SENRS 2026 · INTERESTING CASE

# Beyond the Dura: Transcalvarial and Scalp Extension of a Recurrent WHO Grade 3 Neuroepithelial Tumor

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CLINICAL PRESENTATION

# Initial Presentation April 2024: 34yo M, found postictal

## Exam

GCS 15, neuro exam significant for right foot drop unchanged from baseline

## PMHx

Anaplastic ependymoma s/p resection (2018), seizure disorder, TBI, PTSD, OUD in remission

## Imaging

CT Head identifies new hemorrhage w/o edema, mass effect; MRI confirms trace hemorrhage w/ left frontal and parietal enhancement extending to posterior periventricular white matter

CLINICAL PRESENTATION

# Disease course, 2018–2026

### 2018

Resection and radiotherapy (delayed by wound infection). Lost to follow-up until 2024.

### 4/2024

Presentation after found collapsed, CT head, MRI concerning for intracranial hemorrhage suggestive of recurrence

### 8–10/2024

Recurrence identified on MRI after recurrent seizures. Repeat resection identifies grade 3 ependymoma. MRSA wound infection treated with washout, bone flap removal, mesh cranioplasty.

### 2/2025

Third resection with hardware removal and skull repair. Epidural abscess / cranial osteomyelitis (MRSA, S. epidermidis).

### 3/2025

CSF leak, free-flap wound revision. Pathology: neuroepithelial tumor, WHO grade 3, NEC.

### 5–8/2025

Re-irradiation 5/19–6/25. One cycle of temozolomide stopped for neutropenia

### 1–3/2026

Bevacizumab started 1/13. Right leg DVT and PE: embolectomy; bevacizumab stopped.

### 4-6/2026

Bevacizumab resumed at reduced dose, continued tumor progression. Transitioned to home hospice.

IMAGING DISCUSSION

# Variable pathologies within surgical cavity

## Infection

Cranial osteomyelitis with epidural abscess (MRSA, S. epidermidis) documented 2/2025, in the same operative bed. Required hardware removal and free-flap reconstruction.

## Pseudomeningocele

Extracranial fluid collection at the surgical site (4/2025): proteinaceous, no diffusion restriction to suggest pyogenic material. Resolved by 8/2025.

