

A CASE OF A MISTAKEN IDENTITY - IDIOPATHIC FASCICULAR LEFT VENTRICULAR TACHYCARDIA

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INTRODUCTION

Idiopathic Left Ventricular Tachycardia (ILVT) commonly occurs in young patients without structural heart disease. Fascicular tachycardia is the most common idiopathic tachycardia of the left ventricle. We report a case of a 33-year-old man with **Idiopathic Fascicular Left Ventricular Tachycardia** who was treated in our emergency department.

CASE REPORT

A 33 year old man presented with a 2-day history of palpitations without chest pain, shortness of breath or syncope. He denied having fever, symptoms of upper respiratory tract infection, diarrhea or vomiting. He had a past history of childhood bronchial asthma. On presentation to the emergency department, his was comfortable with a heart rate of 172 beats per minute and a blood pressure of 107/61. His was saturating at 100% on room air.

His electrocardiograph (ECG) showed regular wide complex tachycardia with right bundle branch block (RBBB) and left axis deviation (**Figure 1**). He was initially treated with intravenous adenosine and was then given an intravenous infusion of amiodarone which soon led to hypotension. Subsequently, in view of hemodynamic instability, he was given direct current cardioversion of 100 joules under procedural sedation and analgesia which reverted him back to normal sinus rhythm (**Figure 2**). The patient was subsequently admitted for radiofrequency ablation therapy.

