


## CASE PRESENTATION SOUTHERN EPILEPSY & EEG SOCIETY ANNUAL MEETING

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### USE PATIENT INTRODUCTION

- Current AEDs:
  - Lamotrigine 200 mg BID
  - Levetiracetam 1,500mg BID
  - Clonazepam 0.5 mg TID
- Past AEDs: At least Phenytoin, Phenobarbital, Carbamazepine, Eslicarbazepine, and Valproic Acid

### USE DISCLOSURES

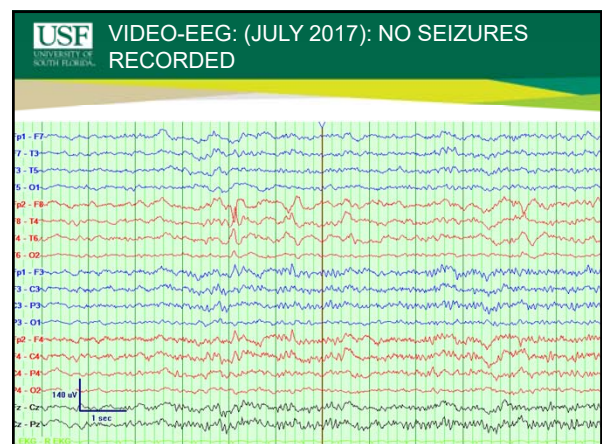
- NONE

### USE OTHER THERAPIES

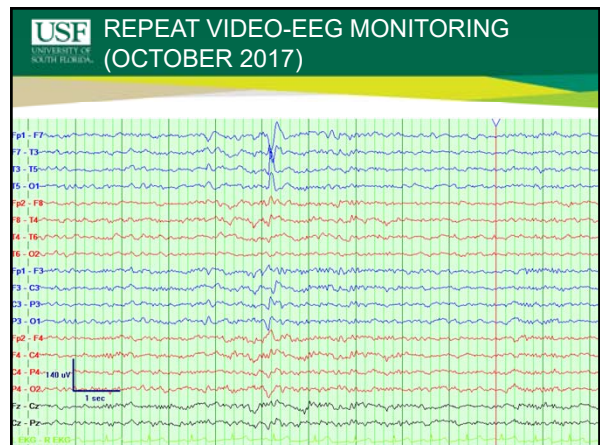
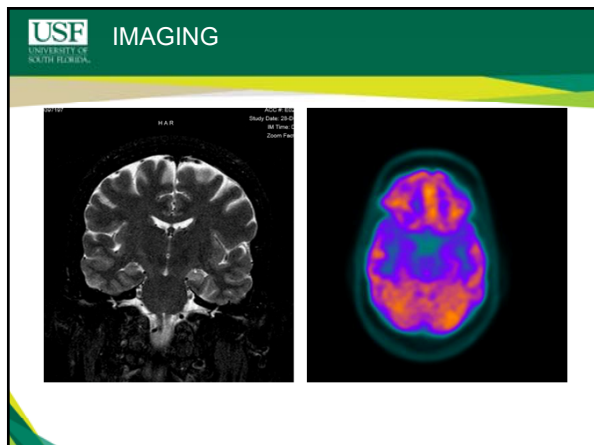
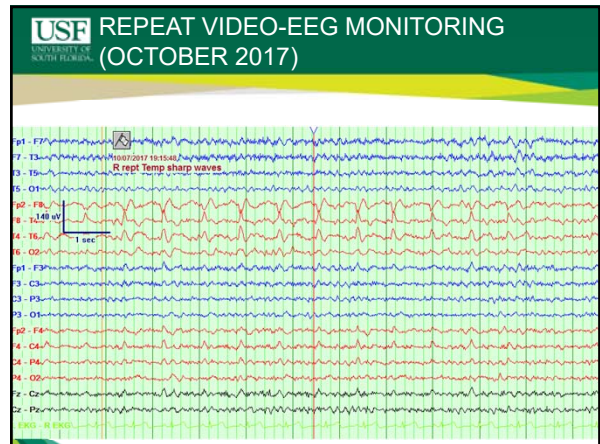
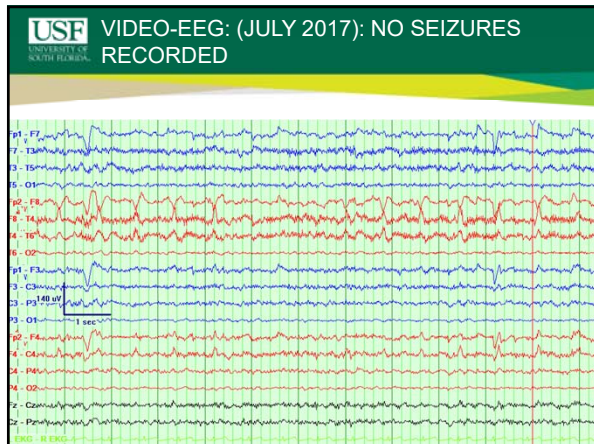
- Vagus Nerve Stimulator placed in 2007 (at other institution)
  - Battery expired
  - Initially, reduced seizure frequency

