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A Rare Case Of Malignant Skin Adnexal Tumor Of Eccrine Origin

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ABSTRACT

Malignant adnexal tumors of the skin are rare neoplasms that arise from eccrine, apocrine, sebaceous, or follicular units and account for less than 1% of all skin malignancies. They often mimic more common skin cancers both clinically and histologically, posing diagnostic challenges. Here, we report a case of a 73-year-old female with a recurrent scalp swelling, eventually diagnosed as a malignant adnexal tumor of eccrine origin. The patient underwent wide local excision with free flap reconstruction. Histopathological examination confirmed complete tumor excision with clear margins. This case highlights the importance of considering adnexal carcinoma in the differential diagnosis of scalp lesions and underscores the critical role of histopathology and surgical management in such cases.

Case presentation

A 73-year-old woman presented with a recurrent, slowly progressive scalp swelling over the occipital region for two years, associated with intermittent pricking pain. She had undergone a previous excision two years earlier, but no histopathological records were available. CT showed mixed density heterogenous lesion with surface calcification in the scalp. Wide local excision was done and histopathological examination revealed a malignant adnexal tumor, of eccrine origin. The post-excisional defect was managed with a free thoracodorsal artery perforator flap. The patient had an uneventful recovery with no immediate postoperative complications

Keywords: *Skin adnexal tumor, Malignant adnexal neoplasm, Scalp swelling, Eccrine tumor, Wide local excision*

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1. INTRODUCTION

Skin adnexal tumors (SATs) are a diverse group of epithelial neoplasms derived from structures associated with skin appendages—namely eccrine and apocrine sweat glands, sebaceous glands, and hair follicles[1]. Skin cancer has emerged as the fifth most commonly reported cancer in the world, causing a burden on global health and the economy. The enormously rising environmental changes, industrialization, and genetic modification have further exacerbated skin cancer statistics. Current treatment modalities such as surgery, radiotherapy, conventional chemotherapy, targeted therapy, and immunotherapy are facing several issues related to cost, toxicity, and bioavailability thereby leading to declined anti-skin cancer therapeutic efficacy and poor patient compliance[2]. While the majority are benign, malignant counterparts are exceedingly rare and can be diagnostically challenging due to overlapping histological features with other primary skin cancers and metastatic tumors. Skin cancer is a global threat to the healthcare system and is estimated to incline tremendously in the next 20 years, if not diagnosed at an early stage[3]. Most countries will need to accelerate their efforts to reduce NCD burden, including cancer, to meet this SDG target.6,7 Increasing the pace of progress will be particularly critical given the ongoing COVID-19 pandemic, which has led to delays and disruptions in cancer screenings, diagnosis, and treatment around the world[4].

Malignant adnexal tumors account for less than 0.1% of all skin cancers and approximately 1–2% of all skin adnexal tumors, making them an uncommon but important clinical entity[5]. Among these, eccrine carcinomas represent a small subset, with an estimated incidence of 0.005–0.01 cases per 100,000 individuals per year. They typically occur in older adults and have a predilection for the head, neck, and extremities due to the abundance of eccrine glands in these areas[6].

Malignant eccrine tumors include a spectrum of neoplasms such as eccrine carcinoma, porocarcinoma, syringoid

carcinoma, and microcystic adnexal carcinoma. Clinical features are often nonspecific and include painless nodules, plaques, or ulcerated lesions. These tumors may be mistaken for more common malignancies like basal or squamous cell carcinoma, leading to diagnostic delays[7].

Definitive diagnosis is reliant on histopathology and immunohistochemistry. Features such as ductal differentiation, high mitotic index, and necrosis often point toward eccrine origin. Treatment primarily consists of wide surgical excision with margin clearance. Due to the risk of local recurrence and metastasis, particularly with eccrine carcinomas, long-term follow-up is essential[8].

We report a rare case of a malignant adnexal tumour of probable eccrine origin located on the scalp in an elderly woman, with details of clinical presentation, surgical management, and histopathological findings.

