

SQUAMOUS CELL CARCINOMA GROWING ALONG THE MARGINS OF EPIDERMOID CYST

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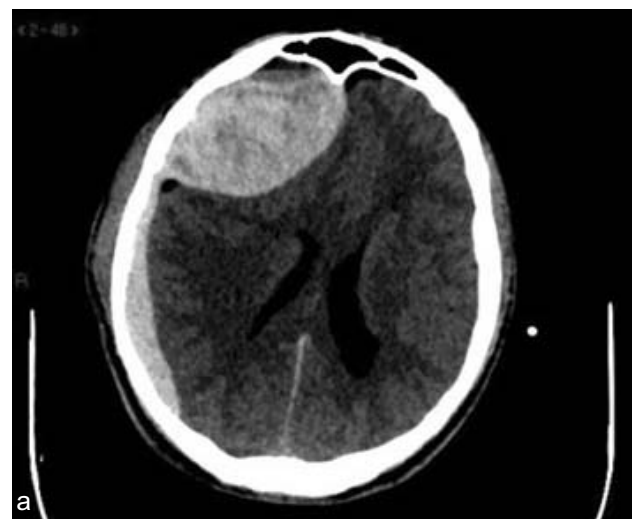
ABSTRACT

We report case of 27 years old male of a rare complication of epidermoid cyst with malignant transformation into squamous cell. Patient underwent surgery 4 months back for resection of epidermoid cyst. The patient presented post-operatively to our setup when he started having pain and swelling at surgical site which was growing progressively. Initial investigations of CT and MRI were done which showed imaging features similar to epidermoid cyst. Re-exploration surgery and histopathology confirmed keratin pearls which are seen in epidermoid cyst. On follow-up, the imaging not only showed post-surgical complications but also interval development of nodular and enhancing masses in the surgical bed. Patient underwent surgery again for post-operative complications. Biopsy was taken from tumor site. Histopathological slides of squamous cells with keratin pearls correlated with our findings of squamous cell carcinoma on imaging. Fewer cases of epidermoid cyst's complication into malignancy are reported in literature. Our purpose is to highlight one of such cases.

Case Report

A young 27 years old male, with history of right temporal lobe epidermoid cyst subtotal resection presented with headache and neurological deficit. Initial investigation with CT showed a large subdural hematoma. Surgery for evacuation of hematoma was performed, which underwent unforeseen complications like collections and midline shift as well as uncontrollable bleeding. Biopsy sample was also taken at that time which showed lamellated keratin flakes, seen in epidermoid cyst. Serial follow-up imaging with CT scan and MRI were performed post-operatively. Later, within a month, patient developed large progressive scalp swelling. On follow-up MRI, T1 and T2 weighted images, heterogeneous isointense to hypointense nodular masses were noticed along the surgical site in right frontoparietal and temporal regions. These on post contrast images enhanced heterogeneously more so along the peripheral margins of the prior tumor site. Suspicion

of malignant transformation of epidermoid cyst was raised by radiologist for which patient underwent surgery. Re-exploration surgery was challenging due to patient's prior co-morbidities. The solid enhancing



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tumor components were removed surgically. Histo-pathological slides were sent, which showed abundance of eosinophilic cytoplasm and pleomorphic nuclei. The presence of keratin pearls in these slides confirmed the malignant transformation of primary intracranial epidermoid cyst into squamous cell carcinoma.

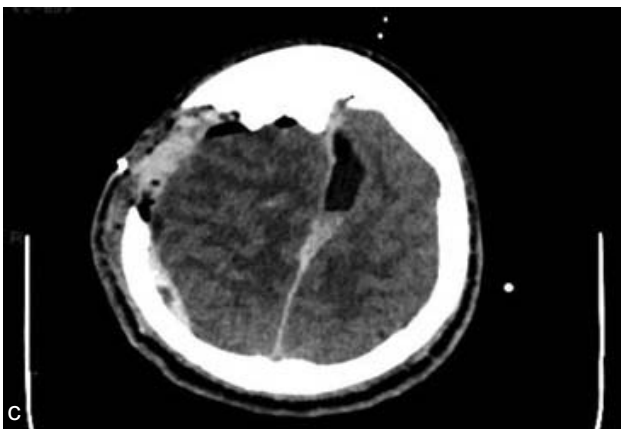
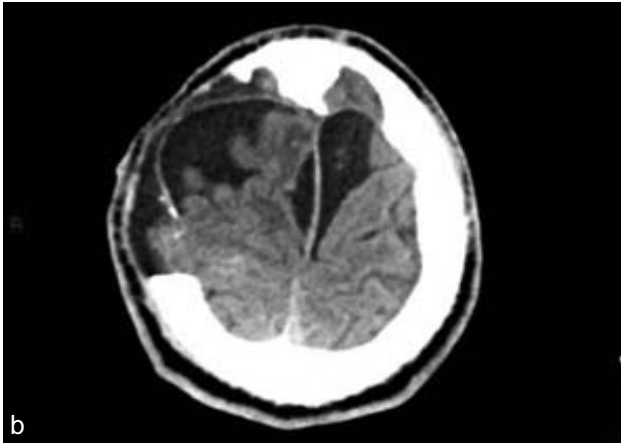