### USE PATIENT INTRODUCTION

- **HPI:** 40-year-old right-handed woman with uncontrolled seizures
- **Age of onset:** 15
- **Semiology:**
  - Generalized tonic-clonic seizures lasting from 1-3 minutes and post-ictal confusion. Frequency of 2-3 episodes per year.
  - Staring spells lasting from 30 seconds to 2 minutes. Occasionally, she feels dizziness and lightheadedness before the events. Frequency 2-3 episodes per week.
- **Risk factors:** One febrile seizure at age 1 y/o. No family history of epilepsy, head trauma, infection.
- **PMH:** Bipolar disorder, Mild Intellectual Disability
- **Physical exam:** Normal Neurological examination

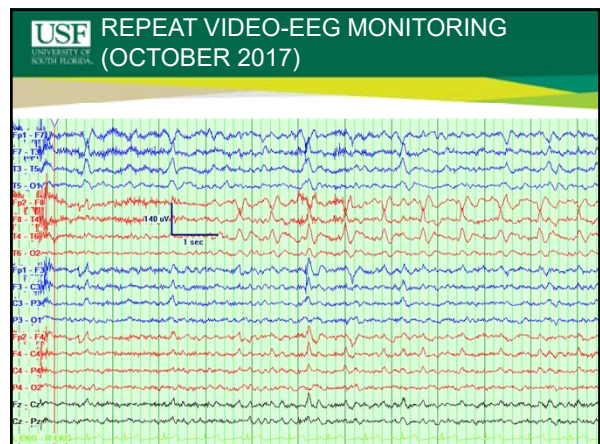


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**USF** DIAGNOSTIC TESTING: WADA AND NPE

- **Right Injection:** Receptive and expressive speech intact. Recall was 5/8
- **Left Injection:** Expressive aphasia. Receptive speech not entirely impaired with the patient retaining ability to follow several commands. Recall was 3.5/8
  - left hemisphere dominant for language with receptive speech that may be bilaterally represented.
  - Memory was somewhat asymmetric favoring the left mesial temporal lobe.
- **Neuropsychological testing:** global cognitive impairment
  - Findings were not particularly localizing or lateralizing



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## CONCLUSIONS & POSSIBLE TREATMENT OPTIONS

- Diagnosis: Temporal epilepsy
  - “True” bi-temporal epilepsy
  - Or temporal lobe epilepsy side unclear
  - How bilateral is this?
- Options
  - Intracranial EEG to clarify side and confirm “true” bilateral” temporal lobe epilepsy
  - Brain-responsive Neurostimulation (RNS)
  - VNS

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## Brain-responsive neurostimulation in patients with medically intractable mesial temporal lobe epilepsy

<sup>1</sup>Eric B. Geller, <sup>2</sup>Tara L. Skarpaas, <sup>3</sup>Robert E. Gross, <sup>4</sup>Robert R. Goodman, <sup>5</sup>Gregory L. Barkley, <sup>6</sup>Carl W. Bazil, <sup>7</sup>Michael J. Berg, <sup>8</sup>Gregory K. Bergey, <sup>9</sup>Sydney S. Cash, <sup>10</sup>Andrew J. Cole, <sup>11</sup>Robert S. Duckrow, <sup>12</sup>Jonathan C. Edwards, <sup>13</sup>Stephan Eisenschenk, <sup>14</sup>James Fessler, <sup>15</sup>Nathan B. Fountain, <sup>16</sup>Alicia M. Goldman, <sup>17</sup>Ryder P. Gwinn, <sup>18</sup>Christianne Heck, <sup>19</sup>Aamir Horekar, <sup>20</sup>Lawrence J. Hirsch, <sup>21</sup>Barbara C. Jobst, <sup>22</sup>David King-Stephens, <sup>23</sup>Douglas R. Labar, <sup>24</sup>James W. Leightner, <sup>25</sup>W. Richard Marsh, <sup>26</sup>Kimberly J. Meador, <sup>27</sup>Eli M. Mitrani, <sup>28</sup>Anthony M. Murro, <sup>29</sup>Dileep R. Nair, <sup>30</sup>Katherine H. Nos, <sup>31</sup>Yong D. Park, <sup>32</sup>Paul A. Rutecki, <sup>33</sup>Vicenta Salanova, <sup>34</sup>Rai D. Sheth, <sup>35</sup>Donald C. Shields, <sup>36</sup>Christopher Sjöström, <sup>37</sup>Michael C. Smith, <sup>38</sup>David C. Spencer, <sup>39</sup>Shradha Srinivasan, <sup>40</sup>William Tatum, <sup>41</sup>Paul C. Van Ness, <sup>42</sup>David G. Vossler, <sup>43</sup>Robert E. Wharen Jr., <sup>44</sup>Gregory A. Worrell, <sup>45</sup>Daniel Yoshor, <sup>46</sup>Richard S. Zimmerman, <sup>47</sup>Kathy Crowe, <sup>48</sup>Felice T. Sun, and <sup>49</sup>Martha J. Morrell

