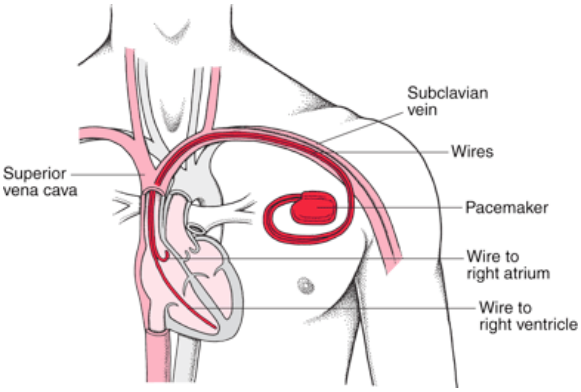
Pacemakers

Gabriel Ausfresser-Biomedical Engineering-University of Rhode Island

Native, or natural, pacemakers are the tissues in the heart that regulate the heartbeat. This tissue is called the sinoatrial node, and is made up of special myocytes, which can contract upon getting signals to do so. The heart actually has multiple natural pacemakers, but the sinoatrial node is the one that controls the heartbeat most effectively. The node makes the heart beat about 100 times per minute, but if this node fails, a slower atrioventricular node takes over the job as pacemaker. It is because of this that the heart is very complex: very well made with multiple fail-safes.

If the natural pacemaker fails, then most of the time, the "backup" pacemakers generate heartbeats that are too slow for the person to be active, as a normal person would be. Because of this, they are not efficient enough. Also, since every person has their own beats-per-minute needs, a permanent artificial pacemaker can be implanted in and adjusted to each patient's needs. Modern pacemakers can even be adjusted externally by a cardiologist, which is important because it prevents further surgery or complications within the human body.



The artificial pacemaker works by sending electrical signals, or impulses, to the myocardium, or cardiac muscle, through electrodes that actually come in contact with the heart. This impulse causes the heart muscle to contract, thus making it possible to control a heartbeat. Pacemakers are used to regulate a heartbeat that is too slow, too fast, or irregular. Irregular heartbeats are also called arrhythmias.

Pacemakers have developed into a device with multiple functions. Some pacemakers monitor blood temperature or breathing rate and adjust accordingly. Also, pacemakers can be temporary, depending on the situation. Temporary pacemakers are used on patients who have recently suffered a heart attack, heart surgery, or a medicine overdose. For these cases, the patient will remain in the hospital while the temporary pacemaker is implanted. These temporary pacemakers will maintain a steady heartbeat while the patient recovers.

In conclusion, if the sinoatrial node fails as a pacemaker, there are other natural pacemakers that take over the job, but are an insufficient replacement. This is why artificial pacemakers have to be implanted into people with heart arrhythmias. The patient with an artificial pacemaker implanted can continue living a fairly normal life.

SOURCES:

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