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Orbital Exenteration for Massive, Recurrent Basal Cell Carcinoma with Perineural Invasion: A Case Report

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ABSTRACT

Basal cell carcinoma (BCC) of the periocular region, though typically indolent, may behave aggressively in recurrent or large tumors. We present a case of massive, recurrent periocular BCC with perineural invasion necessitating orbital exenteration. Histopathological examination revealed infiltrative basaloid cell nests with perineural invasion, despite negative surgical margins. This report highlights the importance of recognizing high-risk pathological features in guiding radical surgical intervention.

Keywords: *Basal cell carcinoma, Histopathology, Orbital exenteration, Perineural invasion, Recurrence.*

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1. INTRODUCTION

Basal cell carcinoma (BCC) is the most prevalent cutaneous malignancy, with approximately 20% occurring in the periocular region. While most cases are managed conservatively, high-risk features, such as tumor size > 2 cm, deep invasion, recurrence, mid-facial location, and perineural invasion (PNI), may predict aggressive clinical behavior. [1]Orbital exenteration is rarely required but remains the definitive treatment in cases of extensive orbital involvement.[2] This report details a rare case of recurrent giant BCC with PNI requiring exenteration despite clear margins.

2. CASE PRESENTATION

A 55-year-old female presented with a swelling over the right lower eyelid. The swelling developed two years ago with an insidious onset and gradually increased in size. The patient reported a history of sticky discharge, a burning sensation, and difficulty opening her right eye. The patient did not report any history of fever, trauma, hypertension, or high blood pressure. During the clinical examination, a swelling measuring 8*8 cm was observed on the right lower eyelid. Skin over swelling is hyperpigmented, with no active bleeding/discharge. The patient has no sinus tract, there is no present tenderness, and the swelling is firm in consistency. No lymphadenopathy. NCCT Paranasal sinus imaging indicated an ill-defined exophytic mass of soft tissue with irregular borders. A few air density foci were present in the right preseptal region, measuring 6 x 4.8 cm and 8 x 3.5 cm. Imaging showed a large mass with displacement but no infiltration of the eyeball. Laboratory reports showed normal PT, APTT, creatinine 0.6, urea 13.0, normal LFT, and negative HIV, HBsAG, and HIV.Previously operated for twice, the last biopsy taken from the right orbit shows histopathological features suggestive of basal cell carcinoma of the right orbit. On 2/11/2024, orbital exenteration was performed due to functional obstruction. The specimen measured 7.5 × 7.5 × 4.5 cm.

Gross Examination: Type of specimen: Right orbital exenteration. Specimen laterality is right. Tumor site: Right lower eyelid. The tumor is unifocal. Specimen dimensions are 7.5*7.5*4.5 cm..

Gross examination Tumor: A single unifocal, exophytic, polypoidal, cauliflower-like growth is identified involving the right lower eyelid, measuring 5*4.5*3.5 cm. (Fig 2A) The growth completely obstructs the underlying eyeball, but on the cut surface, the eyeball appears to be involved with the tumor. The cut surface of the growth is predominantly solid grayish-white in appearance (Fig 2B) with the presence of occasional foci of hemorrhage and necrosis (Fig 2C). The growth is poorly circumscribed with ill-defined borders and is soft and friable in consistency. The skin margin, as well as the optic nerve cut margin, is grossly not involved by the tumor.

Tables

Table 1 presents the clinical timeline, highlighting the initial excision of an eyelid lesion two years ago (records unavailable), followed by a biopsy on 26/10/2024 confirming basal cell carcinoma, and subsequent orbital exenteration on 02/11/2024 with histopathological confirmation of the diagnosis.

Table 1: Timeline of Clinical Events

Time Point	**Event**
2 years ago	Initial excision of eyelid lesion (records unavailable)
26/10/2024 –Biopsy done	Biopsy confirmed BCC
02/11/2024-Orbital exenteration performed	Histopathological Diagnosis;Basal Cell Carcinoma,

Table 2 highlights the high-risk features of periocular basal cell carcinoma (BCC) as per NCCN guidelines, including tumor size >2 cm, recurrence, deep dermal invasion, and perineural invasion (PNI), all of which significantly increase the risk of recurrence, subclinical extension, poor prognosis, and may necessitate wider surgical margins or adjuvant radiotherapy.