2. CASE PRESENTATION

A 73-year-old woman presented to the surgical department with a recurrent swelling over the parieto-occipital region of the scalp, present for two years.(Fig. 1A, 1B) She noticed the swelling 3 months after the previous excision. The swelling was gradually increasing in size, and associated with intermittent pricking pain. There was no history of neurological symptoms such as headache, seizures, or visual disturbances. She had previously undergone surgical excision of a similar swelling of smaller size over the occipital region two years earlier, though histopathological records were unavailable.

A CT scan showed a mixed-density, heterogenous, well-defined hypodense lesion involving the calvarial soft tissue of the posterior high parietal scalp, measuring approximately 6.8 × 7.5 × 3.5 cm with foci of surface calcification. No significant bone involvement was noted.(Fig. 3A,3B) An incisional biopsy performed showed features a malignant adnexal tumour.

We proceeded with a wide local excision with a 1 cm margin all around and the excised lesion was oriented and sent for histopathological analysis.(Fig. 2A,2B,2C) A free thoracodorsal artery perforator flap over the post-excisional defect measuring 16 × 12 cm was done in the same setting. Split skin graft was placed over the donor site.

The excised scalp specimen showed a tumour made up of small cuboidal cells arranged in lobules, nests, and broad columns extending from the epidermis, with monomorphic nuclei, scant eosinophilic to clear cytoplasm, and evidence of ductal differentiation.(Fig 6A, 6B) Extensive necrosis and frequent mitoses were noted, but all surgical margins were free of tumour. The overall features were consistent with a malignant adnexal tumour, most likely of eccrine origin. The postoperative period was uneventful.

3. DISCUSSION

Malignant eccrine tumors are extremely rare and account for a minor fraction of skin cancers. They include a broad spectrum of histological subtypes such as eccrine carcinoma, porocarcinoma, and syringoid carcinoma. Clinical presentation is often subtle, and diagnosis is frequently delayed. In our case, the recurrence of swelling after a previous excision and the nonspecific radiologic findings led to the initial differential of a dermoid cyst[9].

Histologically, eccrine carcinomas demonstrate ductal structures, small cuboidal tumour cells, and high mitotic activity. In our case, ductal differentiation with eosinophilic cuticle and areas of necrosis supported the diagnosis. Immunohistochemistry, which is recommended for definitive diagnosis, was not performed due to resource constraints, but the histological features were consistent with eccrine carcinoma.

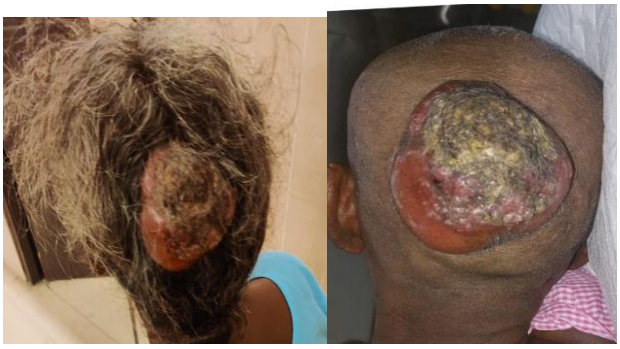
Complete surgical excision with tumour-free margins is the cornerstone of treatment. Mohs micrographic surgery has been advocated in some cases to achieve optimal margin clearance[10]. Due to their potential for local recurrence and distant metastasis, long-term surveillance is necessary. Adjuvant radiotherapy and chemotherapy have been used selectively in high-grade or metastatic cases[11].

Reconstructive surgery following wide local excision may involve local flaps, pedicled flaps, or free tissue transfer. In this case, a free thoracodorsal artery perforator flap provided adequate coverage and satisfactory aesthetic results. Skin adnexal carcinomas are aggressive skin cancers known for their tendency to recur locally. The risk of recurrence is especially high in cases with unfavourable features such as perineural invasion, lymph node involvement, positive surgical margins, high tumour grade, multifocal disease, recurrence, or extracapsular extension. Effective local and regional disease control can often be achieved through surgical excision followed by adjuvant radiotherapy, particularly in patients with these high-risk factors[12]. Adjuvant radiotherapy is considered especially in cases with positive surgical margins, perineural invasion, lymph node involvement, or high-grade tumours with aggressive histology to reduce the risk of local recurrence. Postoperative radiotherapy can enhance local control, particularly in cases where complete resection is not feasible due to anatomical constraints, or when the tumour shows aggressive features such as deep infiltration or high mitotic index[13].

