Do you frequently care for patients who have language deficits as a result of a tumor or resection? Learn how to maximize their communications skills during this session, which addresses the unique language implications of a primary or metastatic brain tumor location. You’ll examine the eloquent brain, which is associated with language comprehension, the production of language, writing, and reading. Your exploration will cover Broca’s area, Wernicke’s area, and the Sylvian fissure. You’ll also learn how to collaborate with neuropsychologists, occupational therapists, and speech therapists for your patients’ maximum therapeutic benefit.

**Content Area:** Clinical Practice

**Content Level:** Advanced

**Coordinator/Speaker:**
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**Full Disclosure:**
Nothing to Disclose

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**Full Disclosure:**
Nothing to Disclose

**Objectives:**
At the end of this session, participants will be able to:
1. Predict likely language deficits based on tumor location.
2. Appropriately assess for potential language deficits based on tumor location.

**Content Outline:**
I. Introduction
II. Basic brain anatomy
   A. Gross anatomy
      1. Hemisphere
      2. Lobes
      3. Cortex
      4. White matter
   B. Neuron
III. Eloquent brain
   A. Dominance
   B. Broca’s area
   C. Wernicke’s area
   D. Sylvian Fissure
IV. Language disorders
   A. Conceptual frameworks for classification
   B. Relationship to location
   C. Classifications of language disorders (relate to location)
      1. Aphasias
      2. Agraphia
V. Intraoperative brain mapping
   A. Purpose
   B. Process (techniques)
      1. Awake craniotomy
      2. Intra-operative MRI
      3. Intra-operative language function tests
   C. Pre- and post-operative neurocognitive testing
   D. Interdisciplinary collaboration
   E. Evidence for effectiveness
   F. Nursing role
VI. Post-operative language assessments
   A. Assessment tools
   B. Frequency
   C. Interdisciplinary collaboration
      1. Nursing
      2. Physician
      3. Speech therapy
      4. Physical therapy
      5. Occupational therapy
   D. Cerebral edema
      1. Role in language function
      2. Management
   E. Seizures
      1. Role in language function
      2. Management
   F. Nursing interventions
      1. Physical
      2. Psychosocial
      3. Family
VII. Long-term
   A. Assessment tools
      1. MRI
      2. Neuro-cognitive testing
   B. Frequency of assessment
   C. Interdisciplinary collaboration
   D. Nursing interventions
   E. Survivorship issues
Bibliography:


**Basic Brain Anatomy**

- **Gross Anatomy**
  - Right and left hemispheres
  - Frontal lobes (2)
  - Parietal lobes (2)
  - Temporal lobes (2)
  - Occipital lobe
  - Cerebellum
  - Cortex
  - White Matter
  - Brain Stem

**Eloquent Brain**

Focus on Language
- Language
- Movement
- Sensory

**Dominance**

**Handedness**
- 97% right-handed = Language Dominance in LH.
- Case study of atypical pt
  - Right handed
  - DES (direct elect stim) intra op
  - RH dominant
  - Gross total resection safely done near broca’s
  - No lang deficits in pre or post-op
  - Illustrates importance of intraop cortical mapping.

**Conceptual Frameworks**

- Wernicke-Lichtheim (W-L) model of language processing – early effort (1885)

**Auto-Associator Network Model**

- Rooms in a House

**Aphasias**

- Broca’s
- Wernicke’s
- Pure Motor speech disorder
Surgical Considerations
patients with tumors in the “eloquent brain”

Introduction
Indications for awake surgery and mapping

Assessment

Clinical exam- H&P
Functional MRI
WADA test
Neurocognitive testing

Surgery

Pre-operative
Peri-operative
– Neuromonitoring
– MAC anesthesia
– MRI intraoperatively
Post-operative

Post-operative

Neurological observation
Potential complications
Clinical Interventions
Imaging

Long term care

Rehabilitation
Coordination of Interdisciplinary care
Ongoing re-assessment
Psychosocial

Case Study