

Delayed Transcranial Herniation Following Treatment of Invasive Auricular Basal Cell Carcinoma: A Case Report



Michael Evans, MS¹; Benjamin Hodnett, MD²; Rajeev Masson, MD²; Luke Smith, MD²; Adam Olszewski, MD²; Mark Van Ess, DO²; Ricardo Ramirez, MD²
¹Kansas City University, ²Mercy Springfield



Background & Case Overview

Invasive basal cell carcinoma (BCC) of the temporal bone is rare and requires complex resection and reconstruction. While early postoperative CSF leak is well described, delayed cerebral herniation is exceedingly rare. Early reconstructive stability does not preclude late structural failure, particularly in irradiated fields.

We present a 66-year-old man with a ~10-year history of a progressively enlarging ulcerative left auricular lesion, ultimately diagnosed as invasive auricular BCC with temporal bone and dural involvement.

This case uniquely demonstrates:

- Delayed temporal encephalocele following oncologic temporal bone and dural resection
- Subsequent Eustachian tube-mediated CSF rhinorrhea
- A distinct late failure pattern in radiated lateral skull-base defects

Definitive Oncologic Resection

Oncologic Resection & Reconstruction (Figure 1)

- Left total auriculectomy with radical excision (7.3 cm) + lateral temporal bone resection and subtotal petrosectomy
- En bloc dural resection → 2.5 × 3.0 cm calvarial/dural defect

Initial Reconstruction Strategy

- Watertight dural repair (collagen-based bovine-derived matrix)
- Rigid cranioplasty deferred (contamination, planned radiotherapy)
- Lateral Eustachian tube obliteration
- ALT free-flap reconstruction

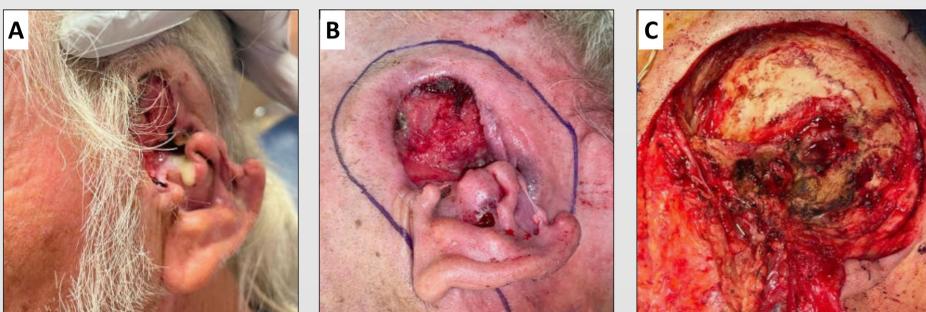


Figure 1: (A) Initial presentation with an ulcerated lesion of the left auricle consistent with biopsy proven BCC. (B) Intraoperative view of a deeply invasive tumor of the upper auricle and temporal scalp. (C) Wide surgical exposure extending to the temporal bone & external auditory canal

