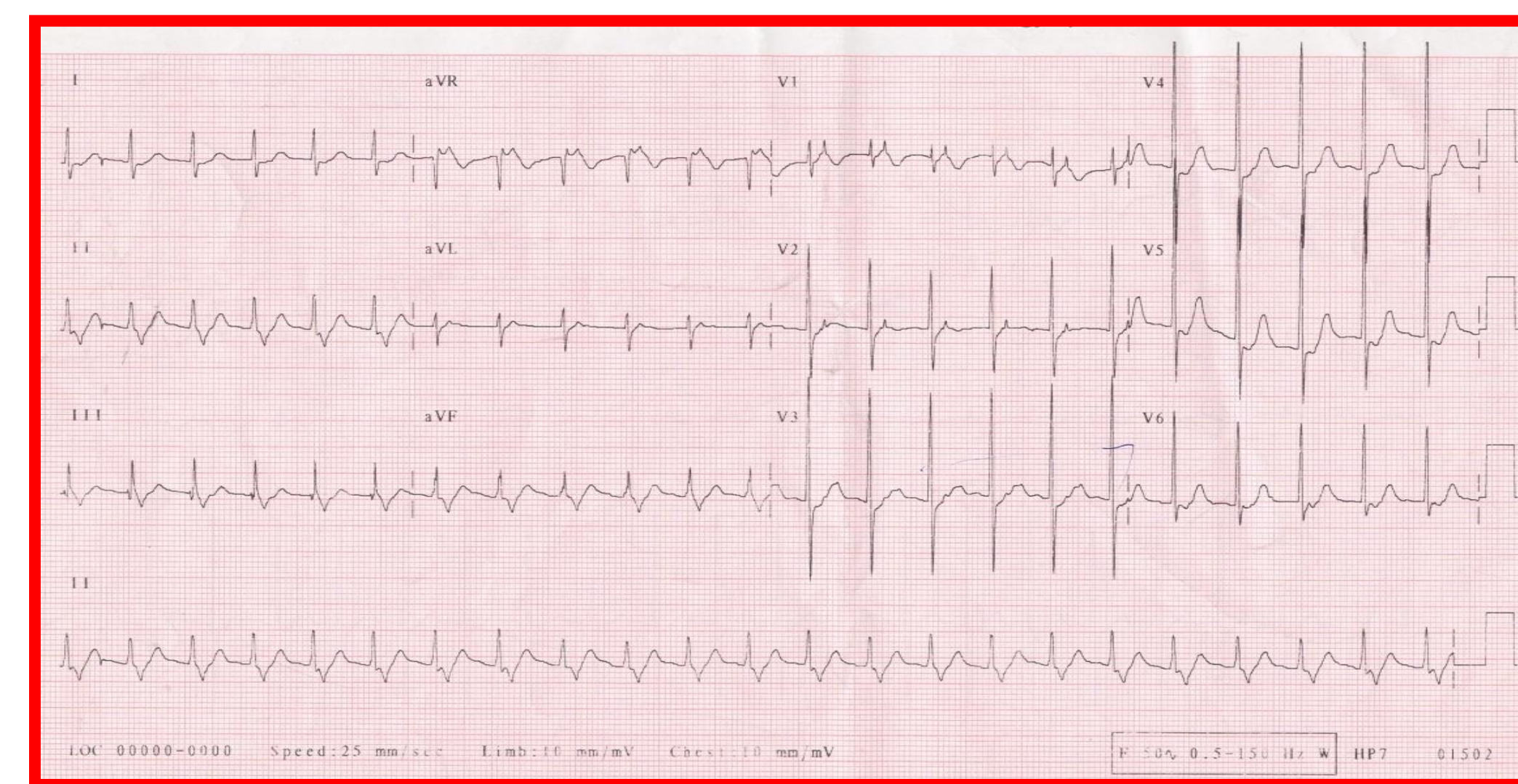


Figure 1. Surface ECG

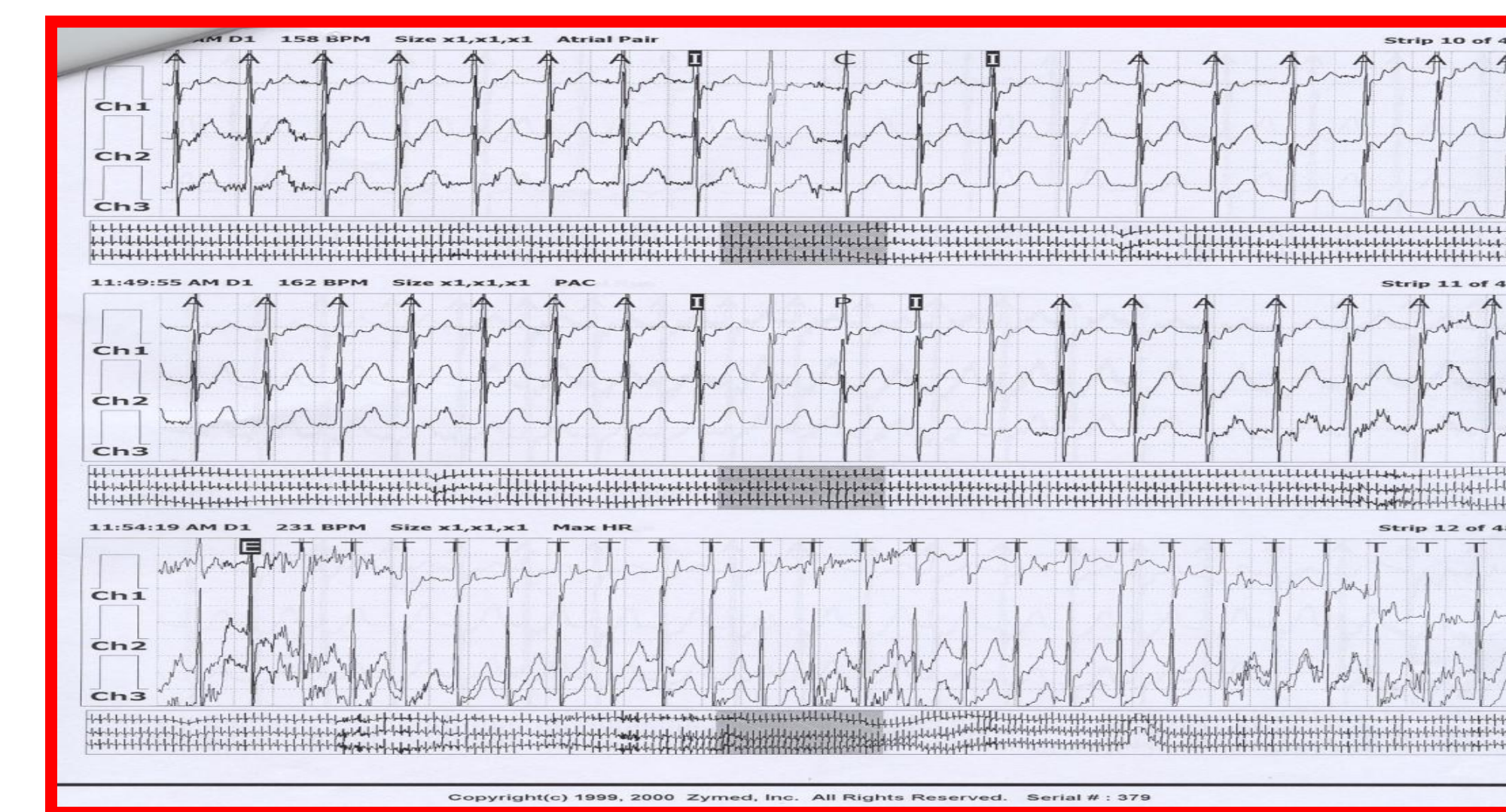


Figure 2. Holter Recording

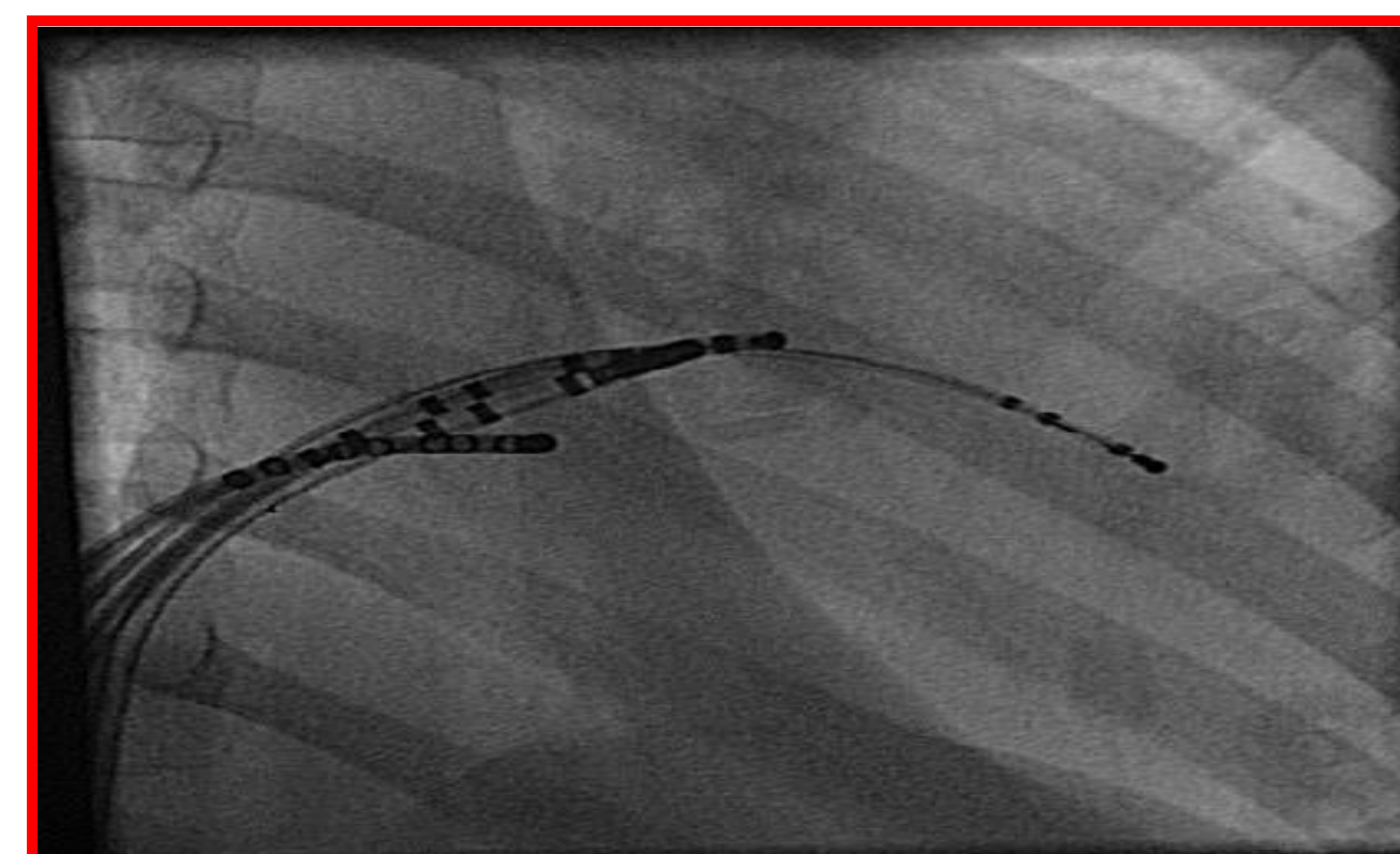


Figure 3. RAO projection



Figure 4. LAO projection

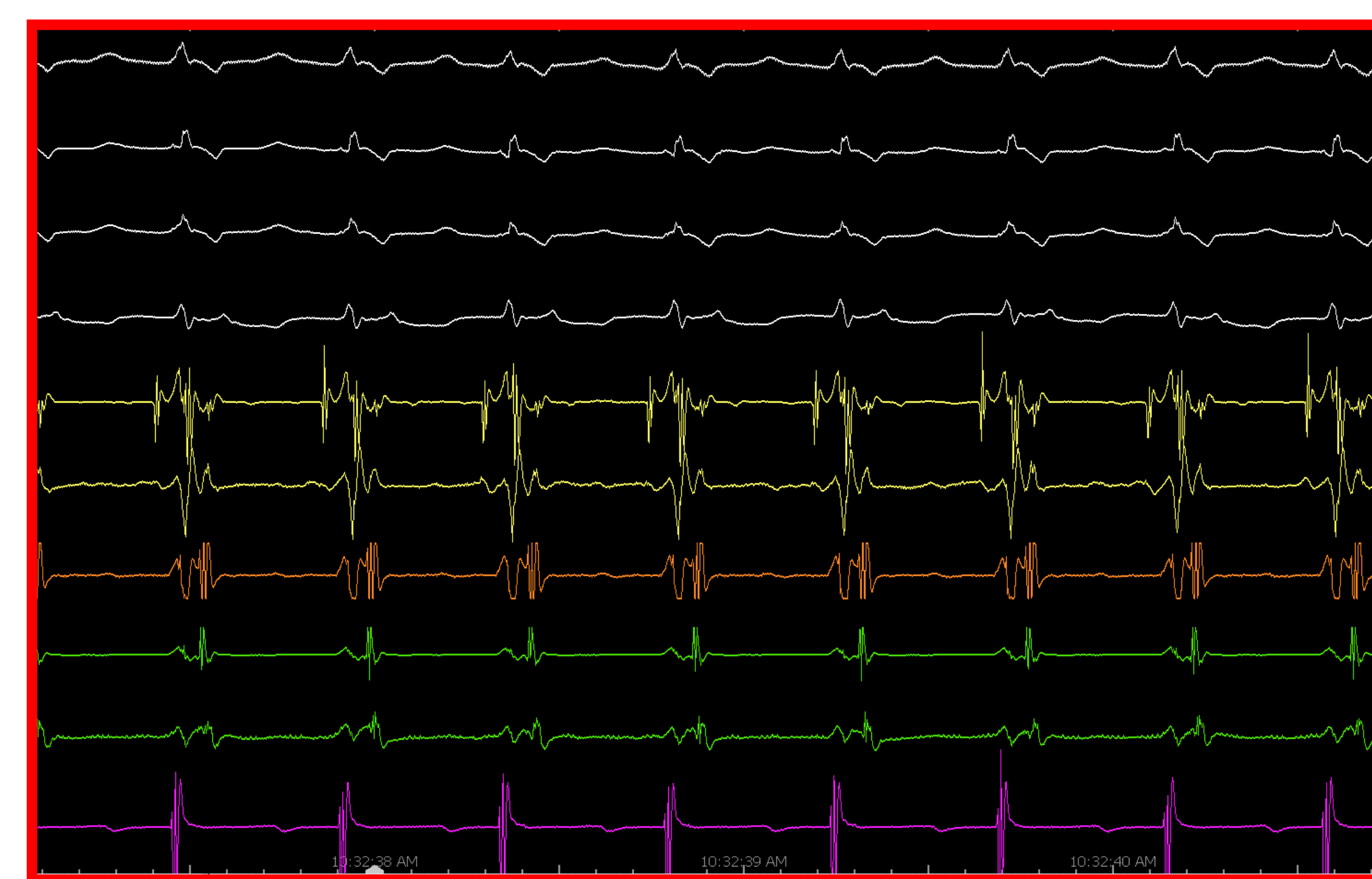


Figure 5. Intracardiac electrograms

