

Breakout Session F

Metastatic Brain Tumor

Luke E. Pater, MD | Radiation Oncology

Olivier Rixe, MD, PhD | Medical Oncology

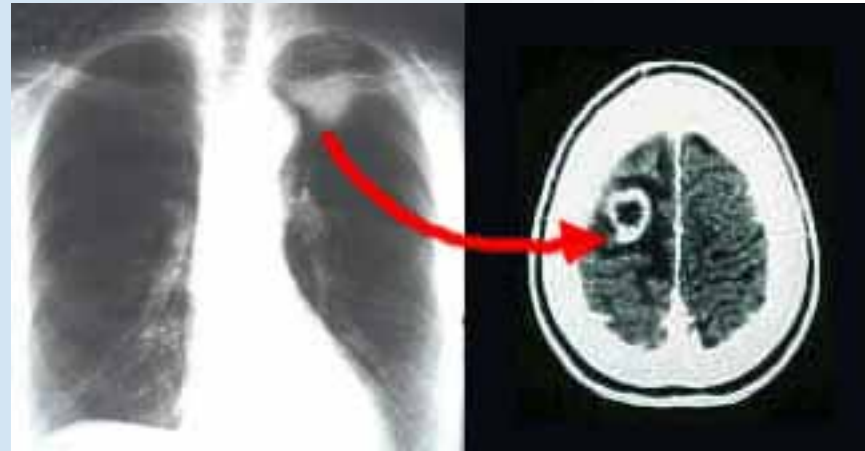
University of Cincinnati Academic Health Center

Overview

- § ~1.4 million people diagnosed with cancer annually in US
- § Up to 40% of patients with cancer will eventually develop brain metastases
- § Metastatic tumors 10X more common than primary brain tumors

Incidence by Primary Tumor

Melanoma	48%
Lung	33%
Breast	21%
Renal	15%
Gastrointestinal	6%



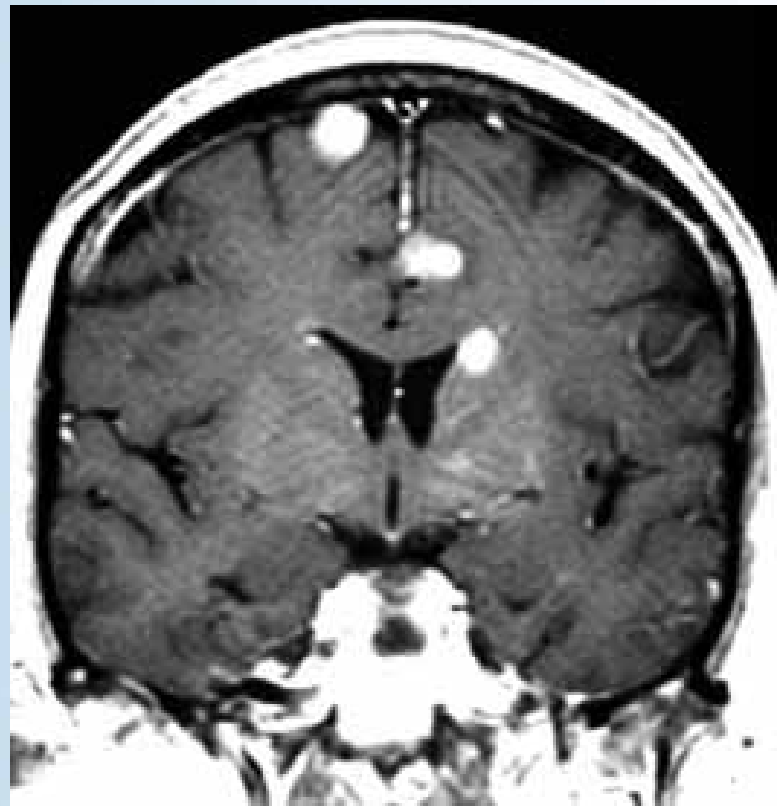
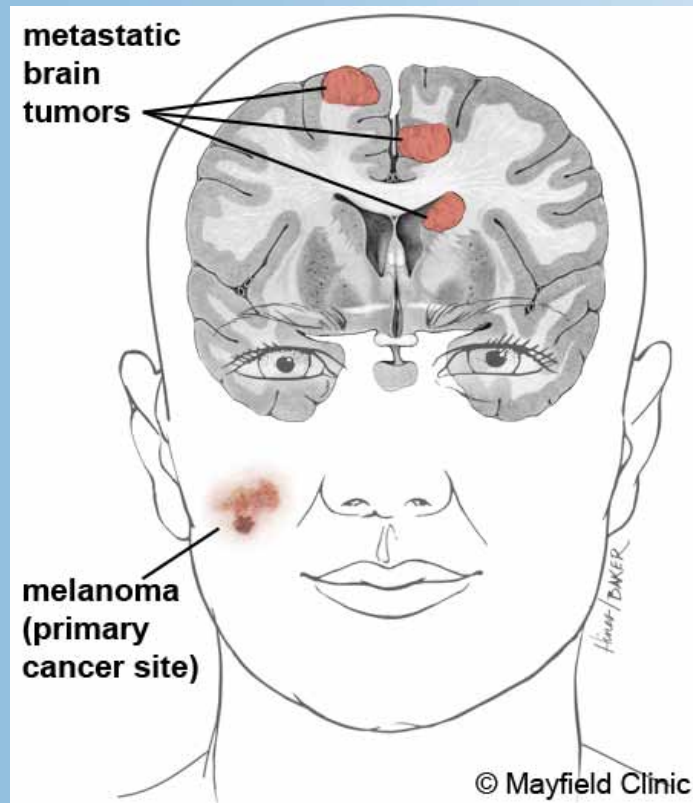
Brain Metastases incidence rising

