



**MRI Guided Focused Ultrasound
Thalamotomy for Essential Tremor**

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AGENDA

1. Fundamentals / Indications
2. Options
3. Procedure Description
4. Outcomes
5. Side Effects
6. Other Considerations
7. Patient Examples
8. Conclusion



Essential Tremor

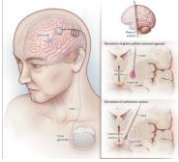
- Movement disorder that causes tremor with action
- Commonly runs in families
- Roughly **7 million** people in the United States suffer from Essential Tremor.
- This is approximately **2.2%** of the total population
- Medications such as Propranolol and/or Primidone are commonly used to help



Essential Tremor

- When medications, such as Propranolol and/or Primidone fail to control the tremor, surgical options exist:

Deep Brain Stimulation



Lesioning

- **RF Ablation** (Requires incision and physical probe in the brain)
- **LITT Ablation** (Requires incision and physical probe in the brain)
- **Gamma Knife** (No incision, delayed result, uses radiation)
- **MRI Guided Focused Ultrasound** (No incision, immediate result, uses soundwaves)



Essential Tremor

MRI Guided Focused Ultrasound (FUS)

- Outpatient
- No Anesthesia
- No incision
- Instant result



Essential Tremor

MRI Guided Focused Ultrasound (FUS)

- Requires complete head shave
- Requires 4 "numbing shots" on the scalp
- Requires 4 temporary small pin placement in the front and back



Essential Tremor

Who is a candidate?

- Diagnosis of Essential Tremor
- Medications no longer working
- Tremor disabling
- Can have an MRI
- Pass screening CT Scan ("SDR")



Essential Tremor

How does it work?

- Focuses ~1000 harmless ultrasound waves to a specific area of the Thalamus
- Target is "tested" at low power
- If tremor is improved and there are no side effects, the power is increased and the lesion is made.
- Scalp is cooled with deionized sterile water



Essential Tremor

How good is it really?



CLINICAL ARTICLE

Magnetic resonance imaging–guided focused ultrasound thalamotomy for essential tremor: 5-year follow-up results

G. Rose Cragg, MD,¹ N. Lippman, MD, PhD,¹ Andrea M. Lazzari, MD, PhD,¹ Jin Woo Chang, MD, PhD,² Casey Habern, MD,³ Pajman Shamsi, MD, PhD,² Howard Eisenberg, MD,⁴ Paul Finkelman, MD, PhD,⁵ Tapani Taira, MD, PhD,⁶ Michael L. Schwartz, MD, MSc,⁷ Nathan McDonnell, PhD,⁸ Michael Hayes, MD,⁹ Susheela RS, MD,¹⁰ Binil Shah, MD,¹¹ Piyler Geron, MD,¹² Veronica E. Santini, MD, MA,¹³ Kulvinder Sanghera, PhD,¹⁴ and W. Jeff Elias, MD¹⁵

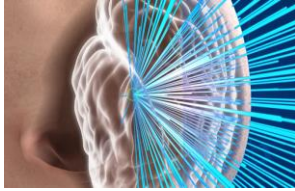
- **55-65% Reduction in Tremor @ 5 years**



Essential Tremor

Are there risks?

- Imbalance
- Numbness/Tingling
- Weakness
- **Very Uncommon to have long-term issues.**
- **Most side effects resolve within a few weeks**



Essential Tremor

Bilateral Tremor

- One side treated at a time
- Must wait at least 9 months in between treatments



Essential Tremor

What if it doesn't last or work?

- Can re-treat
- Consider DBS



Essential Tremor

OU Health experience



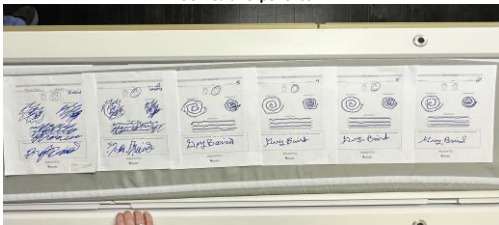
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OU Health experience



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How to Make An Appointment

Clinic Name	OU Health Physicians — Neurosurgery Clinic
Clinic Address	1000 N Lincoln Blvd., Ste. 4000 Oklahoma City, OK 73104
Clinic Phone Number	(405) 271-4912
Toll-free Number	(800) 574-1974
Website	OUHealth.com/essentialtremor
Email	essentialtremorSHU@ouhealth.com
