EndoSure™ Wireless AAA Pressure Measurement System  
Kristina Bruen

The FDA approved of this medical device as of October 28, 2005. November 11, 2005 marked the launch and U.S. clearance of the EndoSure™ Wireless AAA Pressure Measurement System. Since then there have been many U.S. patients that have used this new technology to their health benefit. Doctors and engineers from CardioMEMS, Inc designed the EndoSure™ Wireless AAA System.  
CardioMEMS, Inc. is a member of Georgia Tech’s Advanced Technology Development Center focused on the development and improvement of wireless, implantable, monitoring devices. This new system was developed to treat aneurysm in the abdominal aortic region (AAA).

Previously, surgical procedure involved just stent graph placement in the aneurysm sac, but there was no way to monitor the stent graph and/or measure the pressure in the sac due to circulation unless temporary methods were used, such as dyes or radiation. Now with CardioMEMS’s proprietary technology we have a permanent and wireless pressure sensor that does not require batteries or replacement.

The EndoSure™ Wireless AAA System consists of a sensor about the size of a paperclip and CardioMEMS Interrogator cart. The sensor is powered by radiofrequency (RF) energy sent from a lightweight antenna during the endovascular aortic repair (EVAR) procedure – when the stent graph is installed in the AAA. During EVAR the pressure sensor is placed in the AAA sac thrombus area. The sensor takes pictures during EVAR and helps the doctor assess whether the stent graph is properly excluding the walls of the aneurysm from systemic blood flow.

On the interrogator cart is a 15” touch screen monitor that displays a real-time waveform of the pressure in the AAA sac. When a reading is ready to be taken the antenna is waved over the abdomen of the patient. The resonant frequency of the circuit in the sensor is known; changes in the membrane of the silica cavity in the sensor result in a change in the resonant frequency. The waveform on the monitor is then produced by the sensor sending back a resonant frequency signal to the antenna and the electronics/ CardioMEMS software displaying that signal as a real-time, high-resolution pressure waveform. The sensor measures intrasac systolic, diastolic, average, and pulse pressure.

Now doctors are able to receive wireless pressure readings after EVAR procedure to confirm the aneurysm sac exclusion. Next step is decreasing the size of the sensor and developing a method that would make the insertion of a pressure sensor in the AAA sac in a patient who has already undergone EVAR procedure. Also, CardioMEMS, Inc. is looking to develop another wireless sensor to take measurements for those with Congestive Heart Failure (CHF).

Est. Cost……………………..$3,500.00

References:
- http://www.cardiomems.com
- http://www.americanheart.org
- http://www.montefiore.org/services/coe/heart/thoracicaneurysm/
- http://www.mdbuyline.com