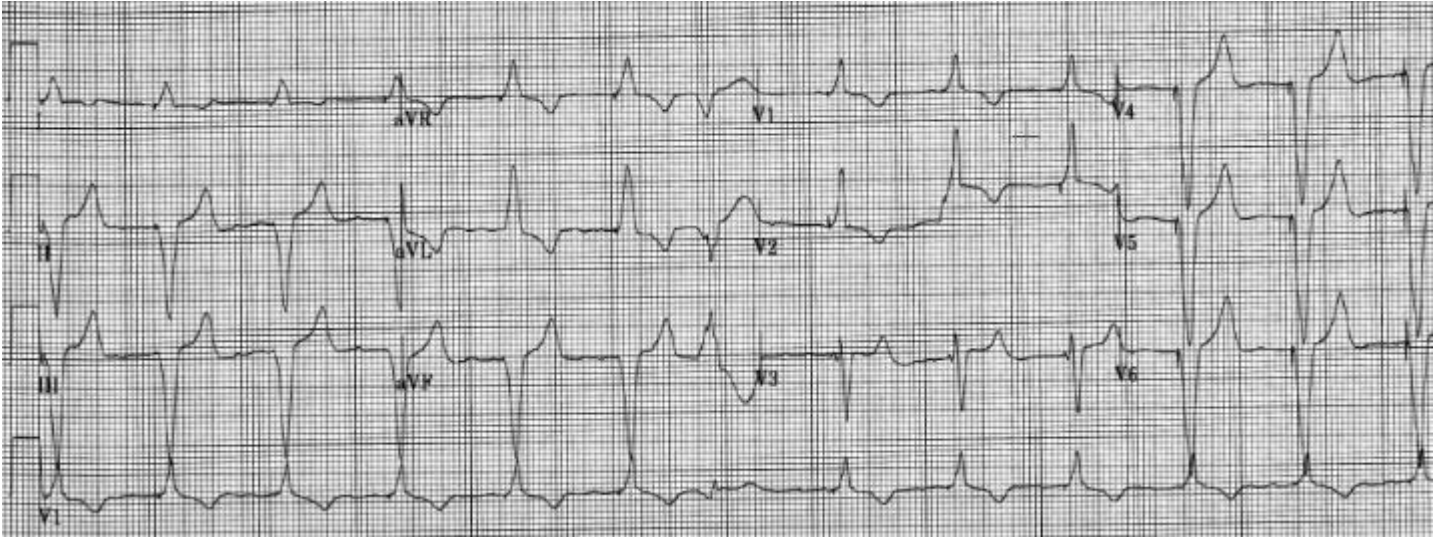


Coupling Intervals and Return Cycles



Coupling intervals involve a native, normal deflection that is followed by a premature, ectopic deflection of the *same type* (i.e., *from the same chamber*). In other words, if we have an ECG with a sinus P wave that is followed by a normally-conducted QRS complex which is then followed by a PVC, the interval from the *beginning* of the normal QRS to the *beginning* of the PVC is the **coupling interval**. The P wave is not involved here because it is not a QRS.

On the other hand, if we have an ECG with a normal P wave followed by a normally-conducted QRS which is then followed by a PAC which manages to conduct to the ventricles, producing its own QRS, then the coupling interval for the atrial impulses would be measured from the *beginning* of the sinus P wave to the *beginning* of the premature ectopic P' wave. The QRS complexes would have no relation because the normally-conducted QRS did not produce the ectopic P' wave or the QRS that followed it.

So, a *coupling interval* is the interval from a normal deflection to an ectopic deflection that follows it; both are the *same type of deflection* due to *depolarization of the same chamber*. And remember: we always measure coupling intervals and return cycles from the *onset* of each deflection.

A **return cycle** is also an interval - but we don't call it that! It represents the interval from the *onset* of that ectopic deflection to the *onset* of the next normally-occurring deflection of the same type. In our first example, the coupling interval was from the beginning of the normally-conducted QRS to the onset of the ectopic QRS. The *return cycle* would be measured from the onset of that same ectopic QRS to the onset of the next normally-conducted QRS. It is not

measured to the next P wave because we are *relating two deflections of the same type that occurred in the same chamber*.

Whenever there is more than one ectopic beat on an ECG, always check the coupling interval for each one. If they have the same coupling interval, the ectopic beats are most likely reentrant phenomena and are usually benign. Even if the PVCs have different morphologies (but generally the same axis), as long as they have the same coupling interval, they are most likely originating in the same reentrant pathway with different exit paths. They, too, are still PVCs with fixed coupling and are almost always benign.

There are many more implications involving coupling intervals and return cycles, but the focus of this post is just to introduce many of you to these two terms. I will write more on this another time.

Meanwhile, take a moment to browse through our website and learn about the advanced ECG interpretation courses we offer - including a new one – ***The Masterclass in Advanced Dysrhythmias!*** People travel from all over the world to participate in our Masterclasses that are intentionally kept small so that everyone can ask questions at any time, actively participate in interpreting complex ECGs and receive individual attention.

I hope to see you in one of our Boot Camps or Masterclasses in the near future!

At **Medicus of Houston**, you are always a *participant... never just an audience!*