§ Incidence is rising due to:

- Longer survival resulting from earlier diagnosis
- Better systemic therapy for extracranial disease
- Higher detection rate from improved neuro-imaging and diagnosis

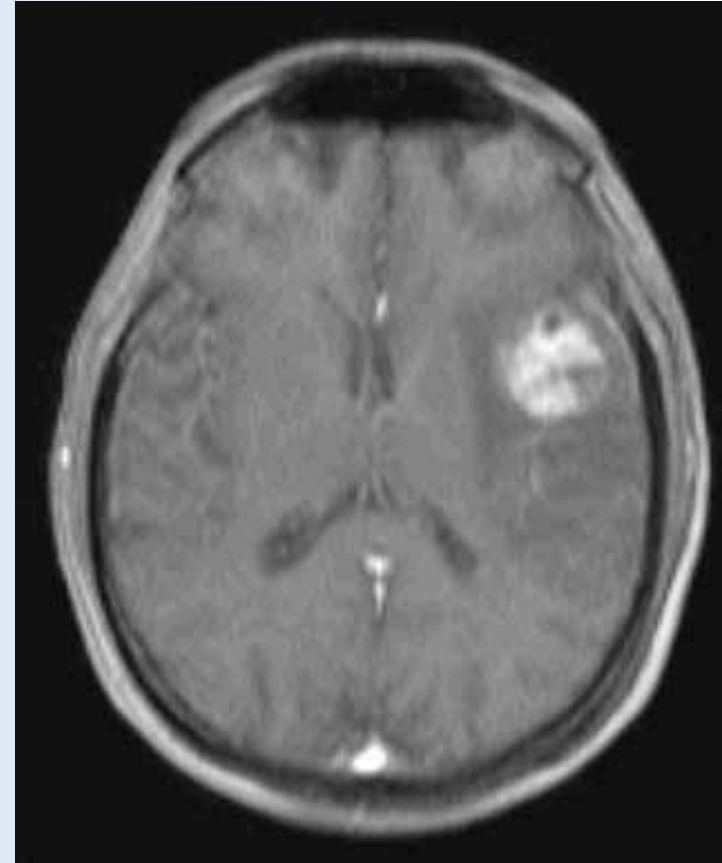
What are brain metastases?