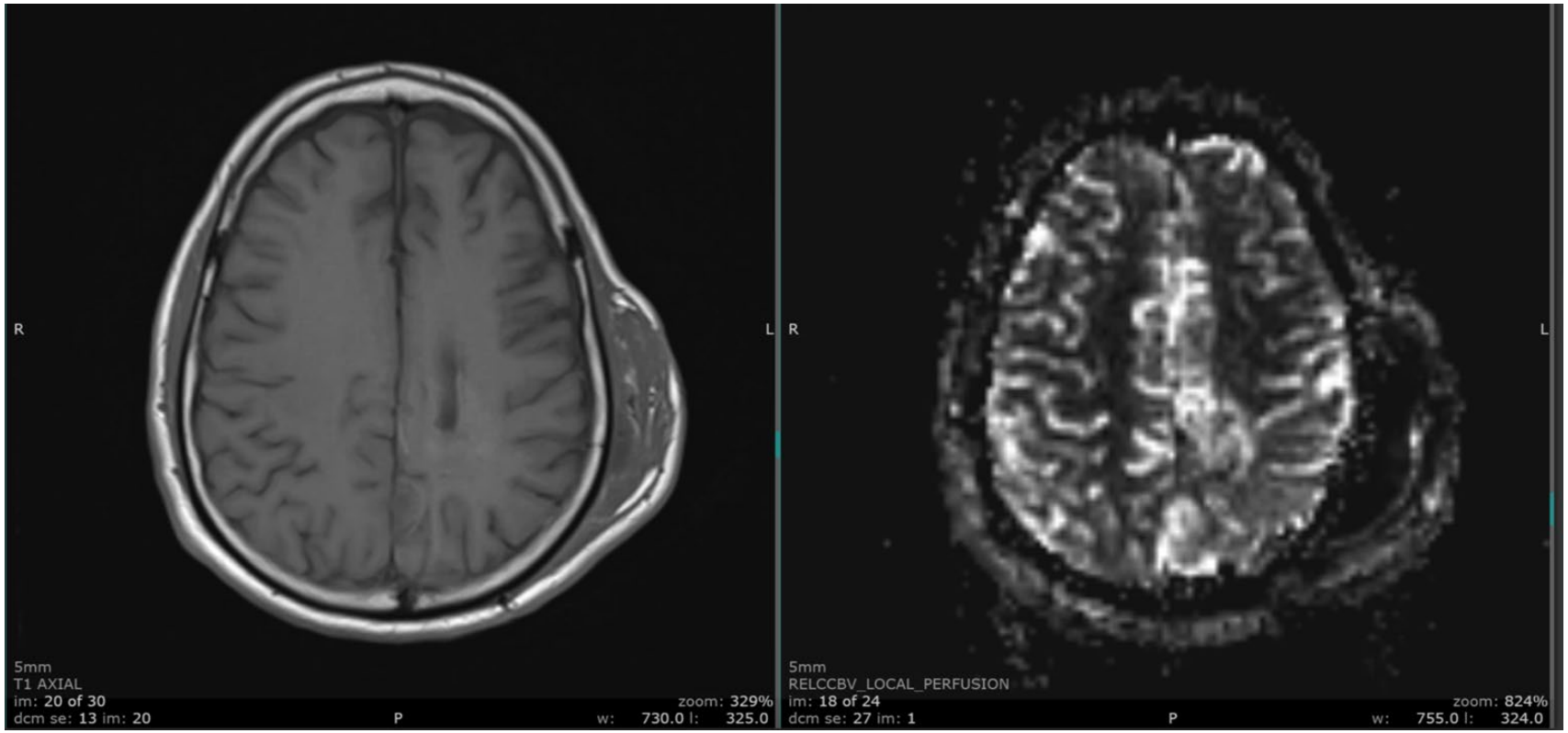
## Recurrent tumor

Nodular enhancement at the cavity margin with elevated rCBV on perfusion imaging. Later: satellite nodules and dural-based extra-axial lesions.

**Perfusion (rCBV) necessary to discriminate between viable neoplasm and infection or fluid.**

IMAGING DISCUSSION

# 4/2025: residual tumor with elevated rCBV, beside a sterile-appearing collection




*Left: axial T1. Right: relative CBV map. A left extracranial collection is visible on T1.*

- **Nodular enhancing lesion**, mostly extra-axial along the left falx: over 3.5 × 2.3 cm, elevated rCBV
- **Adjacent white-matter lesion**: 3.4 × 1.8 cm, elevated rCBV
- **Satellite foci**: a 0.8 cm nodule, up from 0.4 cm
- **Superior sagittal sinus**: partially effaced or invaded
- **Extracranial collection**: no diffusion restriction

IMAGING DISCUSSION

# Serial MRI: perfusion shaped each read

## 8/2025

New post-op baseline. Cystic cavity with hemosiderin and minimal peripheral enhancement. Pseudomeningocele resolved. Questionable 3 × 4 mm right parietal cortical focus.

## 11/2025

Heterogeneous enhancement up to 1.8 × 1.3 cm at the cavity margin, with no abnormal rCBV. Read clinically as likely post-radiation change; follow-up advised.

