Questions
1. What is the mechanism of the tachycardia shown in Figure 1A?
2. What is the mechanism of the tachycardia shown in Figure 1B?
3. Can you explain the change in tachycardia mechanism during catheter ablation?

Discussion
1. The narrow QRS tachycardia shown in Figure 1A has a rate of 210 bpm and shows a 1:1 relationship between QRS and P wave. The P waves have a short RP interval and are negative in the inferior leads, indicating the start of atrial activation in the posteroseptal region. The AP location was confirmed to be located right posteroseptally during intracardiac recordings. Therefore, a narrow AV reentrant tachycardia was present with atrioventricular (A-V) conduction over the AV node and ventriculoatrial (V-A) conduction over a rapidly conducting posteroseptally located AP.

2. During the first attempt at RF catheter ablation, the tachycardia showed a slowing in rate (165 bpm) with a marked increase in RP interval (Figure 1B). The pattern of retrograde atrial activation was the same as during the tachycardia shown in Figure 1A. The slowing in tachycardia rate accompanied by RP prolongation without a change in initial atrial activation site suggests that, during this tachycardia, a more slowly conducting AP is used for V-A conduction.

3. The narrow QRS tachycardia shown in Figure 1B is a long RP tachycardia with negative P waves in the inferior ECG leads. We know of 3 possible causes of that ECG pattern: low atrial tachycardia, fast–slow AV nodal reentrant tachycardia, and a circus movement tachycardia with V-A conduction over a slowly conducting AP. However, the findings in our patient as to the mechanism of the long RP tachycardia can be best explained by RF-induced damage in retrograde conduction over the AP resulting in RP lengthening and onset of a slower long RP tachycardia. This is supported by tachycardia interruption by the next dose of RF energy without change in catheter position.

Sternick et al\(^1\) described several cases that showed slowing in anterograde conduction over an AP during RF ablation. The observation in our patient suggests that ablation damage of the AP may also occur in retrograde conduction, changing a narrow QRS AV reentrant tachycardia into a long RP tachycardia.

Reference