§ Metastatic brain tumors originated from a primary disease site and spread through the blood stream to the brain



Presenting Symptoms

Headache	42%
Mental status change	31%
Focal weakness	27%
Seizure	20%



Management Determinations

- § Tumor size
- § Number of lesions
- § Location
- § Histological features
- § Patient-related factors: age, neurological status and other medical conditions
- § Extent of systemic cancer
- § Past or potential response to therapy
- § Possible damage to other organ systems from previous treatment

Management Options

- § **Steroids:** Symptom management
- § **Surgery**
- § **Radiation**
- § **Chemotherapy**
- § **Combined modality therapy**

Surgical Considerations

§ Accessibility

- Ability to reach tumor(s)

§ Resectability

- Ability to remove tumor(s)

§ Quality of Life

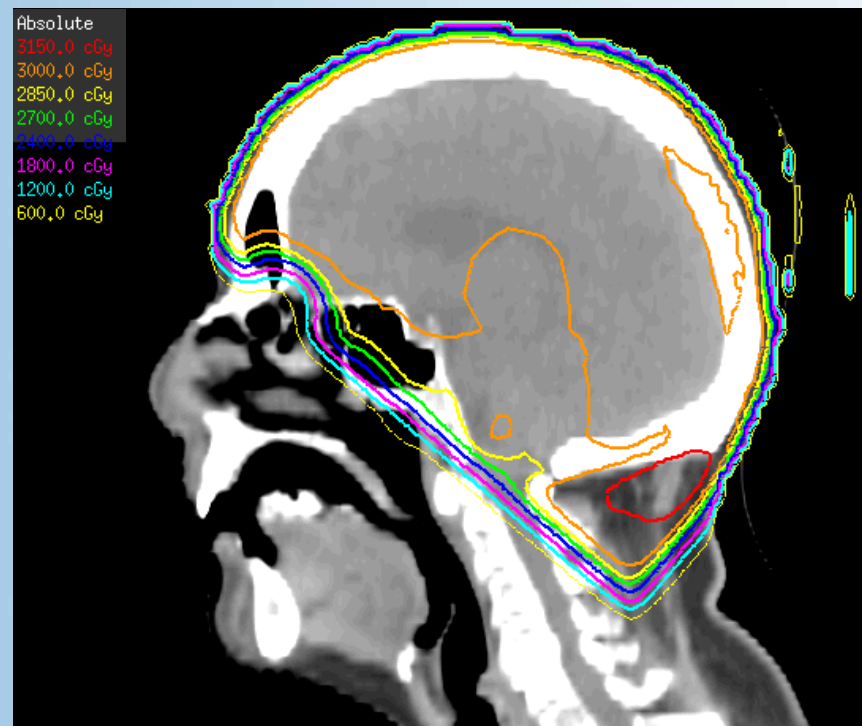
- The extent of deficit acceptable to the patient and the surgeon



Whole Brain Radiotherapy

Whole Brain Radiotherapy (WBXRT)

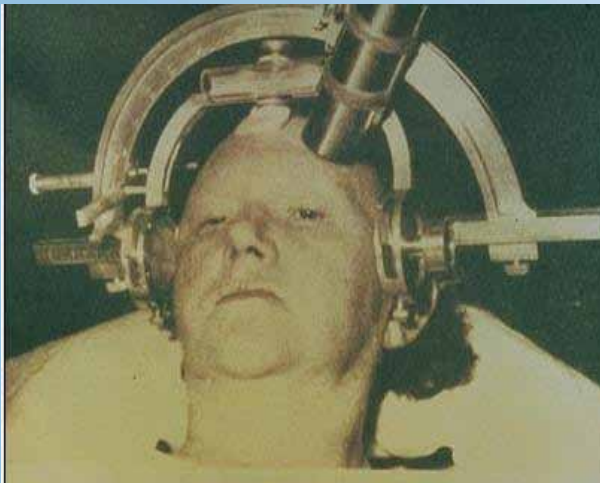
- § WBRT has limited effectiveness in controlling large brain metastases
- § WBRT can contribute to morbidity and quality of life issues