Figure 1a,b,c: Computed Tomography, axial section. **A:** Initial post-operative scan with large hyperdensity in right fronto-parietal region consistent with subdural hematoma. **B & C:** Subdural hematoma with blood levels layering at dependant part of hematoma. Post surgical changes of isodense collection, air, edema and bleed are also seen.

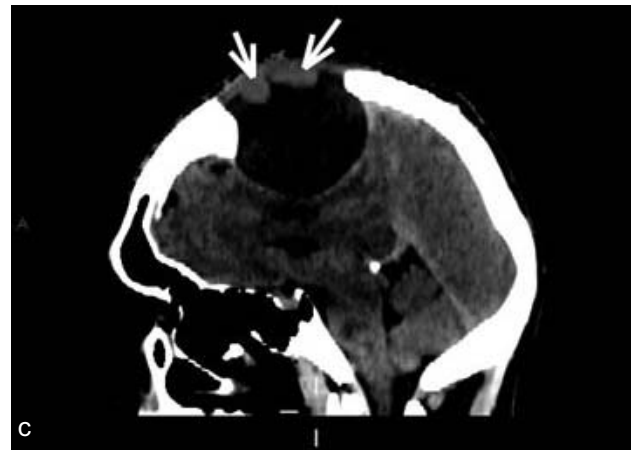
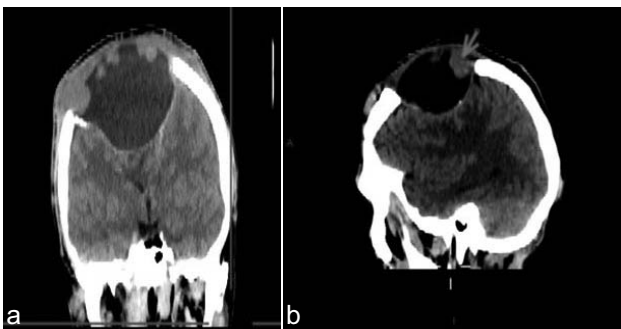
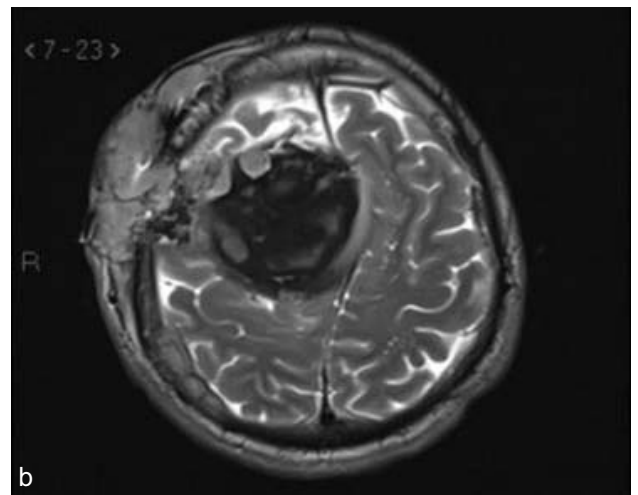
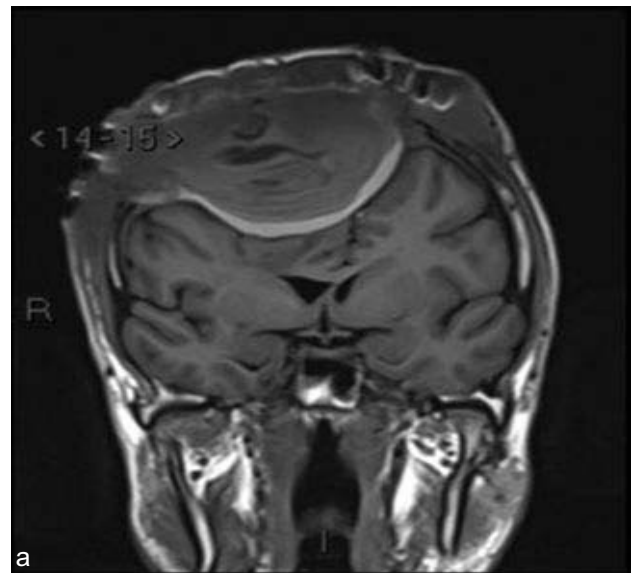


Figure 2a,b,c: CT scan axial sections. After re-exploration for evacuation of hematoma, on further serial follow-up CT scan, nodular masses were noticed along the surgical site. The lesions are peripheral and noted along the collections in right frontoparietal region. There is significant mass effect and midline shift.



