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## Case Report

# Case report: Scattered intraventricular lesions on MRI following epidermoid cyst resection ☆☆☆

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## ABSTRACT

Local recurrence after epidermoid cyst surgery is a frequently reported complication, but intraventricular spread after surgery has not yet been described in literature. We present the case of a 61-year-old male patient with steadily progressive headaches after surgical excision of an epidermoid cyst in the right cerebellopontine angle about two months ago. The MRI showed multiple intraventricular FLAIR-hyperintensities with diffusion restriction, suggestive of scattered remnants of the epidermoid cyst. We recommend early postoperative MRI-scans after cranial epidermoid surgery, which should be carefully inspected not only for local remnants but also rare complications like intraventricular spread.

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## Introduction

Epidermoid cysts are slow growing and benign lesions, although a rare malignant transformation has been described in literature [1,2]. About 40%-50 % of them occur in the cerebellopontine angle [3–6]. The majority of patients only show symptoms in late stages which is due to the slow growth of this mainly benign entity and the associated local displacement of brain structures. The most common symptoms in-

clude headaches, vertigo and symptoms related to the seventh and eighth cranial nerve, explained by the mass effect in this specific brain area [3,5,7].

Complete surgical resection is considered curative. Local recurrence in the boundaries of the surgery site is frequent [3,5,6,8], but intraventricular spread of an epidermoid cyst after surgery has not been reported in the literature yet.

We present a case of newly delineated intraventricular lesions after epidermoid resection, suggestive of scattered epidermoid remnants.

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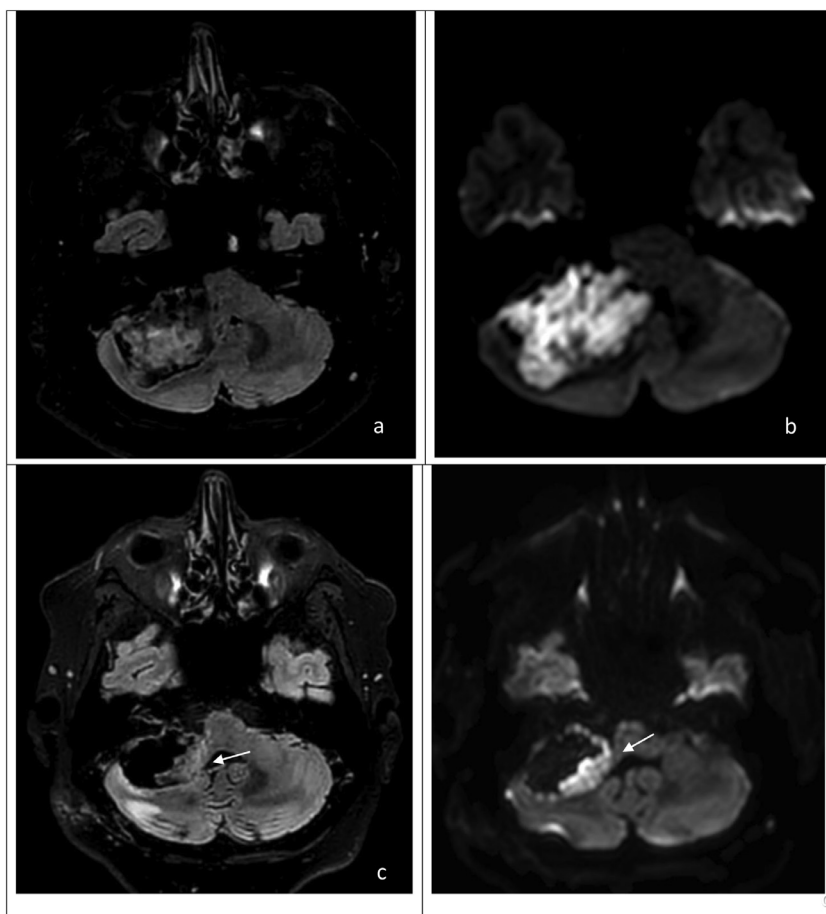
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**Fig. 1 – preoperative MRI and postoperative MRI scan after symptom onset**

**Axial FLAIR (A,C) and DWI (B,D) slices**

**Preoperative imaging demonstrates an extensive epidermoid cyst in the right cerebellopontine angle. The postoperative MRI scan reveals a diffusion restriction at the edge of the resection site with matching FLAIR-alterations in keeping with local epidermoid remnants (white arrows)**

## Case report

A 61-year-old man presented to the emergency department with steadily increasing headaches and vertigo for about two months. He was afebrile and had undergone surgery of an extensive epidermoid cyst in the right cerebellopontine angle two months ago with an unremarkable direct postoperative course. Clinical examination revealed no neurological deficits except for a subtle mental deceleration. An emergency cranial computed tomography showed moderate dilatation of the lateral ventricles indicating incipient cerebrospinal fluid blockage. No intraventricular hemorrhage or any other acute pathology could be detected. The patient was subsequently hospitalized for further assessment. Repeated lumbar puncture only showed an increase in white blood cells, but did not identify an underlying pathogen.