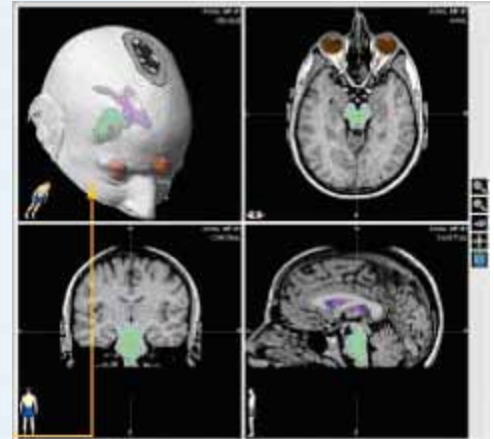
Stereotactic Radiosurgery

Progress in Brain Tumor Therapy *Radiation*

§ First brain tumor radiation procedure (1951)



1951



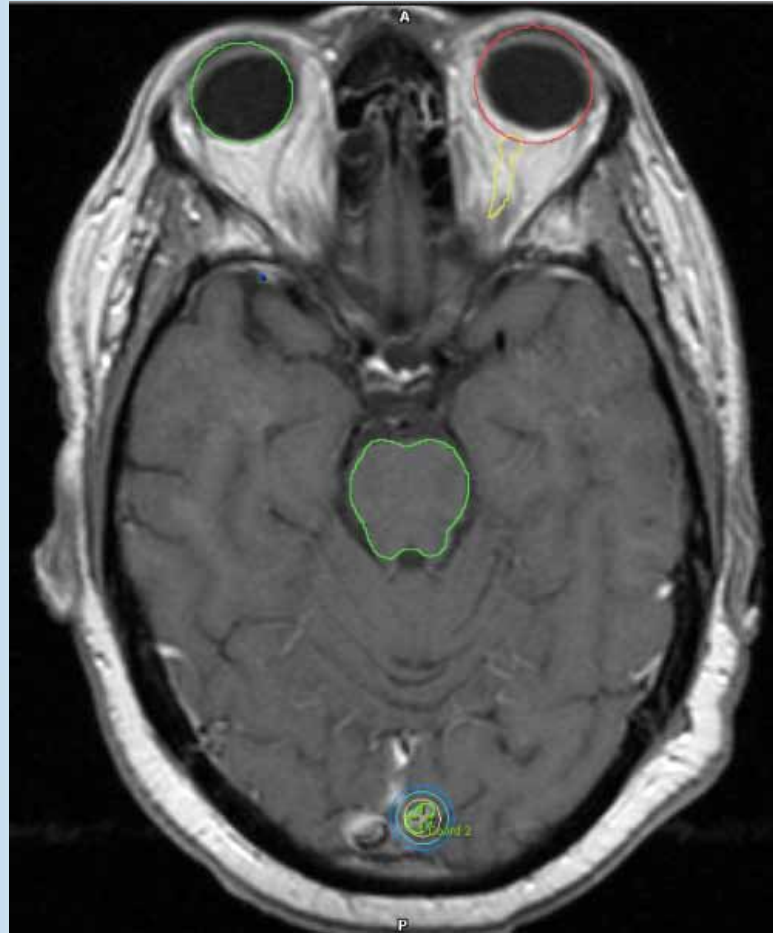
2010

SRS

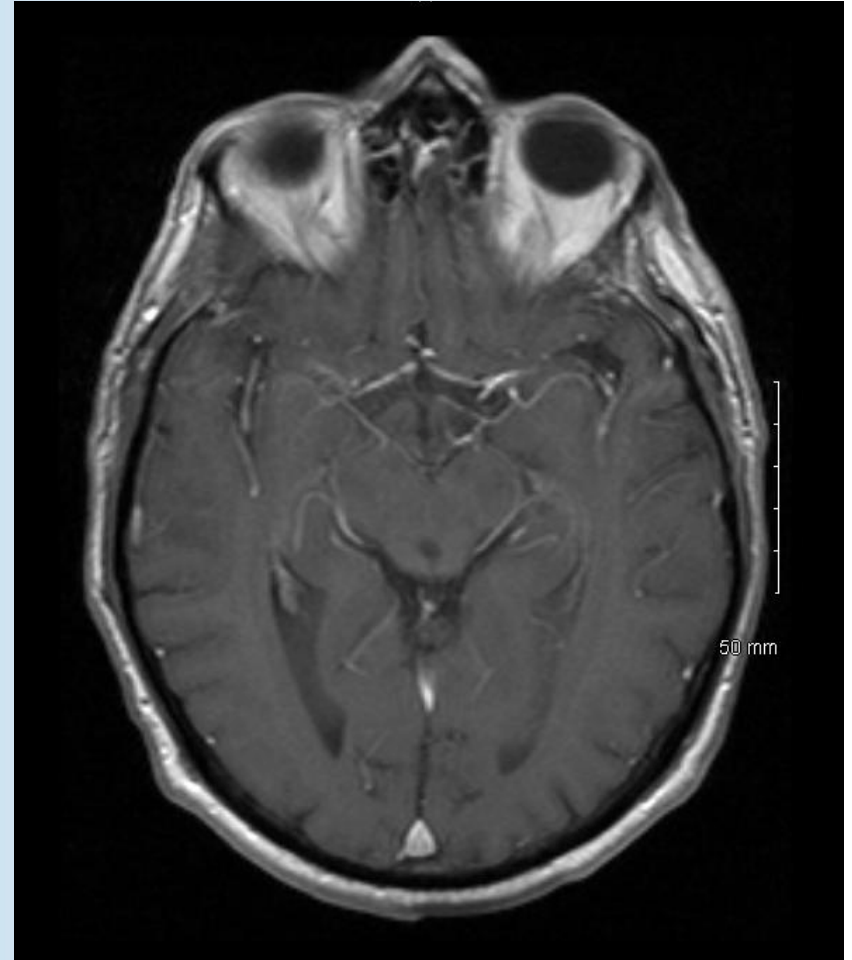
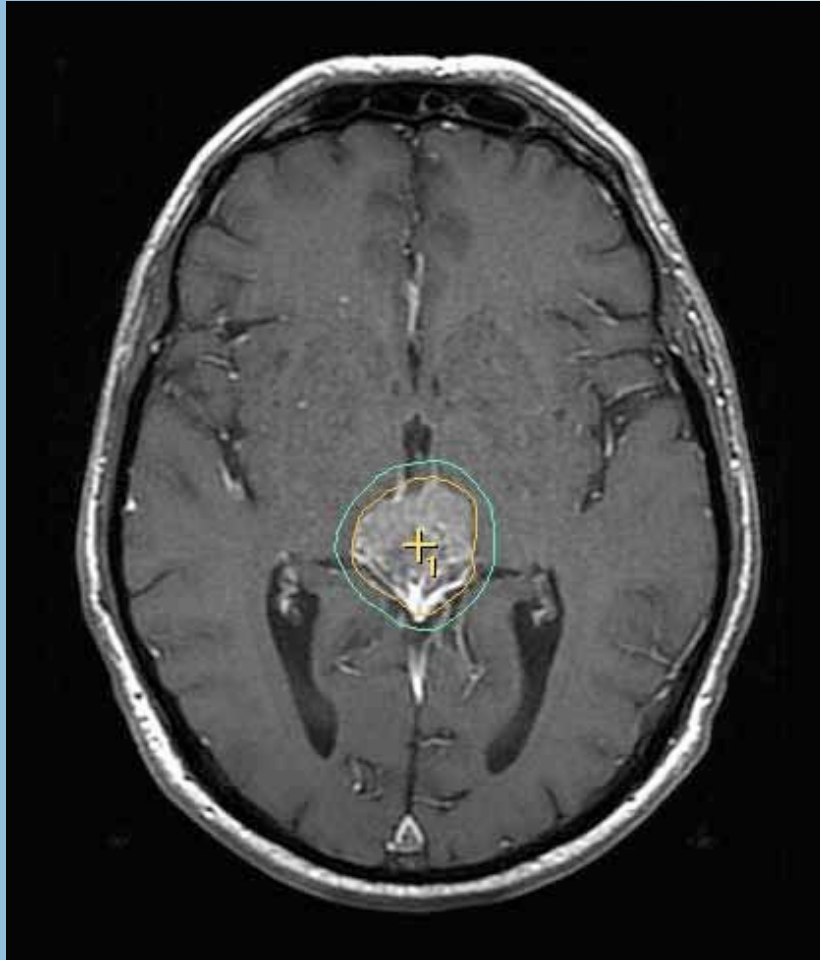
- § **CT or MRI used to localize tumors in 3D**
- § **Single or multiple sessions**
- § **Multiple beams**
- § **High energy source**
- § **Produce a conformal treatment plan**
- § **Allows delivery of high radiation doses to the target**
- § **Minimally invasive**
- § **One-day outpatient stay**