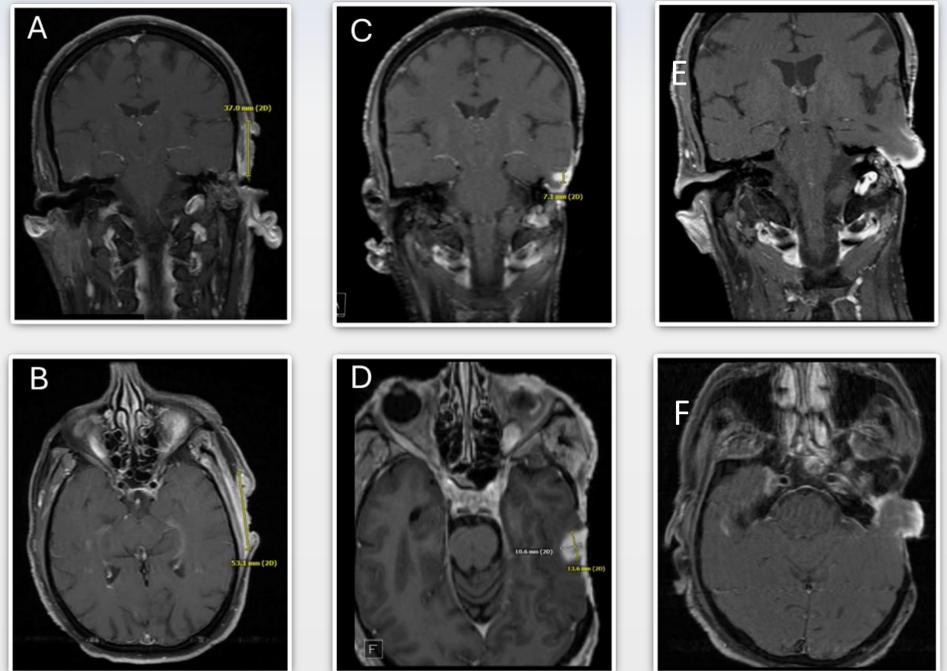


Figure 3: (A, B) T1-weighted post-contrast MRI demonstrating an enhancing lesion of the left pinna and temporal scalp at initial presentation (C, D) Two-year post-treatment scan demonstrating dural and cortical enhancement. (E, F) Herniation of gliotic temporal lobe through the resection defect, consistent with temporal encephalocele.



Figure 4: Short-term cosmetic results following latissimus dorsi free-flap reconstruction. (A) Intraoperative view immediately following reconstruction. (B,C) Short-term cosmetic results at 1 month following reconstructive surgery.

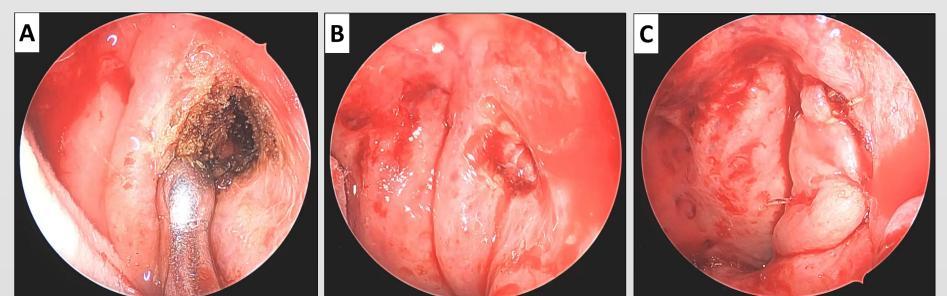


Figure 5: Endoscopic repair of cerebrospinal fluid leak via eustachian tube obliteration. (A) Electrocautery of the mucosa. (B) Fat and fascia obliteration. (C) Running V-Loc suture closure.

Delayed Temporal Encephalocele & Salvage Reconstruction

Delayed Complication

- Three months post-radiotherapy: enlarging pulsatile temporal mass
- Imaging confirmed temporal lobe herniation through prior defect (**Figure 3**)
- Biopsy: gliotic brain tissue, no recurrence

Stage I: Structural Reconstruction (Figure 2)

- Temporal craniotomy with resection of herniated brain
- Dural repair (acellular dermal matrix) + Titanium mesh cranioplasty
- Latissimus dorsi free-flap reconstruction (**Figure 4**)

Stage II: Persistent CSF Egress

- Positional rhinorrhea; CSF from Eustachian tube orifice
- Endoscopic ET obliteration (**Figure 5**)
- Complete resolution



Figure 2: (A) Progressive, pulsatile left temporal mass two years after initial surgery, consistent with encephalocele. (B) Wide local excision of involved temporal scalp with craniotomy and resection of herniated gliotic brain tissue. (C) Titanium mesh cranioplasty following dural repair.

Conclusions

- Delayed temporal encephalocele is a rare complication of lateral skull base surgery.
- Radiation therapy, wound complications, and absence of rigid cranioplasty may contribute to late structural failure in composite calvarial-dural defects.
- Eustachian tube-mediated CSF rhinorrhea represents a rare but important failure pathway following lateral skull-base reconstruction.
- Long-term surveillance and consideration of definitive structural reconstruction may be warranted in high-risk lateral skull-base defects.

References

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Contact

Michael Evans
 Kansas City University
 2901 St. Johns Blvd, Joplin, MO 64804
 Michael.Evans@kansascity.edu
 402-889-3863