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(CASE REPORT)

# Scalp Melanoma: Characteristics of an Unusual Location

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## Abstract

Malignant melanoma of the scalp is a rare entity, representing an atypical location often associated with delayed diagnosis. This site poses a real clinical challenge due to its limited visibility and the difficulty of assessment, which can lead to late diagnosis and a more severe prognosis.

We report the case of a patient presenting with a progressive pigmented lesion of the scalp, which was confirmed as malignant melanoma on histological examination. This case highlights the clinical and therapeutic specificities of this uncommon location. A review of the literature is also provided to better understand the diagnostic and prognostic challenges associated with this clinical form.

**Keywords:** Melanoma; Scalp; Surgical excision; Prognostic factors

## 1. Introduction

Malignant melanoma is an aggressive cutaneous neoplasm arising from melanocytes, with a steadily increasing global incidence [1,2]. Among its various anatomical sites, the scalp represents an uncommon localization, accounting for approximately 5% of all cutaneous melanomas [3].

This particular site is frequently associated with a poorer prognosis compared with other locations, mainly due to delayed diagnosis [4,5]. The difficulty of clinical examination related to hair coverage, in addition to the distinctive anatomical and vascular characteristics of the scalp, contributes to rapid tumor progression and early metastatic spread [6,7].

Histologically, diagnosis is established through morphological and immunohistochemical evaluation of tumor specimens, allowing accurate characterization of the lesion [8]. The standard therapeutic approach consists primarily of wide local excision with adequate surgical margins, combined with a comprehensive staging assessment to evaluate potential lymph node involvement or distant metastases [9,10].

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## 2. Case Report

We report the case of a 73-year-old patient with no significant past medical history who presented with a progressively enlarging pigmented lesion of the scalp that had evolved over a period of nine months. The patient, with a Fitzpatrick skin phototype III, exhibited on clinical examination an asymmetrical nodular mass of the scalp measuring 15 mm in its greatest dimension, with heterogeneous pigmentation and areas of ulceration. No palpable lymphadenopathy was detected on locoregional examination.

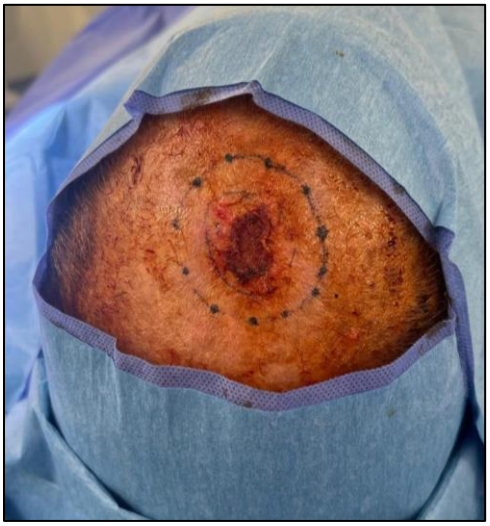

**Figure 1** Preoperative view of scalp melanoma prior to surgical excision

A biopsy was performed, and histopathological examination revealed a malignant cutaneous melanoma with a Breslow thickness of 0.5 mm and Clark level I.

Following this diagnosis, a staging work-up was carried out, including lymph node ultrasonography and thoraco-abdominopelvic computed tomography (CT) scan, which showed no evidence of distant metastases or nodal involvement.

The patient subsequently underwent wide local excision with 1-cm safety margins, in accordance with current guidelines. Histopathological analysis of the excised specimen confirmed complete excision of the lesion with tumor-free margins.

