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Technical note: Endoscopic resection of a dermoid cyst anchored to the anterior optic chiasm☆,☆☆

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ABSTRACT

Introduction: Supratentorial dermoid cysts arise due to the misplacement of embryonic inclusions in the vicinity of the developing neural tube up to the third week of life, when the neural groove begins to close. This report describes a case of a suprasellar dermoid cyst anchored to the anterior optic chiasm, which was accurately located by endoscopic observation, removed gross-totally without visual disturbance, and confirmed pathologically. Although the cyst wall was gross-totally resected, the patient's impaired visual field returned to a normal level. The resection procedure under endoscopic vision is demonstrated.
Materials and Methods: A 22-year-old man gradually developed bitemporal hemianopsia with retrobulbar pain over two months. Magnetic resonance imaging demonstrated a suprasellar cyst with intracystic fat contents forming a fluid level within the lesion. The suprasellar cyst was gross-totally removed with endoscopic endonasal transsphenoidal procedures. Intraoperative inspection confirmed that this cyst arose from the optic chiasm. Pathological examination showed the lesion as a dermoid cyst.
Results: After gross-totally resection of the cyst, the patient presented a further, transient impairment of bitemporal hemianopsia; at four month follow-up, his visual disturbance was not evident any longer.
Conclusion: To the best of our knowledge, ours is the only case of a dermoid cyst anchored to the anterior optic chiasma, which was visually confirmed under endoscopic observation. After surgery, the patient presented a transient impairment of the visual field, which was not evident at four month follow-up. It will contribute to a similar case, in which surgeons hesitate to make an incision in the optic chiasm. A subtotal excision should be considered in cases of dermoid cysts anchored to the anterior optic chiasm, because all the previously reported cases of suprasellar dermoid cysts are young people or those who have a relatively long life expectancy.

Introduction

Dermoid cysts are rare tumors, constituting less than 1% of intracranial tumors. They are benign congenital tumors originating from ectopic inclusion of epithelial cells during closure of the neural tube in the third to fifth week of embryonic development [1–3].

Intracranial dermoid cysts are well circumscribed and most often occur in the parasellar region, sylvian fissure, cerebellopontine angle, posterior fossa, and fourth ventricle [4–6]. Patients with dermoid cysts usually present with symptoms related to a local mass effect, seizures, or recurrent meningitis.

This report describes a case of a suprasellar dermoid cyst anchored to the anterior optic chiasm, which was located by endoscopic observation, removed gross-totally, and confirmed pathologically. To the best of our knowledge, ours is the only case of an intracranial dermoid cyst anchored to the anterior optic chiasma. Although the cyst wall was gross-totally resected, the patient's impaired visual field returned to a normal level. The resected procedure under endoscopic vision is demonstrated in this

