Management of Epidermal Inclusion Cyst within a Diploic Space: A Case Report

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Table 1. Approaches to the Frontal Bone

<table>
<thead>
<tr>
<th>Approach</th>
<th>Indications/Advantages</th>
<th>Contraindications/Disadvantages</th>
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</thead>
<tbody>
<tr>
<td>Endoscopic,</td>
<td>Small lesions at anterior wall of frontal sinus or infundibulum</td>
<td>Lesions which are large, lateral to the medial wall of the orbit, or with intracranial extension</td>
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<td>Endonasal</td>
<td>Minimally invasive and good aesthetic results</td>
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<tr>
<td>Supraciliary/brow</td>
<td>Small tumors at anterior wall of frontal sinus</td>
<td>Poor aesthetic results</td>
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<td></td>
<td>Patients who are bald or have small sinuses</td>
<td>Females with high-arch brows</td>
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<tr>
<td></td>
<td></td>
<td>Higher recurrence rates</td>
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<tr>
<td>Bicoronal</td>
<td>Intradiploic lesions of calvarium</td>
<td>Alopecia/elevates hair line</td>
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<tr>
<td></td>
<td>Large lesions with intracranial or lateral extension</td>
<td>Possible temporal hollowing</td>
</tr>
<tr>
<td></td>
<td>Better exposure15</td>
<td>Longer operative time16</td>
</tr>
<tr>
<td></td>
<td>Less recurrence</td>
<td>Prolonged hospital stay</td>
</tr>
</tbody>
</table>

Introduction

Epidermoid cysts are benign lesions that can occur intracranially. Although observation is an option, a small percentage can become clinically symptomatic. While surgical excision is the standard of care, factors such as location, effect on cosmesis, and patient comorbidities can complicate management of these benign masses.

Case Presentation

A healthy 26-year old woman presented for evaluation of a left frontal bone mass. Imaging demonstrated a fluid-filled lesion of the left frontal bone, lateral to the frontal sinus. Erosion of the posterior cortex was noted. [Figure 1 & 2] A bicoronal approach was used to expose the lesion for biopsy and resection. Once the left frontal bone was exposed, a Medtronic bone-anchored skull base array was used for image guidance. Intraoperatively, the lesion was noted to be dehiscent through the anterior and posterior cortices in three separate areas with exposed dura. [Figure 3] Frozen pathology demonstrated acellular, keratinous material with squamous lined epithelium, consistent with an epidermoid cyst. Once the lesion was completely excised, the surgical bed was filled posteriorly with Tissel and Gelfoam and the anterior defect repaired using a 1-mm titanium plate. There were no post-operative complications or neurologic sequelae.

Background

- Epidermoid cysts, or epidermoid inclusion cysts, comprise 1% of intracranial tumors. Approximately 25% of these intracranial cysts can develop within intradiploic spaces3-5, most commonly the frontal and parietal bones2.
- They are thought to be derived from persistent ectodermal inclusions during neural tube closure.
- These are slow-growing lesions that commonly present as a painless mass with headache and focal neurologic symptoms depending on location4,5. Malignant transformation is rare11,12.
- On MRI, these lesions are isointense on T1-weighted images and hyperintense on T2-weighted and flair sequences4,10.

Discussion

This case demonstrates the complexity in the management of benign intraosseous lesions. It is important to assess the history of the present illness, related clinical symptoms, and characteristic appearance in imaging to help with diagnosis and management of intraosseous masses. Ultimately, a biopsy is required for virtually all intracranial lesions, even for the indolent subset. While there are multiple approaches for biopsy and resection of frontal bone masses [Table 1], patient factors should be considered when choosing the approach. In our patient, a young female whose lesion was noted to be superolateral and isolated from the frontal sinus, the bicoronal approach offered the best exposure for biopsy and reconstruction. It is worth noting that other patient factors, such as age or existing comorbidities, may preclude an extensive surgical approach.

Conclusions

Epidermoid cysts, while benign, can be locally destructive and cause symptoms secondary to mass effect. In determining optimal management of these lesions, it is of the utmost importance to carefully review the history, imaging, and location. For our young female patient, a bicoronal approach with stereotactic navigation provided adequate exposure for biopsy and diagnosis, complete resection, and reconstruction.

References