

Chapter 6

Locating P Waves

Sometimes, P waves aren't visible when you expect to see them – even in very healthy hearts. How do we know where the P waves are located when we don't see any?

First, you must see some P waves – specifically, *two consecutive P waves* (i.e., one normal P-P interval) somewhere on the tracing. Unless there is serious SA node pathology, the SA node keeps sending out P waves regardless of what else is happening in the heart.

Locating P waves is primarily a problem when there is AV dissociation. Here is an example of an accelerated idiojunctional rhythm (Figure 6-1):

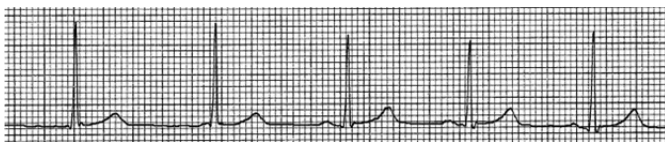


Figure 6-1

This tracing shows three consecutive sinus P waves (the last three beats). Place their dots of origin on the laddergram below (Figure 6-2):

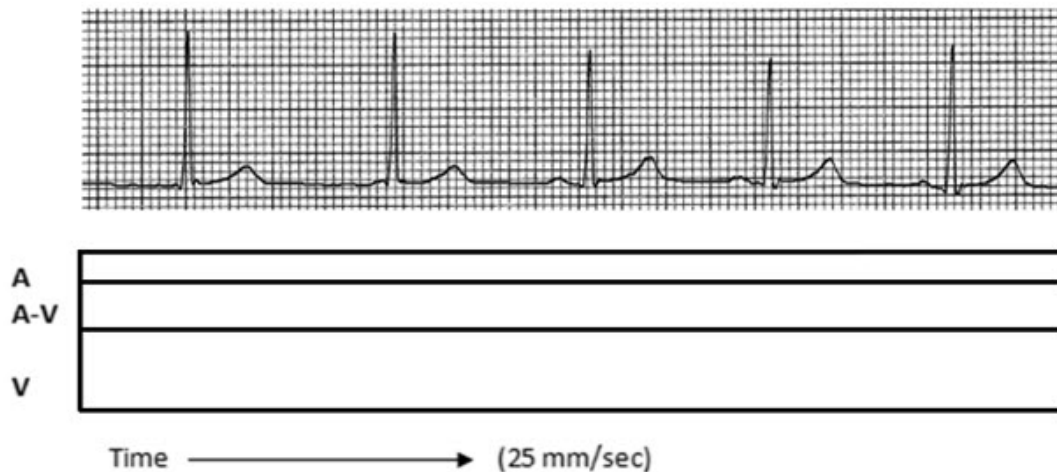


Figure 6-2

Measure the distance between the first two sinus P waves with ECG calipers. Always measure from the beginning of one P wave to the beginning of the next. If the onset of the P wave is too indistinct, then you will have to measure from peak to peak – not as desirable, but sometimes necessary. That is the P-P interval. Use that interval to measure backward on the laddergram from the first visible P wave (third QRS complex). Wherever the caliper point falls is where a

sinus P wave occurred – whether you see it or not. Now, create a laddergram of this tracing using Figure 6-2. Check yours against the one on the next page.

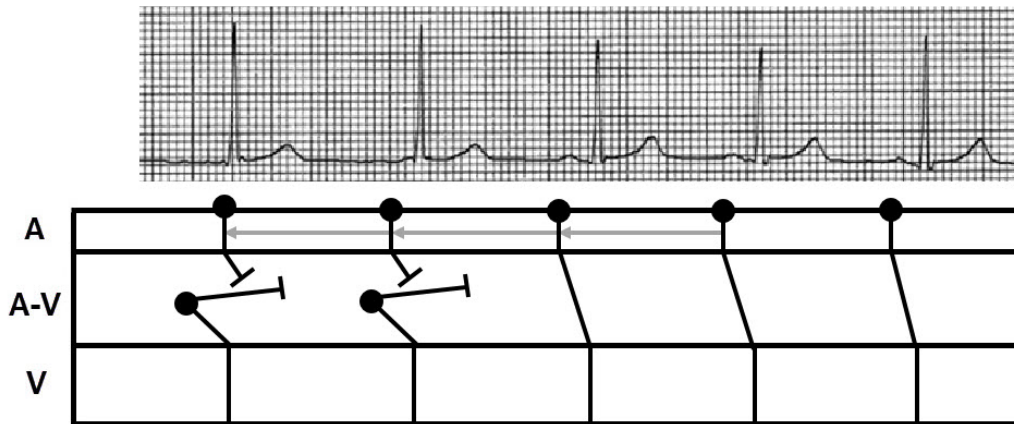


Figure 6-3 (Completed)

There were only two idiojunctional beats before the sinus node resumed its dominance. Kudos if you recognized the beginning of a sinus P wave in front of the second QRS complex. **The difference is much more evident if you compare the onset of the first QRS to the onset of the second.** Retrograde conduction was blocked by the presence of the first two sinus P waves. The sinus node regained control of the rhythm beginning with the third beat.

Look at the laddergram and notice how regular the dots of origin of the P waves are. There are three reasons why the P wave may not come on time:

1. Sinus node pathology (sick sinus syndrome)
2. Resetting of the sinus node by atrial, junctional, or ventricular premature beats
3. Vagal (parasympathetic) influence

You can certainly be a little inaccurate because we don't have any way to allow for sinus arrhythmia or autonomic nervous system influence. But that's quite alright! The laddergram is a sketch drawn to help us decipher a dysrhythmia. It is not meant to be mathematically and geometrically exact, and you are not expected to draw them with engineering or architectural precision.