This case underscores the importance of considering malignant adnexal neoplasms in the differential diagnosis of recurrent scalp swellings in elderly patients and highlights the role of surgical excision combined with reconstructive planning.

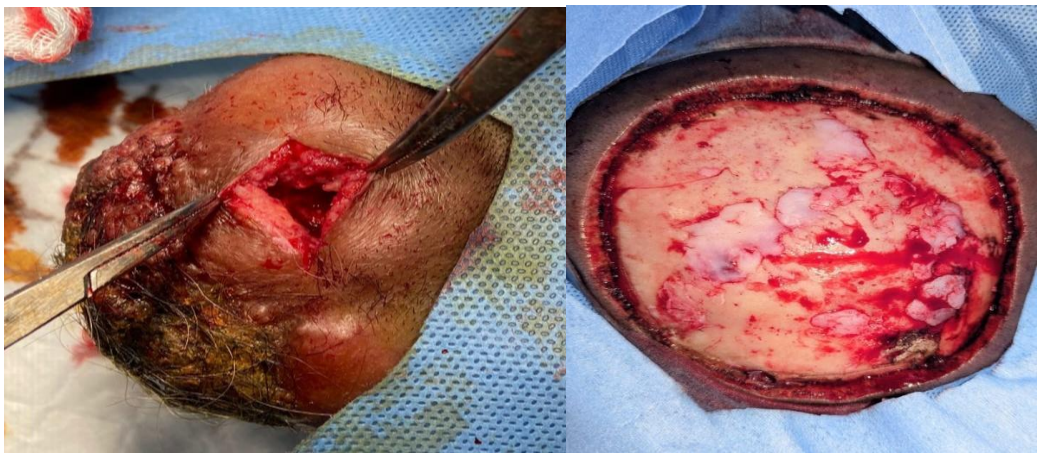
4. CONCLUSION

Malignant adnexal tumours, though rare, must be considered in elderly patients presenting with recurrent or rapidly growing scalp lesions. Diagnosis depends on histopathological and immunohistochemical evaluation. Wide local excision with clear margins remains the definitive treatment. Multidisciplinary management including reconstructive surgery may be necessary for large defects. Long-term follow-up is crucial due to the risk of recurrence and metastasis. Radiotherapy can be given in case of inadequate margins.