A subsequent MRI scan including multiplanar FLAIR and DWI sequences demonstrated progressive ventricular enlargement as well as restricted diffusion and FLAIR signal alterations in the marginal area of the surgery site, suggesting epidermoid remnants (Fig. 1). Compared to a preoperative

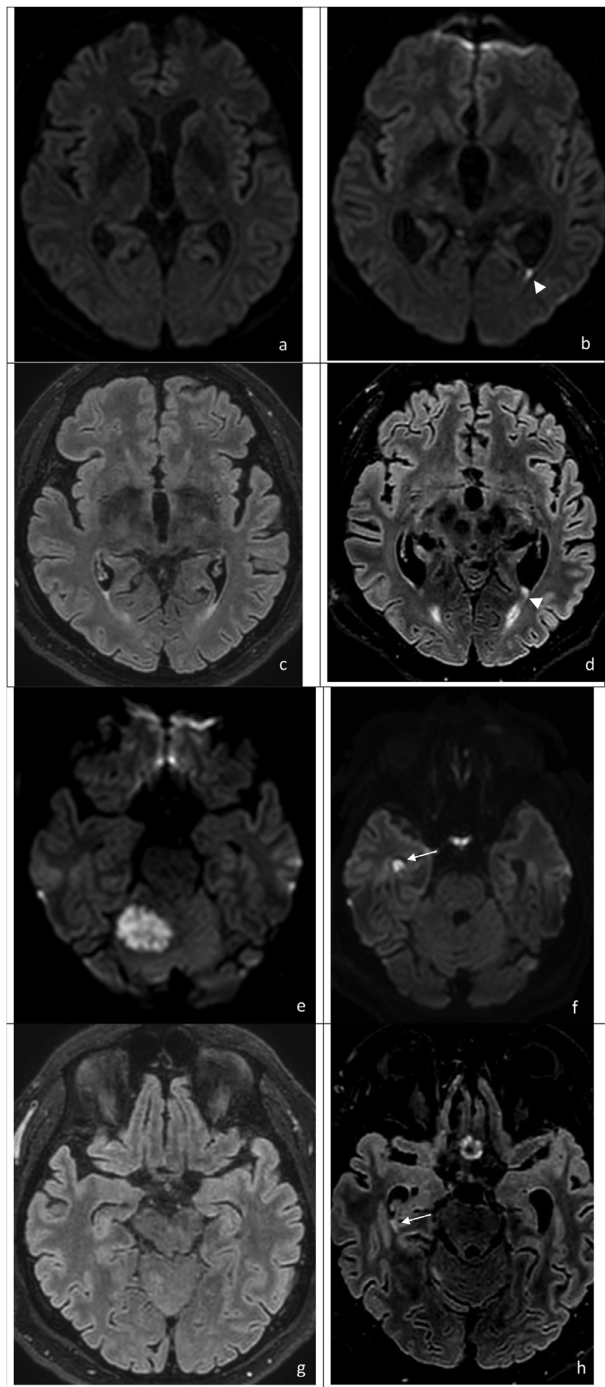
MRI, new intraventricular FLAIR-hyperintensities with diffusion restriction in the lateral ventricles were observed (Fig. 2). Based on their signal behavior, these lesions were interpreted as scattered intraventricular remnants after epidermoid cyst resection.

A ventriculoperitoneal shunt was successfully implanted due to the increasing width of the internal CSF spaces. Several CCT controls showed a reduction in ventricular width and the patient's symptoms improved significantly.

Finally, the diagnosis of aseptic meningitis was considered the most likely and the patient was discharged to outpatient care.

## Discussion

The classic epidermoid cyst usually shows a typical pattern on MRI following the signal of CSF in all sequences with the exception of FLAIR signal alterations and a distinctive diffusion restriction [12,13]. Only in rare cases atypical imaging patterns can be seen, for example in the case of hemorrhage [7].



**Fig. 2 – Comparison between the preoperative and postoperative MRI scan.**  
**Slice-matching DWI (A,B,E,F) and FLAIR images (C,D,G,H)**  
 The comparison of pre- and postoperative imaging reveals new and atypical hyperintensities in the left occipital horn (white arrowheads) and right temporal horn (white arrows) in keeping with scattered remnants of the epidermoid cyst. Dilated ventricles in the postoperative images are noted

These specific signal changes were also evident in the newly delineated intraventricular lesions. Although we have no pathological or cytological confirmation, from a radiological point of view the diagnosis of intraventricular spread of epidermoid tissue is very likely.

Radiologically, differential diagnoses were xanthogranulomas of the choroidal plexus, intraventricular hemorrhages and even ventriculitis. A few reports also describe ruptures of epidermoid cysts with droplets of epidermoid tissue in the ventricle. In contrast to our case, these ruptures cause acute onset of symptoms including hydrocephalus and aseptic/chemical meningitis [1,5,7,9-11].

We were able to exclude these differential diagnoses with high certainty in synopsis with the sequential CCT and MRI, the distinctive location of the intraventricular lesions, and the patient's symptoms.

Our patient had an unremarkable early postoperative course without complications. Only in the later course of about two months, a hydrocephalus with aseptic meningitis appeared. This can be considered as an outcome so far only expected in the early postoperative course or in the context of a rupture as mentioned above. We therefore assume that the intraventricular epidermoid cells entered the ventricular spaces perioperatively and caused the delayed symptoms.

## Conclusion

The findings are very suggestive of perioperative intraventricular spread of epidermoid cyst remnants. The late onset of symptoms can be considered a late complication, which has not been reported previously. We suggest that early postoperative high-resolution MRI might be useful even in asymptomatic patients immediately after surgery. This way, also rare complications like intraventricular spread can be detected and complications like the development of a hydrocephalus and meningitis might be preventable.

## The authors of "Case Report

Scattered intraventricular remnants after epidermoid cyst resection" declare that the manuscript has not been previously published and that they have no conflict of interest. This study was not supported by any funding. For this type of study formal consent is not required.

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