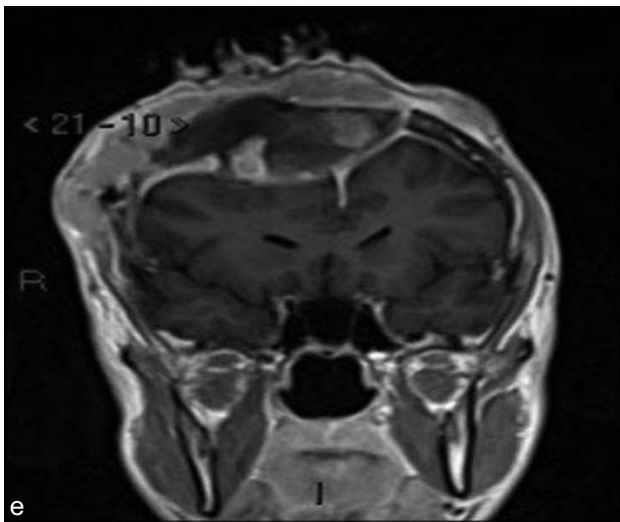
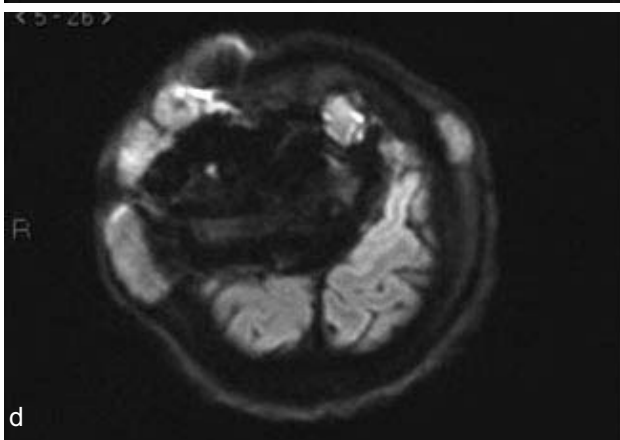
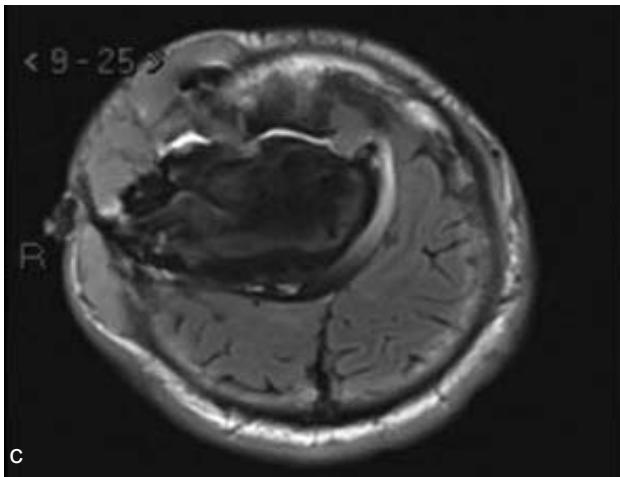


Figure 3a,b,c,d: Magnetic resonance Imaging. **A:** Coronal T1 weighted image: Iso to hypointense peripheral nodular mass with significant mass effect upon underlying brain parenchyma. **B:** Axial T2 weighted image heterogeneous nodular peripheral masses at surgical bed. **C:** FLAIR images with iso to hyperintense nodular masses in surgical bed on right side. **D:** DWI images with patchy restriction in nodular masses on right side. **E:** Coronal post contrast T1WI, heterogeneous enhancement in lesions peripherally located, suggesting tumor growth.