Table 2: High-Risk Features of Periocular BCC (per NCCN guidelines)

Feature	**Present?**	**Significance**
Size >2 cm	Yes	Increased risk of recurrence and subclinical extension
Recurrence	Yes	Up to 40% recurrence rate post-surgery
Deep dermal invasion	Yes	May indicate need for wider margins
Perineural invasion (PNI)	Yes	Associated with poor prognosis; may require RT

Histopathological examination revealed infiltrative nests of basaloid cells with peripheral palisading (Fig 1A), features suggestive of Basal cell carcinoma (Nodular type). Invasion of the tumor beyond the reticular dermis is present (Fig 1B). Perineural invasion present. Areas of tumor necrosis (Fig 1C) and pigmentation are seen (Fig 1D). Sections from all the margins (superior, lateral, inferior, and medial) are negative for infiltration by malignant cells and show skin and fibrocollagenous adipose tissue. The section from the optic nerve cut margin is negative for infiltration by malignant cells

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Figures

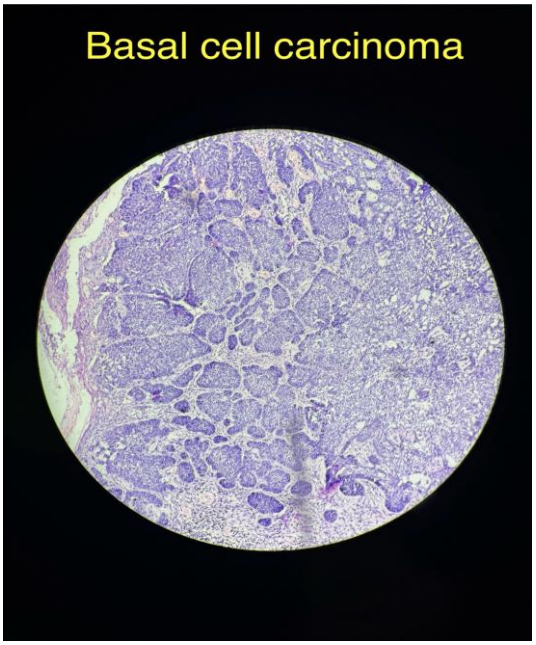

Fig 1A. H&E, 100x: Basaloid nests with peripheral palisading.

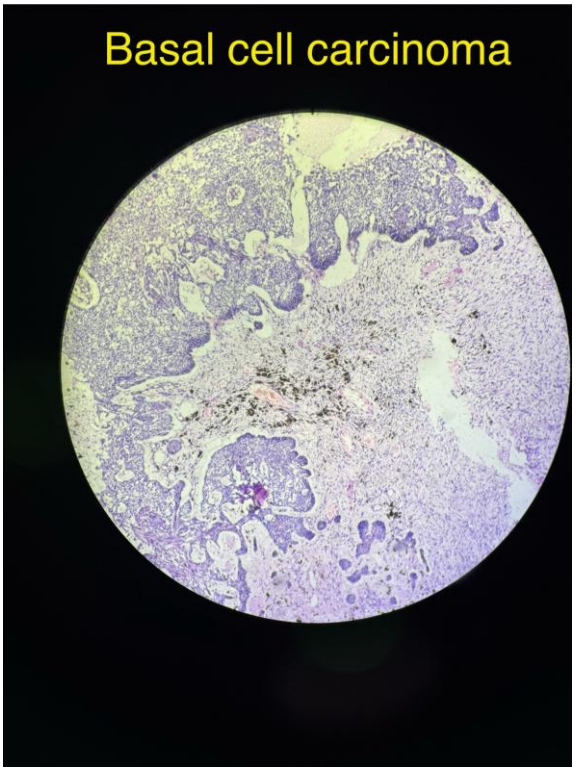

Fig 1B. H&E, 40x: Tumor infiltration beyond reticular dermis.

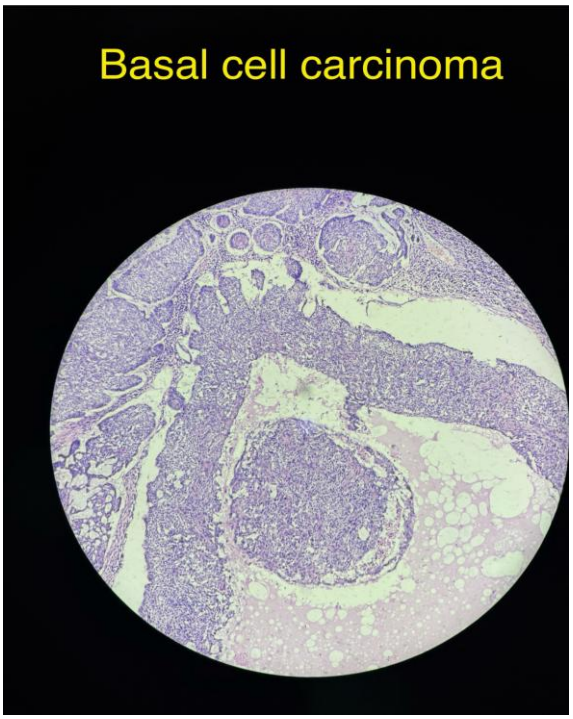

Fig 1C. H&E, 100x: Tumor necrosis.