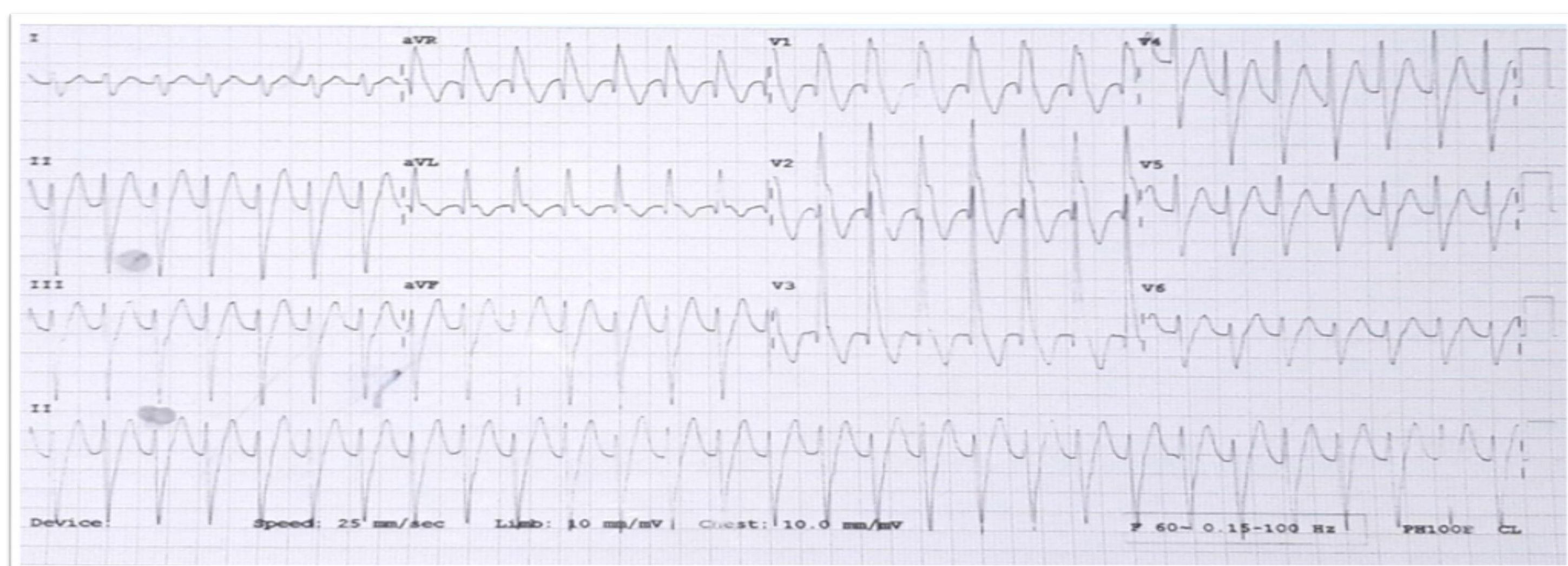


Figure 1: Initial ECG with RBBB pattern and left axis deviation

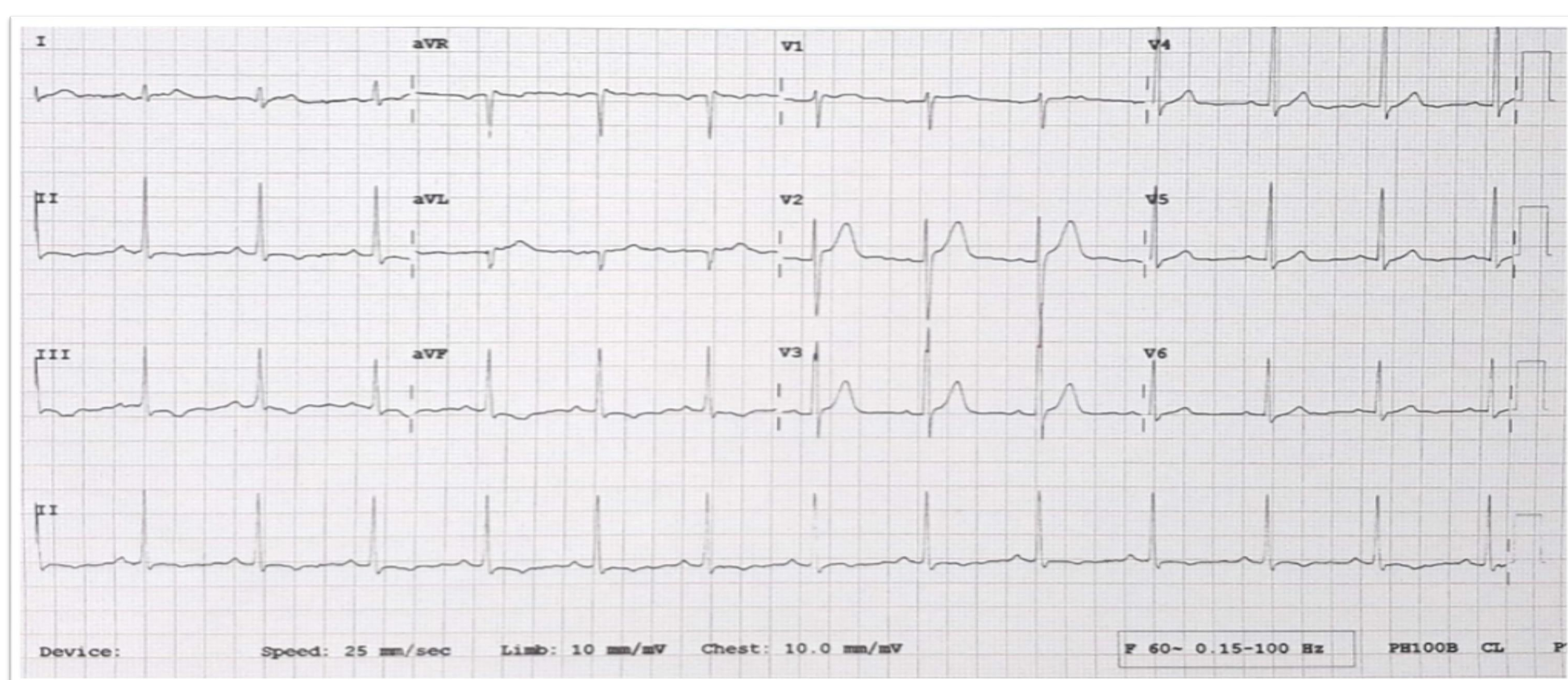


Figure 2: ECG post cardioversion

CONCLUSION

Idiopathic fascicular left ventricular tachycardia responds well to treatment with intravenous verapamil if recognized accurately from characteristic features on the ECG. Physicians should be aware of this less common type of VT and have a high index of suspicion in patients with suspected Supraventricular Tachycardia with RBBB that does not respond to intravenous adenosine. Cardioversion should be instituted for cases with haemodynamic instability. Resistant cases can be referred to a tertiary center for radiofrequency ablation therapy.

REFERENCES

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CASE DISCUSSION

Approximately 10% of cases of ventricular tachycardia (VT) occur in the absence of structural heart disease, and are given the term Idiopathic VT. The management and prognosis of Idiopathic VT differs from VT associated with structural heart disease. In Idiopathic VT, patients generally present with clinically tolerable tachycardia, often with palpitations or dizziness. Sudden cardiac death is uncommon and prognosis remains excellent with pharmacotherapy and radiofrequency ablation. The majority of idiopathic VT arise from the right ventricle, e.g. Right Ventricular Outflow Tract VT (80-90%).

The most common type of idiopathic VT arising from the left ventricle is **Idiopathic Fascicular Left Ventricular Tachycardia**, which accounts for 10% of all idiopathic VT. Both right and left idiopathic VT differ with respect to mechanism, ECG findings, pharmacological response and treatment. ILVT occurs in young, healthy patients, between 15-40 years of age and 60-80% occur in males. Most episodes occur at rest but may be triggered by exercise, stress and beta agonists. The mechanism of re-entrant tachycardia is due to an ectopic focus within the left ventricle. This form of idiopathic VT was first described in 1979 by Zipes et. al. and in 1981, Belhassen et. al. were the first to demonstrate its sensitivity to **Verapamil**.

The ECG features of ILVT include:

- 1) Monomorphic ventricular tachycardia (fusion beats, capture beats, AV dissociation)
- 2) QRS duration narrower than other forms of VT (100-140ms)
- 3) Right bundle branch block (RBBB) pattern
- 4) Axis deviation depending on anatomical site of re-entry circuit.

