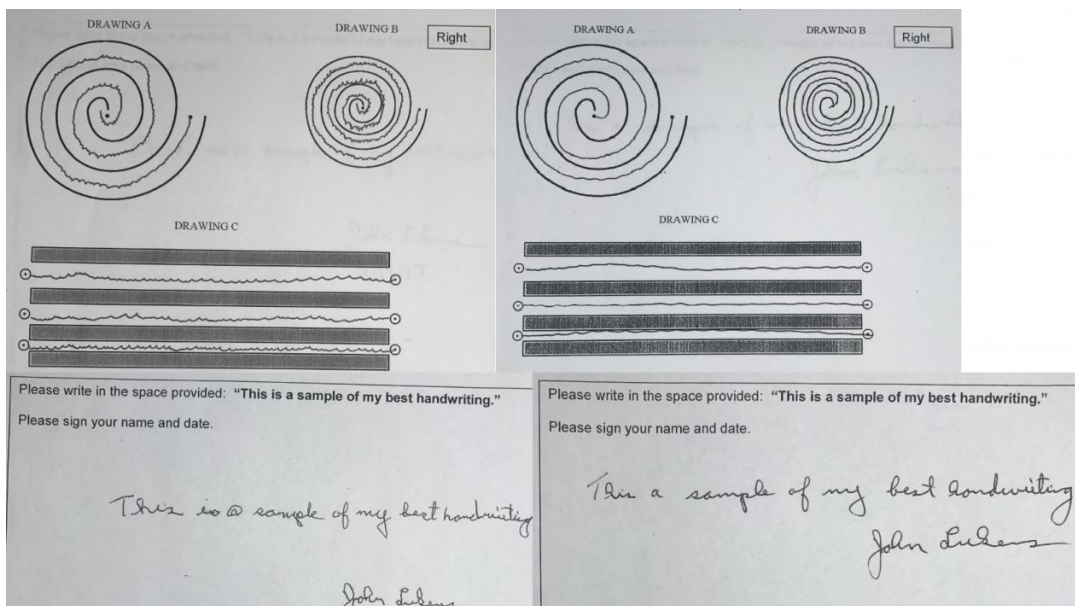


Pennsylvania hospital neurosurgeons perform first focused ultrasound treatment for essential tremor

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Patient, John Lukens', writing samples before and after receiving MR-guided Focused Ultrasound Treatment (MRgFUS) for Essential Tremor (ET). Credit: Penn Medicine

John Lukens recently became the first patient in Pennsylvania to receive MR-guided Focused Ultrasound Treatment (MRgFUS) for Essential Tremor (ET). At age 61, Lukens has suffered with bilateral Essential Tremor for roughly 10 years—a condition which left him with such

significant shaking in his hands and arms that eating, shaving, and even writing with his dominant hand was very difficult. Now two weeks after the procedure, Lukens, who lives in Plymouth Meeting, Pa., says he's tremor-free in his right hand.

Essential tremor (ET) is a movement disorder characterized by uncontrollable shaking mostly in the hands or legs. ET is eight times more common than Parkinson's disease, affecting an estimated 10 million Americans and 42 million worldwide.

Gordon Baltuch, MD, PhD, director of the Center for Functional and Restorative Neurosurgery and a professor of Neurosurgery, Andres F. Deik, MD, assistant professor of Clinical Neurology, and Robert W. Hurst, MD, professor of Radiology, worked alongside a multidisciplinary team to perform Lukens' procedure at Pennsylvania Hospital on April 27, 2017.

During the procedure, high intensity focused [ultrasound waves](#) are used to target a focal point in the Vim nucleus of the thalamus, the tiny part of the brain that is thought to be responsible for causing tremors, with no surgical incisions or implants. After [magnetic resonance imaging](#) (MRI) pinpoints the exact location in the brain where the tremors originate, MRI guidance is used to focus the many ultrasound waves on that location.

"There are millions of people in this country who are affected by [essential tremor](#) and whose lives could benefit from this non-invasive therapy," Baltuch said. "Seeing Mr. Lukens' tremor disappear before our eyes without making an incision or drilling a hole in his skull was nothing short of spectacular."

Pennsylvania Hospital is the first in the area to offer the MRgFUS treatment, Exablate Neuro, as a non-invasive treatment for Essential

Tremor. This year, Exablate Neuro was approved by the U.S. Food and Drug Administration (FDA) for use with 1.5T and 3.0T MRI systems. In clinical studies of patients receiving MRgFUS for this purpose, patients saw a 75 percent improvement in their symptoms in the treated hand at 12 months after receiving the therapy. In Lukens' case, his right hand is currently completely tremor-free and he's hoping to have a future procedure that will also eliminate tremor in his left hand.

Provided by Perelman School of Medicine at the University of Pennsylvania

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