# Artificial Pacemaker of the Heart

Kaitlin Abbate

The heart is essentially what keeps people alive. Without it working properly, blood would not be able to circulate throughout the body. Therefore, essential nutrients would be kept from traveling to destinations that need them to keep the body functioning. Naturally, an area in the heart called the sinoatrial node (SA node) sends electrical impulses through the heart to cause it to contract at a certain pace. This, in turn, sends the blood all over the body. However, what happens when this natural pacemaker of the heart is not working as it should? That is where an artificial pacemaker is needed to keep the heart contracting at a regular pace.

There are a number of reasons that an individual may need an artificial pacemaker. A person may suffer from atrial fibrillation, where the heart beats more rapidly than it should. The opposite problem is called bradycardia, where the heart beats very slowly. There is also a special case of bradycardia called syncope. This is when the pace slows only sometimes. Lastly, a person may suffer from heart failure, where although the heart beats regularly, there is still not enough blood being pumped. This could be caused from various problems such as a previous heart attack or hypertension.

Artificial pacemakers are extremely compact. There are really two main parts to the less than 10 centimeter long device. The battery is what actually acts as the SA node. It is a small, round computer that is implanted directly beneath the layer of skin on the upper chest. It conducts the electrical impulses that will cause the heart to contract. The electric impulses are then carried to the heart muscle through wires, called “leads.” There can be one to three leads leading to different muscle depending on the severity of the patient’s condition.

The actual surgery of the insertion of the pacemaker is considered minor. It takes two to three hours and recovery time is minimal, as long as no complications arise. The surgeon first inserts a needle into a vein in the patient’s shoulder and threads the lead(s) through and into the muscle tissue. Then, a small cut is made in the upper chest to place the battery in. The leads are then attached to the battery and the person can begin to recover.

After surgery, the person can expect to return to normal activities in a few days. Most are even able to play sports and participate in strenuous activities. However, full contact activities, such as football or wrestling, should be avoided so as to not disrupt the device.

References

Artificial Pacemaker -." *Wikipedia, the Free Encyclopedia*. Wikipedia, 20 Mar. 2010. Web. 21 Mar. 2010. <http://en.wikipedia.org/wiki/Artificial_pacemaker>.

"Living with a Pacemaker." *National Heart, Lung and Blood Institute*. Web. 25 Mar. 2010. <http://www.nhlbi.nih.gov/health/dci/Diseases/pace/pace_lifestyle.html>.

"Pacemakers." *Welcome to the London Cardiac Institute*. London Cardiac Institute. Web. 22 Mar. 2010. <http://londoncardiac.ca/pages/pacer.htm>.

"Pacemakers and Abnormal Heart Rhythms." *WebMD – Better Information. Better Health.* Web. 25 Mar. 2010. <http://www.webmd.com/heart-disease/abnormal-rhythyms-pacemaker>.