## 12/2025

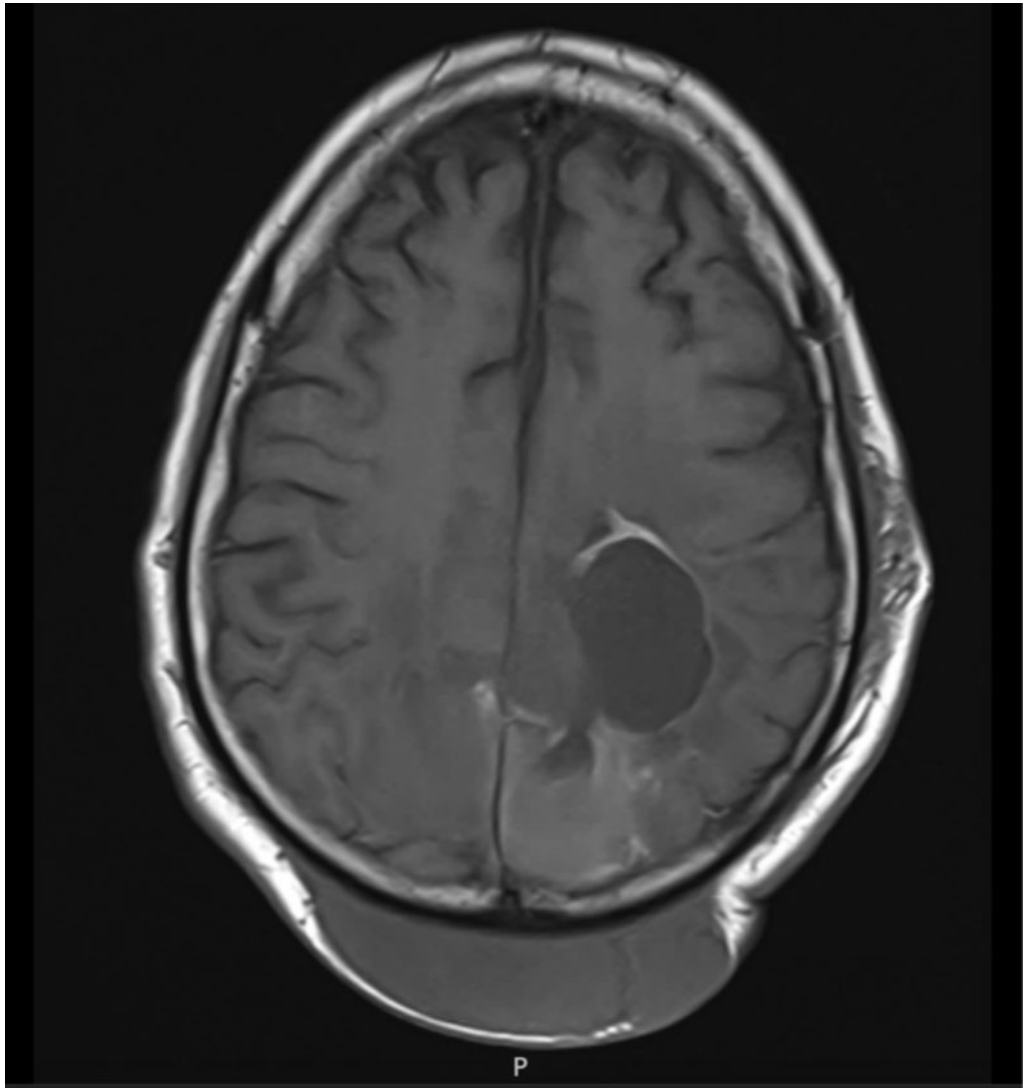
Thick nodular enhancement with increased rCBV. Parafalcine nodule 3.5 × 2.9 cm (was 2.8 × 2.6). New satellite foci, leptomeningeal enhancement, edema: progression.

## 4/2026

Mildly increased nodular enhancement along the medial and posterior superior cavity margin. Scalp nodules unchanged.

IMAGING DISCUSSION

# 6/2026: tumor extends beyond the calvarium into the scalp




*Axial T1. Cystic left parietal cavity and posterior scalp mass.*

- **Scalp tumor**: 2.6 (AP) × 7.9 (transverse) × 6.4 (CC) cm; previously 2.0 × 2.6 × 6.2 cm
- **Cavity margin**: multifocal nodular enhancement reaching the left frontoparietal falx; convexity nodule 2.0 × 2.8 cm (was 1.9 × 2.1), parafalcine nodule 2.4 × 2.3 cm (was 2.1 × 1.7)
- **Dura**: thickening and enhancement suspicious for pachymeningeal disease
- **Right parietal**: 1.2 cm focus (was 8 mm) with new restricted diffusion
- **Impression**: constellation of findings suggestive of progressive neoplasm

MANAGEMENT

# Continued Progression and Post-treatment Complications

## Surgery

Three resections (2018, 2024, 2025) complicated by infection and CSF leak plus washout and free-flap revisions

## Radiation

Radiotherapy in 2018, re-irradiation necessary 5/19–6/25/2025 due to progression.

## Chemotherapy

Temozolomide: stopped after one cycle due to neutropenia. Bevacizumab: started 1/2026, stopped after DVT/PE, resumed at reduced dose 4/2026.

Supportive care: dexamethasone for edema, lacosamide and brivaracetam for seizures, apixaban for DVT/PE.

OUTCOME

# Progression despite maximal therapy

## Tumor Board Decision

Home hospice with focus on comfort and quality of life.

- **Surgery not favored**: low likelihood of meaningful survival benefit
- **Further radiation not advised**: recent radiation and safety concerns
- **Further chemotherapy not recommended**: limited expected benefit; may worsen symptoms
- **Bevacizumab stopped**: continued growth, swelling despite treatment, prior major clotting
- **Routine MRI surveillance stopped**
- **Final Exam**: progressive right-sided weakness (right deltoid 1/5, wrist 0/5), expressive aphasia

TAKE HOME POINTS

# Major Takeaways

1. In a complicated postoperative bed, enhancement alone cannot separate recurrent tumor from infection or pseudomeningocele.

2. Perfusion MRI and rCBV identify viable neoplasm and can guide treatment priorities.