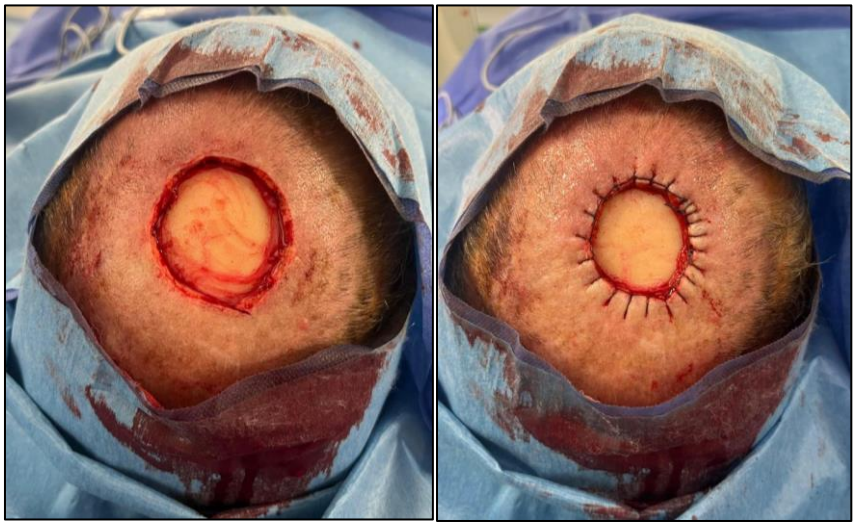

**Figure 2** Post-excisional view of the scalp melanoma surgical site

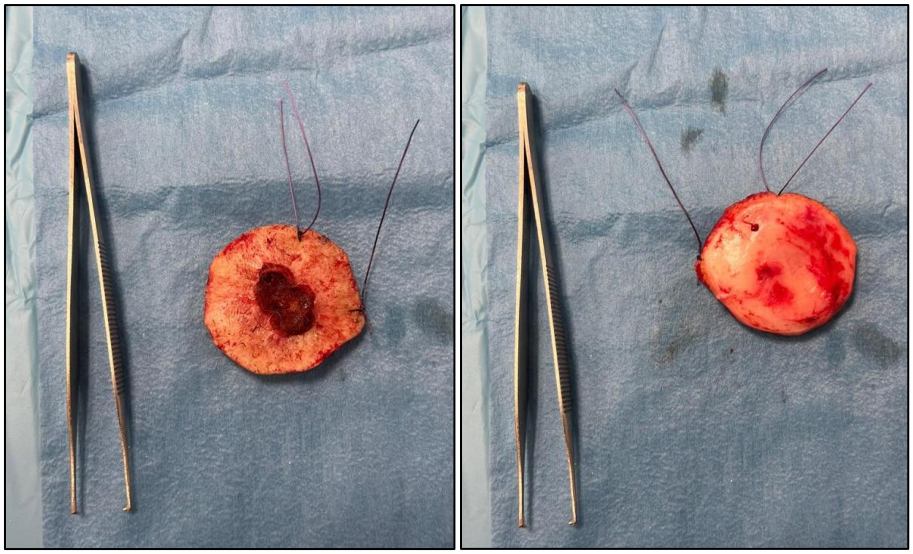

**Figure 3** Excised specimen of the scalp melanoma

Reconstruction was not performed during the same operative session; the procedure was deferred until adequate granulation of the defect was achieved. Secondary coverage was then performed using a skin graft, without the use of a flap, to allow optimal local surveillance and facilitate postoperative follow-up.

## 3. Discussion

Malignant melanoma is the most aggressive form of skin cancer, accounting for approximately 4% of all cutaneous malignancies, yet responsible for the majority of skin cancer-related deaths [11]. Management relies primarily on early diagnosis and complete surgical excision. Scalp melanoma represents a distinct entity due to its rarity, unique biological characteristics, and poorer prognosis compared with other cutaneous sites [12,13].

Although rare, malignant melanoma of the scalp carries a particularly unfavorable prognosis. Several studies have demonstrated that melanomas located on the head, and particularly on the scalp, are associated with lower overall survival compared with other cutaneous sites [4,12,14]. This increased aggressiveness is thought to be related to the rich vascular and lymphatic network of the scalp, frequent delays in diagnosis due to limited lesion visibility under hair, and specific biological characteristics of this anatomical site [15].

