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Recurrent infiltrative basal cell carcinoma with deep nodular formation and superficial lateral microextension

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Dear Editors,

Most basal cell carcinomas (BCC) can be effectively controlled with local treatment. However, in certain histological subtypes, including infiltrative BCC, tumor nests infiltrate in cord-like or micronodular patterns, which often obscure tumor boundaries both clinically and histopathologically [1]. It has also been reported that recurrent lesions may exhibit atypical patterns of tumor spread [2].

An elderly man in his 80s presented with a recurrent lesion on the posterior neck. Ten years earlier, he had undergone complete surgical excision of a basal cell carcinoma (BCC) at another hospital with a 5-mm margin to the level of the subcutaneous tissue, and the surgical margins were histopathologically negative. Approximately 1 year before presentation, an erythematous plaque appeared at the same site and gradually enlarged.

At presentation, an ill-defined erythematous plaque measuring approximately 7 cm in diameter was observed extending from the occipital region to the posterior neck, accompanied by a palpable subcutaneous nodule (Figure 1A). Computed tomography showed a corresponding high-density lesion without lymph node enlargement or distant metastasis. Skin biopsy confirmed recurrent BCC.

The tumor was excised with a 1-cm margin and the defect was reconstructed using a full-thickness skin graft. Histopathological examination revealed infiltrative BCC with deep invasion and superficial lateral microextension beyond the clinically apparent lesion (Figures 1B–D). The lateral margin was positive, and the minimum distance between the tumor and the deep surgical margin was 0.5 mm. Three weeks after the initial excision, mapping biopsies were performed at 13 sites to assess lateral tumor spread. The biopsies extended approximately 5 mm in depth to include the superficial subcutaneous tissue. Approximately 6 weeks later, additional excision was performed, with the resection boundary determined by connecting tumor-negative mapping biopsy sites (Figures 1E,F). Histopathological examination confirmed complete tumor clearance. No recurrence was observed at 6 months after the final excision.

Histopathological examination of the primary excision specimen revealed that tumor nests were distributed predominantly within the subcutaneous tissue, with only limited continuity with the epidermis. Such a distribution may be difficult to recognize clinically as a superficial lesion [3] and may lead to underestimation of tumor extent at the time of the initial excision. Because the surgical margins were judged to be negative, the lesion was followed without further treatment and eventually recurred after a long interval.

