

Vagus Nerve Stimulation

ELE282 Biomedical Engineering Seminar I, April 16, 2001

Morgann Robitaille

Biomedical Engineering, University of Rhode Island
Kingston, RI 02881

Epilepsy is the second most prevalent neurological disorder affecting a million people in the United States. It is characterized by brief disturbances in the electrical functions of the brain, otherwise called seizures. There is an option of surgery but it is limited to patients with controlled seizures, which is not as common as refractory epilepsy (uncontrolled seizures).

Vagus nerve stimulation (VNS) is the first new approach for treating epilepsy patients in over 100 years. The idea to stimulate the vagus nerve was first introduced in the early 1980's by Dr. Jacob Zabara. VNS together with Cyberonics NeuroCybernetic Prosthesis (NCP) system has allowed doctors to reduce the number of epileptic seizures had by their patients. Stimulating this nerve is said to "break up" seizures actually coming from the brain. The vagus nerve was chosen for this treatment for a few reasons. The most significant reason being that it is a primary communication line between the major organs of the body and the brain. Also the vagus nerve and the brain communicate well because there are very few pain fibers in this nerve, and the stimulation lead can be connected right to the nerve and not the brain, which means no brain surgery, is involved.