Monteris Medical - NeuroBlate System

Monteris Medical, Inc. was founded in 1999 with the mission to create new technology that would facilitate neurosurgeons to ablate brain lesions and tumors that may be difficult to treat by traditional means. Monteris has created an ablative device called AutoLITT (NeuroBlate System) by combining the imaging power of Magnetic Resonance Imaging (MRI), Laser Interstitial Thermal Therapy (LITT) and advanced navigation software (M-Vision) to reach virtually any area of the brain. Richard Tyc, P.Eng and Mark Torchia have been the principal scientists at Monteris Medical Inc. to develop and assemble this system.

The NeuroBlate System is a combination of hardware, software and disposable surgical devices used with an existing MRI scanner. The integration of these devices allows the neurosurgeon to precisely direct an MRI compatible, gas cooled laser probe to a desired target, administer laser interstitial thermal therapy and monitor the thermal dose using real time MRI thermometry data. The NeuroBlate directional laser is the preferred tool for contoured ablation of targets while sparing adjacent healthy tissue. The system consists of three components: AtamA Head coil and Stabilization System, AXiiiS Stereotactic Miniframe and M-Vision Software.

The MRI compatible Stereotactic Miniframe is a single use trajectory alignment device that provides stability, flexibility, and visualization for minimally invasive stereotactic procedures. The unique linear leg translation and 360 degree directional interface of the frame which can be attached to the brain by tungsten screws provide the surgeon with over 50 degrees of angulation allowing access to multiple interacranial target points with a simple adjustment. The user friendly software allows the surgeon to generate intended therapy plans and monitor the administration of contoured thermal therapy in 3 dimensions during a laser ablation procedure. It allows him to preoperatively plan multiple trajectories to a desired target and supports visualization of the safest, most effective approach to the region of interest. The software also helps surgeon to control the administration of thermal therapy by accurately monitoring temperature changes in and around the target tissue in 3 dimensions. Thermal dose contours generated from live MRI thermometry data helps to identify the boundary of ablated tissue to support clinical decision making. After each sequence of laser therapy the M-Vision software generates cumulative damage contours which surgeons view in anatomically oriented orthogonal planes. This 3D visualization allows the surgeon to ensure adequate therapy to the region of interest and confirm complete ablation.

The technology has been used on more than 230 patients in United States since receiving regulatory approval in 2009. From a clinical perspective, the NeuroBlate system has allowed patients with superficial lesions to require only a single day stay in ICU, and those with deep grey matter lesions also see reduced ICU stays. The quantitative analysis of outcomes after surgery has shown that recurrence-free survival after this procedure is up to two-times longer than conventional therapy. This System is providing a new option in the treatment, which with traditional surgical methods carries a high likelihood of paralysis, aphasia, and reduced quality of life. The simple fact that patients treated with NeuroBlate technology are typically discharged within 48 hours of the procedure speaks for the benefit it provides to the patients. The Health Canada approved “NeuroBlate System” for commercialization in 2013.