*Epilepsia*, 58(6):994-1004, 2017  
doi:10.1111/epi.13749

- 111 subjects
- Median percent seizure reduction: 70%
- 15 % experienced at least one seizure-free period of 1 year or longer

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## Lateralization of mesial temporal lobe epilepsy with chronic ambulatory electrocorticography

<sup>1</sup>David King-Stephens, <sup>2</sup>Emily Mirro, <sup>3</sup>Peter B. Weber, <sup>4</sup>Kenneth D. Laxer, <sup>5</sup>Paul C. Van Ness, <sup>6</sup>Vicenta Salanova, <sup>7</sup>David C. Spencer, <sup>8</sup>Christianne N. Heck, <sup>9</sup>Alicia Goldman, <sup>10</sup>Barbara Jobst, <sup>11</sup>Donald C. Shields, <sup>12</sup>Gregory K. Bergey, <sup>13</sup>Stephan Eisenschenk, <sup>14</sup>Gregory A. Worrell, <sup>15</sup>Marvin A. Rossi, <sup>16</sup>Robert E. Gross, <sup>17</sup>Andrew J. Cole, <sup>18</sup>Michael R. Sperling, <sup>19</sup>Dileep R. Nair, <sup>20</sup>Marvin P. Gwinn, <sup>21</sup>Yong D. Park, <sup>22</sup>Paul A. Rutecki, <sup>23</sup>Nathan B. Fountain, <sup>24</sup>Robert E. Wharen, <sup>25</sup>Lawrence J. Hirsch, <sup>26</sup>Ian O. Miller, <sup>27</sup>Gregory L. Barkley, <sup>28</sup>Jonathan C. Edwards, <sup>29</sup>Eric B. Geller, <sup>30</sup>Michel J. Berg, <sup>31</sup>Toni L. Sadler, <sup>32</sup>Felice T. Sun, and <sup>33</sup>Martha J. Morrell

*Epilepsia*, 56(6):959-967, 2015  
doi:10.1111/epi.13010

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## 90% LEFT/ 10% RIGHT SINCE IMPLANT

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## Lateralization of seizures of MTL onset

[King-Stephens et al., *Epilepsia*, 2015]

In 20% of patients, the presumed lateralization determined by prior diagnostic testing changed after chronic ambulatory ECoG monitoring.

11 patients presumed unilateral; 7/11 (64%) had bilateral electrographic seizures

71 patients presumed bilateral, 9/71 (13%) had only unilateral electrographic seizures

15

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## DETECTION PERCENTAGE

Activity

11/28/2017 10:29:32 AM

12/28/2017 10:29:32

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**USF** CONCLUSION  
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- In patients with bilateral mesial temporal lobe epilepsy, what should be preferred?
  - Invasive EEG
  - Responsive Neurostimulation (RNS)
    - Localization and Treatment



**USF** LONG-TERM ECOG RECORDINGS WITH RNS® SYSTEM MAY HELP IDENTIFY RESECTION CANDIDATES  
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Chronic unlimited recording electrocorticography–guided resective epilepsy surgery technology-enabled enhanced fidelity in seizure focus localization with improved surgical efficacy

Clinical article

Shinn, J. Dilorenzo, M.D., Ph.D., M.B.A.,\* Fanni, Z. Moustafa, M.D.,\* Shinn, A. Brown, M.D., Ph.D.,\* and Robinson W. Brown, M.D.

Department of Neurosurgery and Neurology, Beth Edwards Medical Center Chicago, Illinois

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Use from

Complementary effect of surgical resection and responsive brain stimulation in the treatment of temporal lobe epilepsy: A case report

Reschauer, Andrea, Moustafa, Z., Wilson, Benjamin, "Sleep Now" 2014

\*Correspondence: Dilorenzo, D., MD, PhD, FRCPC, FRCR, FRCR (Neurology), Beth Edwards Medical Center Chicago, Illinois

- Data obtained from the RNS System identified 4 patients who had not previously been considered for resective surgery as candidates.
- Patients subsequently underwent resective surgery
- All 4 are seizure free (2/4 continued w/ RNS System)

- RNS System data showed predominately right seizure onsets
- Right MTL resection and responsive stimulation on left, now seizure free

Dilorenzo, D. et al, Journal of Neurosurgery, 2014.  
Enatsu, R et al, Epilepsy & Behavior, 2012.

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