Radiosurgery techniques

- § LINAC- based
- § Proton
- § CyberKnife
- § GammaKnife

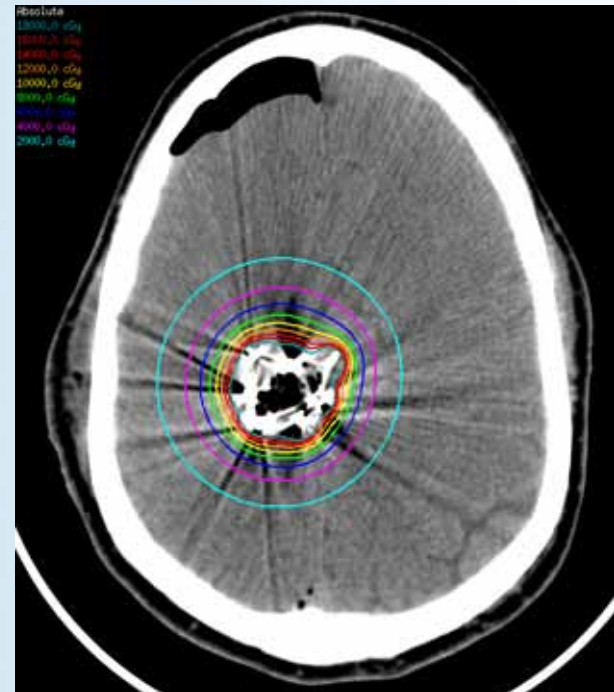


Fractionated Stereotactic Radiosurgery



I-125 Seed Implantation

- § I-125 implanted along resection cavity
- § High radiation dose at short depth
- § Requires procedure with complete removal of tumor



Medical treatments

- § **Chemotherapy (temodar, cisplatin)**
- § **Molecular Targeted therapies (lapatinib)**
- § **Clinical trials!**

Molecular Therapeutics Program at UCBTC

- § From Bench to bedside
- § Launched in 2011
- § Dedicated to Brain Metastasis!
- § Unique Program in the US!

Conclusions

- § **Metastases to the brain is a common problem for cancer patients**
- § **Whole brain radiotherapy, SRS and surgery provide options for treatment of brain metastases and are often used in conjunction with each other as well as chemotherapy for systemic disease control**

Thank You

QUESTIONS???