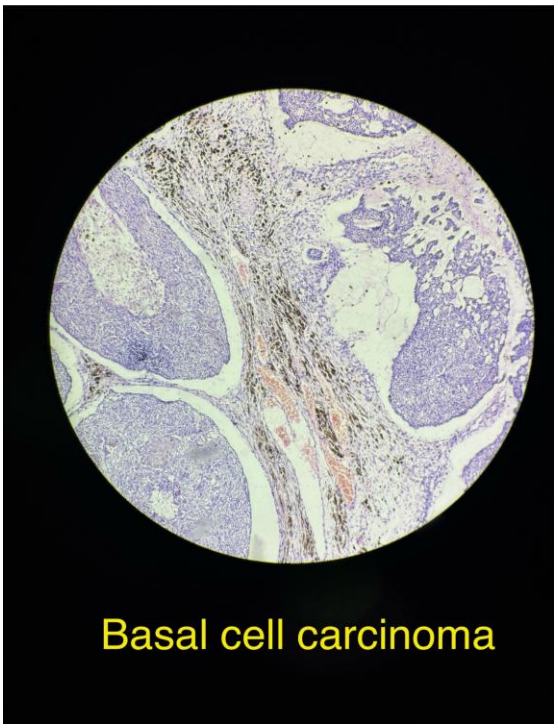

Fig 1D. H&E, 100x: Areas of pigmentation.

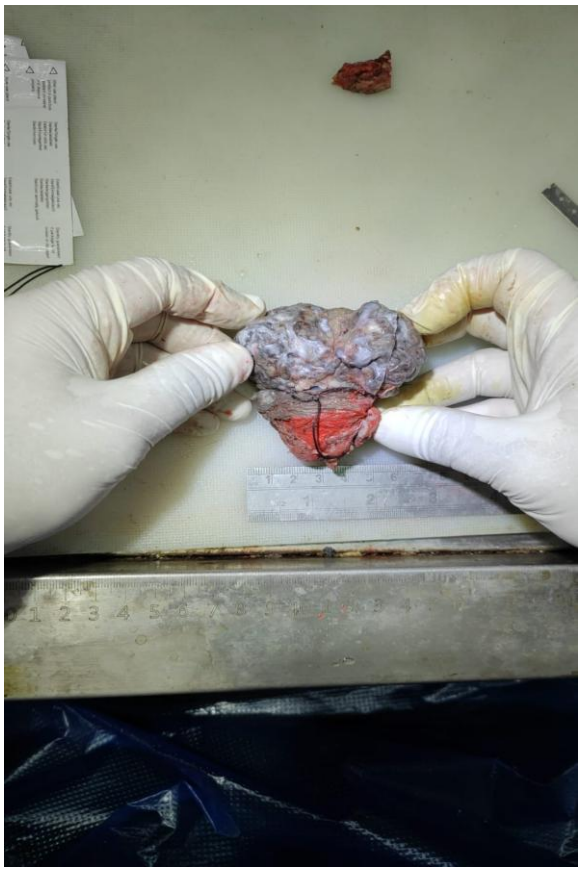

Fig 2A. External view: Large exophytic mass with polypoidal surface.

Fig 2B. Gross cut surface: Grey-white friable tumor obliterating orbital content.

Fig 2C. Cut surface with hemorrhage and necrosis; optic nerve uninvolved

3. DISCUSSION

BCC typically follows an indolent course, but in high-risk sites like the periocular area, certain features increase the likelihood of recurrence and aggressive behavior. [3]Recurrent tumors are associated with deeper tissue invasion and poorly defined margins. [4]Perineural invasion, although uncommon, is a key prognostic marker and warrants consideration for adjuvant therapy. [5] Orbital exenteration is a disfiguring but sometimes essential procedure when tumors are extensive or involve deeper orbital contents (Fig 2B). [6]In this case, exenteration was performed despite no eyeball infiltration due to massive size, recurrence, and histopathological features. Several case reports and series document instances of recurrence in basal cell carcinoma (BCC) despite having clear margins. Therefore, the presence of PNI and deep invasion can outweigh margin status in clinical decision-making. [8]Close follow-up and multidisciplinary management are necessary for such patients.

4. CONCLUSION

This case underlines the importance of recognizing pathological features like perineural invasion and deep dermal infiltration in BCC. Despite clear surgical margins, such features necessitate aggressive management and may justify radical procedures like orbital exenteration. Pathologists play a pivotal role in flagging these features to guide clinical decisions..

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