ILVT can be further classified into the following categories based on ECG morphology corresponding to anatomical location of the re-entrant mechanism (Figure 3):

- 1) Posterior fascicular VT (90-95% of cases): RBBB morphology with left axis deviation
- 2) Anterior fascicular VT (5-10% of cases): RBBB morphology with right axis deviation
- 3) Upper septal fascicular VT (rare): Atypical morphology. RBBB or LBBB.

This patient's ECG had RBBB morphology and left axis deviation, which indicates the anatomical location of the re-entry circuit close to the **left posterior fascicle**. Due to the narrow QRS morphology, ILVT is often mistaken for SVT with RBBB as was in this case. Pharmacological treatment with intravenous adenosine and amiodarone was expectedly unsuccessful and cardioversion was eventually required to treat the patient. ILVT is usually resistant to vagal maneuvers, adenosine and lignocaine. **Verapamil is effective as a treatment for ILVT, both in termination and prevention of recurrence.** Catheter ablation has a success rate of up to 85-100% in resistant ILVT.

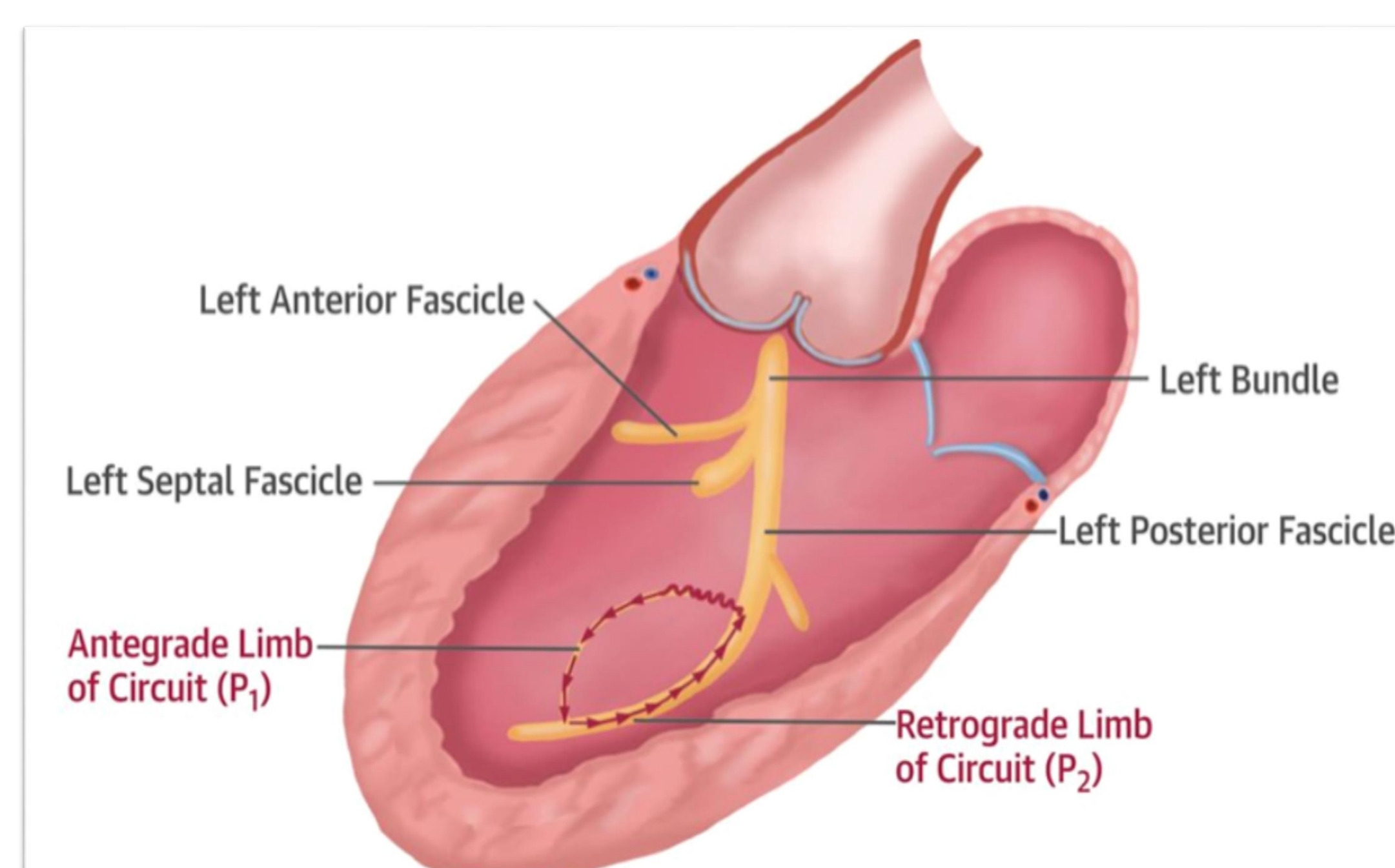


Figure 3: Left ventricular fascicles and areas for ablation for left posterior fascicle VT