Introduction: A 42-year-old man patient presented with paroxysmal palpitations; the ECG revealed narrow QRS regular tachycardia, which terminated after adenosine. Clinical examination, 12 lead ECG and echocardiography were normal. At electrophysiology (EP) study, the baseline intervals were normal. The VA conduction was concentric and decremental and could not induce tachycardia. During atrial stimulation only narrow QRS complexes were seen. Atrial extrastimuli induced narrow QRS tachycardia with the intracardiac electrograms (EGMs) showing an ‘A on V’ sequence. The tachycardia then showed 2:1 AV conduction with intermittent wide QRS complexes (Figure 1a). There was no effect of ventricular extrastimuli on the tachycardia. What is the differential diagnosis?

Methods: The differential diagnosis for A on V tachycardia with 2:1 AV conduction includes typical atrioventricular nodal reentrant tachycardia (AVNRT) and atrial tachycardia (AT). The intermittent wide QRS complexes (120 ms, RBBB with superior axis morphology) appeared early, followed by a longer RR interval. Intracardiac EGMs (Figure 1b) at that time showed a premature ventricular signal with a shorter HV interval. The tachycardia cycle length (A-A interval) remained constant. Hence the wide QRS was a either a left posterior fascicular PVC or a preexcited complex.

Result: The slow pathway was ablated with accelerated junctional ectopy during energy delivery. No tachycardia or wide QRS complexes could be induced thereafter, supporting the presence of a bystander nodofascicular (NF) pathway that manifested only during the 2:1 AV conduction. Since the atrial insertion of NF pathways is usually in close proximity to the slow pathway, this was simultaneously eliminated during slow pathway ablation. The VA conduction was unchanged after ablation.

Conclusion: This case report highlights the extremely rare occurrence of a left NF bystander pathway in association with typical AVNRT.