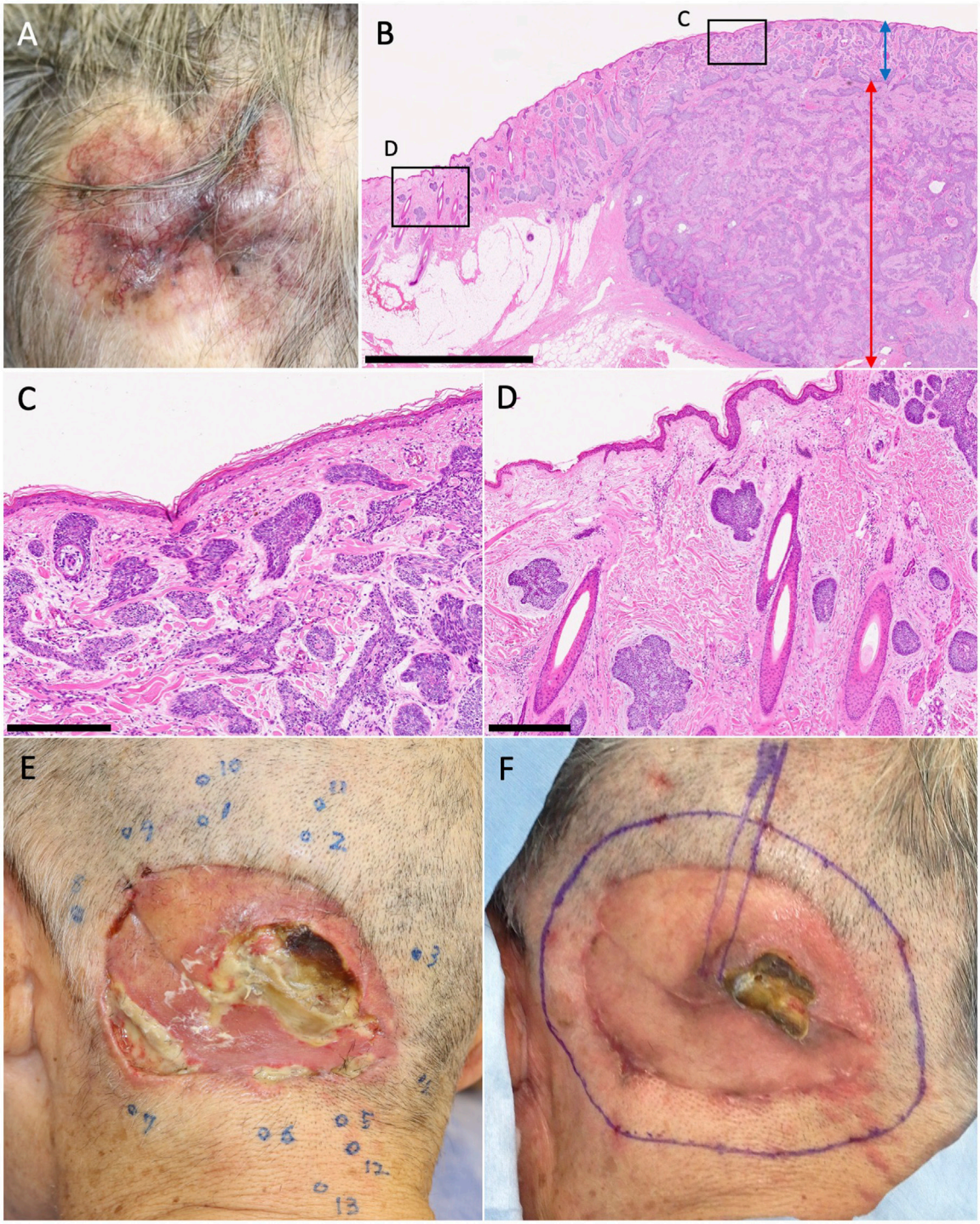

FIGURE 1
Clinical and histopathological findings of the recurrent BCC. **(A)** Clinical appearance of the recurrent lesion at the initial visit to our department. An ill-defined erythematous plaque measuring approximately 7 cm in greatest diameter was observed, extending from the occipital region to the posterior neck, accompanied by a palpable subcutaneous nodule. **(B)** Low-power view of the excised recurrent lesion. The tumor showed limited continuity with the epidermis and was distributed predominantly within the subcutaneous tissue. Two distinct components were identified: a superficially distributed tumor component showing lateral extension within the superficial subcutaneous layer and a deeper, relatively well-demarcated nodular component. The blue and red double-headed arrows indicate the approximate vertical extent of the superficial and deep tumor components, respectively. The areas outlined by black boxes correspond to the magnified views shown in panels **(C,D)**. **(C)** High-power view of the tumor. Tumor cells infiltrated in an irregular cord-like or micronodular pattern, consistent with infiltrative-type basal cell carcinoma. Tumor nests showed minimal continuity with the epidermis and were located mainly within the subcutaneous tissue. **(D)** High-power view of the lateral tumor extension. Scattered small tumor nests were sparsely distributed within the superficial subcutaneous layer, ranging from approximately 200 μm below the epidermis at the shallowest level to 1.5 mm at the deepest level, representing clinically inconspicuous lateral extension. **(E)** Post-excisional clinical photograph obtained before mapping biopsy, showing the marking sites for multiple biopsies performed to evaluate lateral tumor extension within the superficial subcutaneous layer. **(F)** Additional resection area determined by connecting sites judged to be tumor-negative on mapping biopsy. Scale bars: 5 mm **(B)**, 250 μm **(C)**, and 500 μm **(D)**.

In the recurrent lesion, the tumor formed a nodular mass within the deeper subcutaneous tissue, suggesting a more aggressive growth pattern [4]. At the same time, the tumor retained subtle lateral microextension within the superficial subcutaneous layer beyond the deep nodular component, making accurate margin determination difficult. This growth pattern may explain why the tumor extent was difficult to appreciate clinically and why conventional margin determination based on surface findings was insufficient in this case.

Changes in skin coloration and a palpable subcutaneous nodule were used as clinical landmarks for estimating the tumor boundary; however, margin determination based solely on palpation was insufficient to capture the lateral tumor spread within the superficial subcutaneous layer.

Although Mohs micrographic surgery is recommended for high-risk BCC [5], its availability varies among institutions. In retrospect, given the difficulty in clinically determining the tumor extent in this case, temporary coverage with artificial dermis at the initial excision, followed by definitive reconstruction after histopathological confirmation of clear margins, might have been a reasonable alternative approach. In situations where Mohs surgery is not feasible, mapping biopsy may be useful for assessing tumor extent and guiding appropriate surgical margins.

Data availability statement

The original contributions presented in the study are included in the article/Supplementary Material, further inquiries can be directed to the corresponding author.

Ethics statement

Ethical approval was not required because this manuscript reports a single case based solely on clinical findings obtained during routine medical care, without any additional intervention or prospective research procedures. The studies were conducted in accordance with the local legislation and institutional requirements. The participants provided their written informed consent to participate in this study. Written informed consent was obtained from the individual(s) for the publication of any potentially identifiable images or data included in this article.

Author contributions

MM and YY contributed equally to the conception of the report, acquisition and interpretation of the clinical and histopathological data, and drafting of the manuscript. KF critically revised the manuscript for important intellectual content and supervised the work. KN, SU, and AO reviewed and edited the manuscript. All authors approved the final version of the manuscript. MM and YY contributed equally to this work. All authors contributed to the article and approved the submitted version.

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Conflict of interest

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Supplementary material

The Supplementary Material for this article can be found online at: https://www.frontierspartnerships.org/articles/10.3389/jcia.2026.17511/full#supplementary-material

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