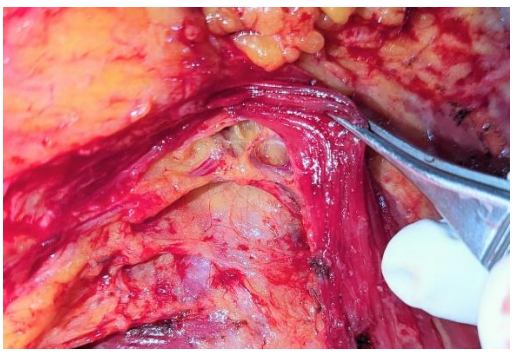


1A **1B**

Figure 1A,B: Pre-operative images of the tumor

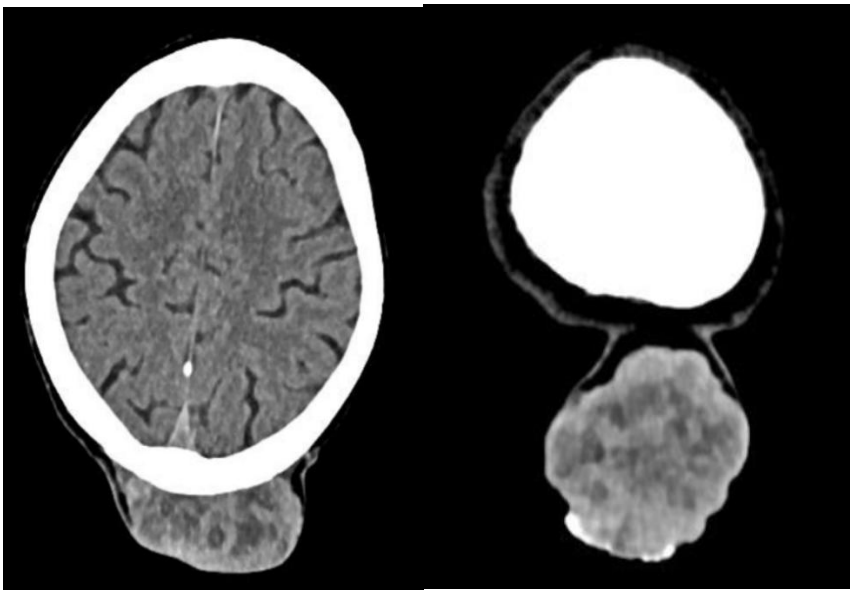


2A **2B**



2C

Figure 2A, B,C: Intraoperative images of the patient



3A 3B

Figure 3A, B: CT images showing the extent of the tumour

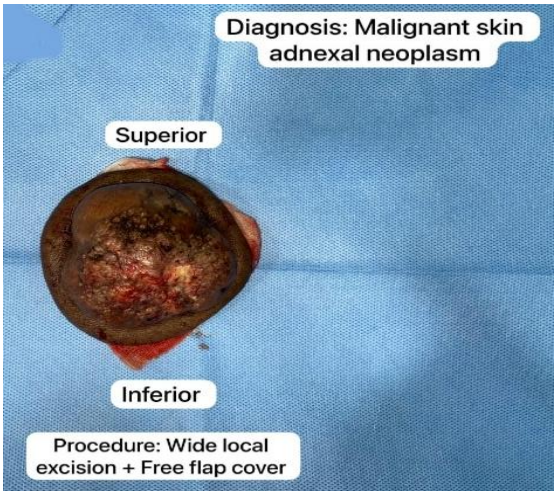
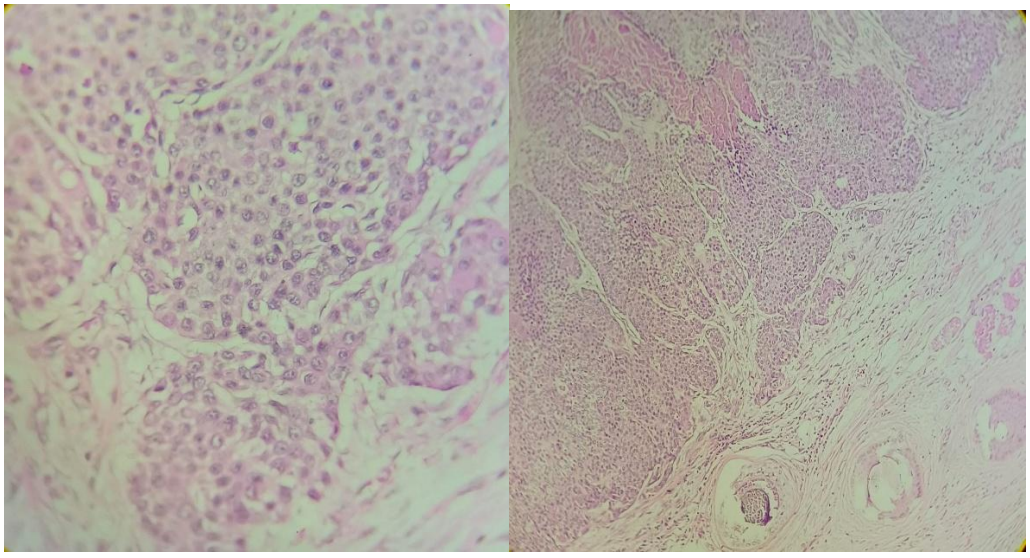


Figure 4: Specimen picture

Figure 5: Post-operative images of the patient



6A 6B

Figure 6A, B: Histopathological slide images

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