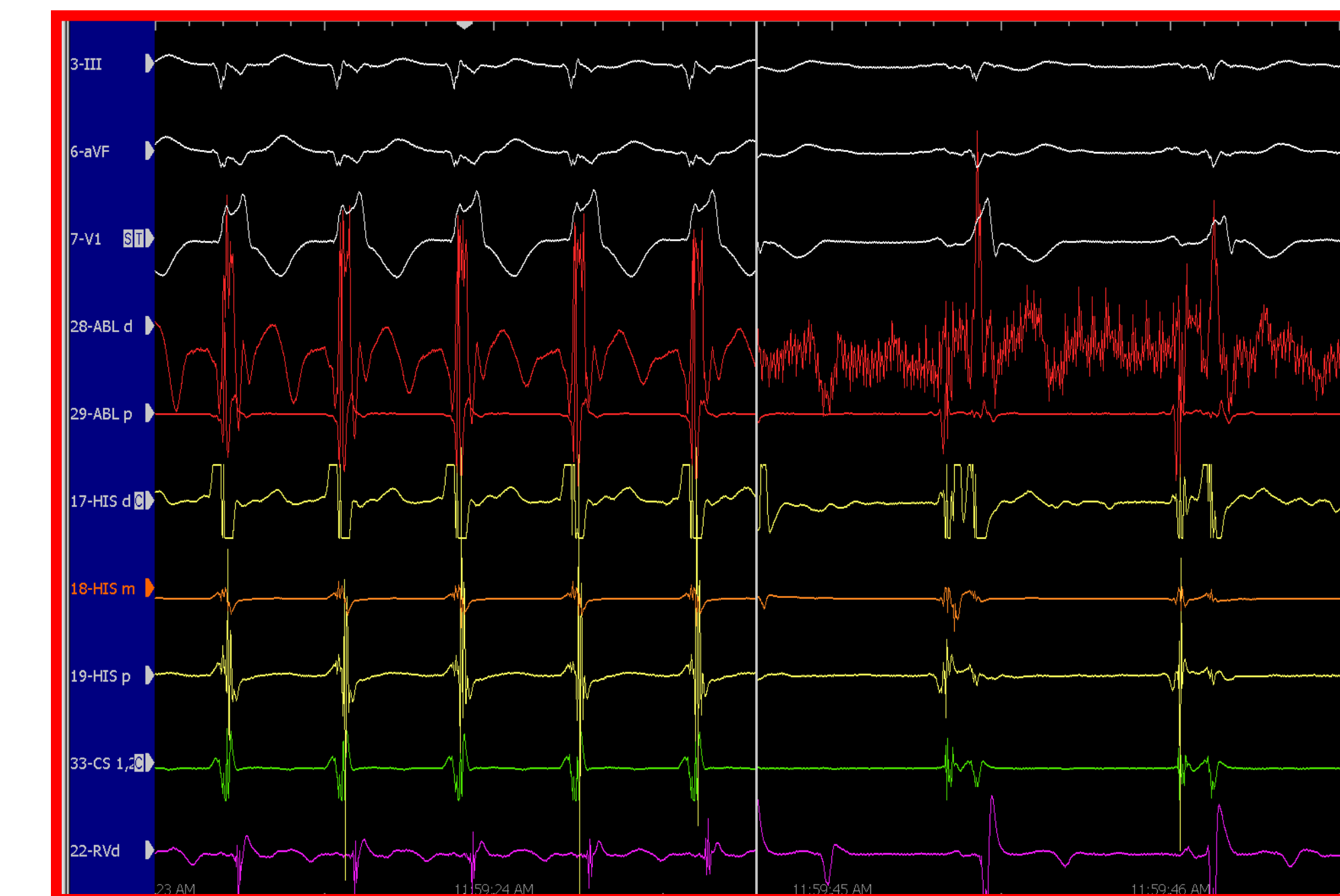


Figure 6. After 20 sec of Cryoablation

Results:

- ❖ Among the 4 patients, 2 had dilated left ventricle (LV) and one had decreased LV systolic function on presentation.
- ❖ All patients had acute procedural success with restoration of sinus rhythm.
- ❖ The total procedural and fluoroscopy times were 152 ± 41 minutes and 18.8 ± 15.3 minutes respectively.
- ❖ The total numbers of cryo lesions were 9.6 ± 3.2 .
- ❖ Follow up Holter monitoring showed sinus rhythm in all patients.
- ❖ Long-term, one patient had late recurrence of slower JET at a rate of 100-130 /min 18 months after the initial procedure.
- ❖ Echocardiography in this patient showed normal LV function and dimension.
- ❖ The remaining 3 patients have shown no clinical recurrence at 3 years (2 patients) and 4 years (1 patient) assessed by Holter monitoring.
- ❖ In all patients, LV function returned to normal by 6 months as assessed by echocardiography.

Conclusions:

- ❖ Therapy by cryoablation for congenital JET is safe and effective, with complete elimination of the arrhythmia with restoration of LV systolic function at long-term follow-up.

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