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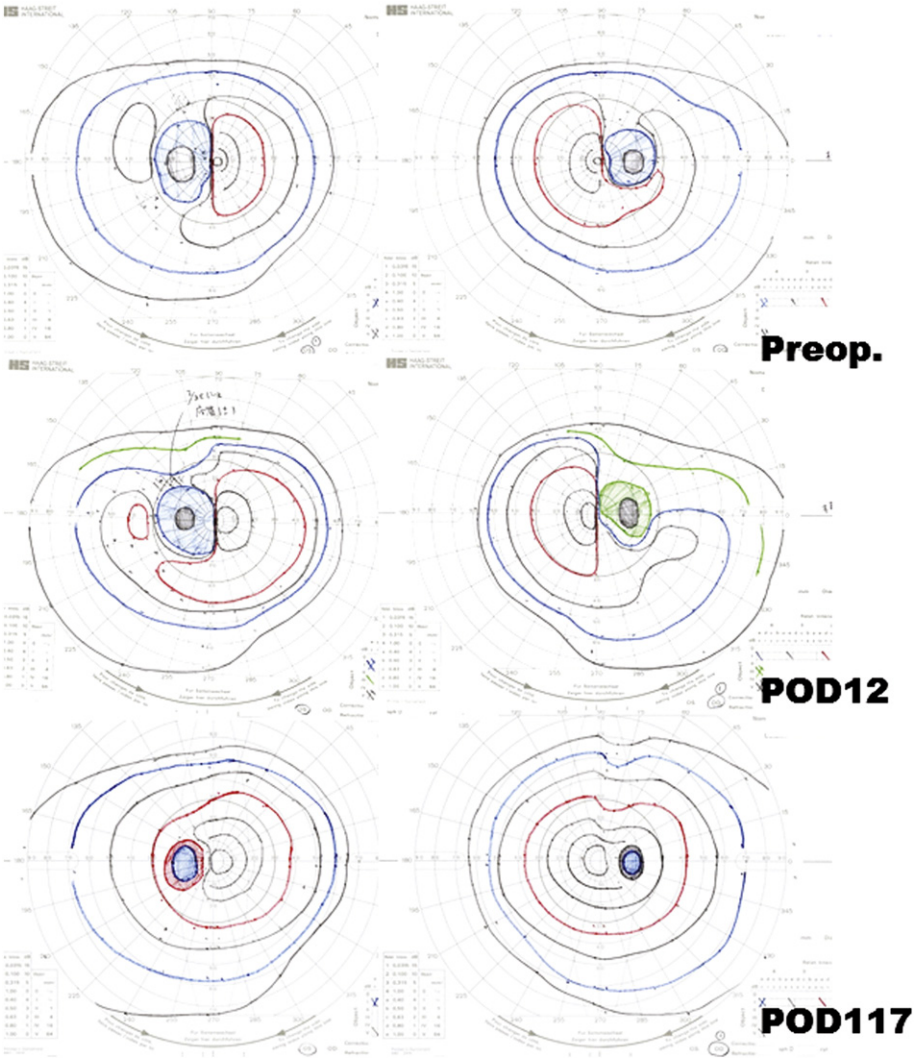

Fig. 1. Goldmann perimeter (GP) reveals bitemporal hemianopsia (upper), which is aggravated transiently after the resection of the cyst (middle). The bitemporal hemianopsia has disappeared, which is confirmed with GP (lower), four months after surgery.

case report. It will contribute to a similar case, in which surgeons hesitate to make an incision on the optic chiasm.

Case presentation

A 22-year-old man, with a history of intermittent retrobulbar pain for two years, gradually developed left-eye dominant visual disturbance over two months. Ophthalmological examination revealed bitemporal hemianopsia (Fig. 1, upper). Magnetic resonance (MR) imaging demonstrated a suprasellar cyst with intracystic fat contents forming a fluid level, indicating the lesion as a dermoid cyst (Fig. 2, B, C, E, F). Computed tomography (CT) showed no calcification of the lesion (Fig. 2A and D). The patient underwent endoscopic endonasal transsphenoidal removal of the cyst for optic pathway decompression and for histopathological diagnosis of the lesion. The cyst was the same in color as the optic nerve/chiasm and well-demarcated from the surrounding structures, such as the pituitary, the anterior cerebral arteries, or the basal frontal lobes, except for the anterior optic pathway. The cyst contents obtained by needle puncture were creamy white emulsive fluids. Aspiration of the cyst contents enabled observation of the attachment site of the cystic lesion on the anterior optic chiasm. The cyst wall seamlessly continued to the optic chiasm and to the optic nerves bilaterally, which was visually confirmed under high-definition endoscopic vision. The pituitary stalk was intact and not affected by the lesion (Figs. 3F and 4B). Only the wall of the collapsed suprasellar cyst was gross-totally removed with endoscopic procedures with great care. Pathologically, the removed tissue was diagnosed as dermoid cyst, being lined by squamous epithelium and endowed with skin appendages, including pilosebaceous units; marked lymphocytic (T-cell-dominant) infiltration was evident (Fig. 5).

Postoperative course was uneventful. Postoperative examination showed that the gross total resection transiently aggravated the patient's visual field disturbance (Fig. 1, middle), which almost recovered in four months (Fig. 1, lower). He did not experience postoperative meningitis or hypopituitarism including diabetes insipidus. The patient was discharged with sufficient pituitary reserve. Postoperative MR imaging showed no residual lesion (Fig. 6). The patient has been closely monitored for relapse of dermoid or as a component of immature teratoma. He has remained free of recurrence at one-year follow-up.