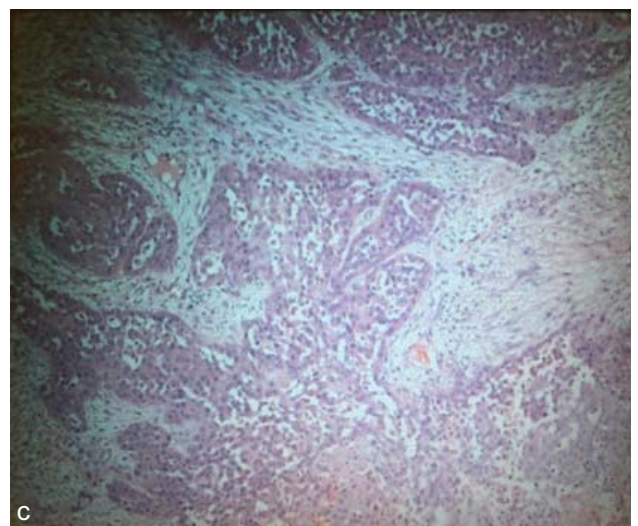
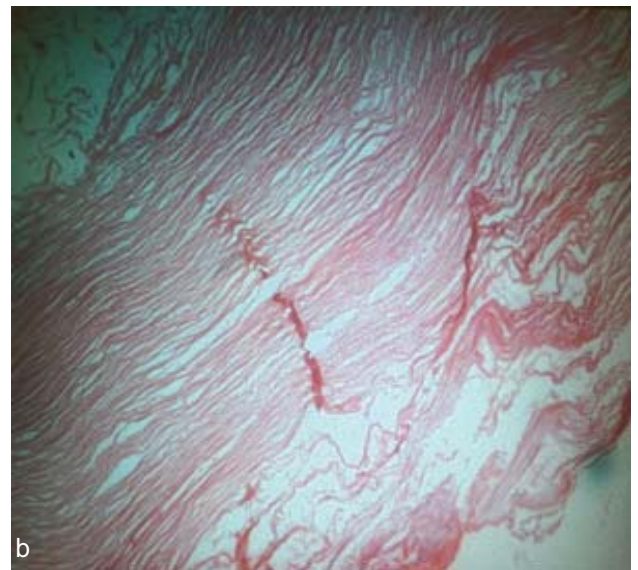


Figure 4a,b,c: **A:** surgical exploration of tumor. **B:** of histopathology slide which shows lamellated keratin flakes, consistent with epidermoid cyst. **C:** Large sheets of squamous cells with abundant eosinophilic cytoplasm and pleomorphic nuclei. Keratin pearls also seen

Discussion

Squamous cell carcinoma; is rare in brain. It is also seen as a rare sequela of benign cerebral epidermoid cyst with only fewer than 60 cases reported in literature.^{1,2,3} Epidermoid cysts consist of cholesterol, water and keratin pearls. Microscopically, epidermoid cyst has stratified squamous epithelium but only without vascularity. Surgical intervention is rarely required depending upon the mass effect of cyst upon underlying brain parenchyma.

Desquamation of epidermoid cyst leads to increased risk of malignancy. It is believed that chronic inflammation associated with rupture of epidermoid cyst maybe the causative factor or subtotal resection maybe the causative factors for development of neoplasia, however exact etiology remains unknown.^{2,4} Previously reported cases showed prior surgical histories, where squamous cell carcinoma grew post-operatively.³

Our case is based on the latter theory where subtotal resection followed by multiple histories of surgeries became the potential factor in developing malignancy. On our retrospective analysis of previously obtained histopathology slides, lamellated keratin flakes were noticed, consistent with epidermoid cyst. Since on follow-up, there was persistent swelling on scalp, MRI was performed which showed multiple enhancing masses to be growing exclusively along the previously resected tumor site. Based on radiological findings, surgical exploration was mandatory. Re-biopsy showed large sheets of squamous cells with abundant eosinophilic cytoplasm and pleomorphic nuclei. Keratin pearls were also seen.

Epidermoid cysts are mostly hypodense cyst like masses following CSF signal intensity in brain. Squamous cell carcinoma is enhancing tumor in epidermoid cyst as a result of desquamation.² On MRI, these are mostly heterogeneous, hypointense or hyperintense due to tumor increased cellularity or necrosis, respectively. These tumors also show restriction on DWI, which was also observed in our case. Further, on contrast enhanced T1 weighted images there is ring-like or peripheral enhancement in tumor. Our case demonstrated the peripheral and intense enhancement of nodular lesions along the resected tumor margins.

Surgery for primary intracranial epidermoid cyst is

not necessary unless there are complications like mass effect or neurological deficits. In our case, since the patient was developing tumor, surgery was inevitable. The tumor was badly adherent to neurovascular structures in our case. Combination of surgery and radiotherapy may provide some benefit to prolong patient's quality of life.

Teaching Point

The underlying mechanism causing malignant transformation of epidermoid cyst is not well known, but chronic inflammation with cyst rupture or subtotal resection of the cyst may be potential factors.⁵

Conflict of Interest: None

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