Delayed diagnosis is a key determinant of poor prognosis. Scalp lesions are often overlooked or misdiagnosed as benign lesions (e.g., nevi, seborrheic keratoses, traumatic lesions), leading to detection at more advanced stages, frequently beyond stage II according to the AJCC classification [9,16]. This diagnostic latency is typically associated with increased Breslow thickness at presentation, which correlates with a higher metastatic risk [16].

Although clinical evaluation is the first step in diagnosis, scalp melanomas often present atypically, making identification challenging. They may appear nodular, verrucous, or even amelanotic, and can remain hidden under hair [17]. In our case, the nodular and ulcerated appearance of the lesion, in a patient with Fitzpatrick phototype III, raised early suspicion of malignancy. While clinical suspicion is essential, definitive diagnosis relies on histopathological confirmation. Biopsy allowed confirmation of the melanocytic nature of the tumor, underscoring the importance of systematic histological assessment of suspicious scalp lesions [18]. Histopathologically, scalp melanomas most commonly present as nodular melanoma or lentigo maligna, subtypes associated with more rapid progression and higher metastatic potential [19].

Once diagnosis is established, a comprehensive staging work-up is essential to determine tumor stage and guide management. This typically includes regional lymph node ultrasonography, thoraco-abdominopelvic CT, and, in selected cases, brain MRI or PET-CT [11,20]. In our patient, no locoregional involvement or distant metastases were detected, allowing for curative surgical management alone.

Surgical excision remains the cornerstone of treatment, with margin width determined according to tumor thickness in line with international guidelines [9,21]. Excision of scalp lesions presents particular challenges due to limited tissue

elasticity and proximity to critical anatomical structures. These technical constraints can complicate wide excision, highlighting the importance of meticulous surgical planning and precise preoperative assessment of tumor extent [19,21].

Post-excisional reconstruction depends on the size and location of the defect as well as aesthetic and functional goals. In our case, reconstruction was deferred to allow for granulation. A secondary skin graft was subsequently performed without flap coverage, facilitating optimal visual surveillance of the area. This approach is particularly relevant for high-risk locations such as the scalp, as a thick flap could obscure early local recurrence [19,21,22].

Overall prognosis remains poor: 5-year survival for scalp melanomas is estimated at 60–70%, compared with 80–90% for other sites [12,23]. This discrepancy is likely due not only to delayed diagnosis but also to distinct biological features, including increased expression of molecular signatures associated with invasiveness and treatment resistance [24].

The advent of targeted therapies (anti-BRAF, anti-MEK) and immunotherapies (anti-PD-1, anti-CTLA-4) has substantially improved outcomes for advanced melanomas, including those of the scalp [25]. However, data specific to this anatomical location remain limited, and further studies are needed to evaluate efficacy and optimize multidisciplinary management.

Post-therapeutic follow-up is a critical component of care, enabling early detection of local recurrence, lymph node involvement, or distant metastases. Follow-up is based on regular clinical examination, complemented by imaging as indicated by initial stage and clinical course. For localized cases such as ours, follow-up every 3–6 months during the first two years, then every 6–12 months up to year five, is recommended [20,26].

Finally, comprehensive management of scalp melanoma must include preventive measures. Awareness of scalp examination, both among at-risk patients and healthcare professionals, is essential. Systematic inspection of the scalp should be incorporated into any dermatologic evaluation, especially in fair-skinned patients, those with multiple nevi, or with a history of sunburns. Patient education regarding self-examination can also contribute to earlier diagnosis [27,28].

## 4. Conclusion

In summary, scalp melanoma is a rare but formidable entity. The present case highlights the diagnostic challenges associated with this location, the importance of a thorough staging work-up, the crucial role of wide surgical excision with appropriate reconstruction, and the necessity of careful and prolonged follow-up. Prevention through patient education and regular surveillance remains the most effective means of improving the prognosis of this disease.

## Compliance with ethical standards

### *Disclosure of conflict of interest*

No conflict of interest to be disclosed.

### *Statement of informed consent*

Informed consent was obtained from all individual participants included in the study.

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