Original Article

Surgical Outcomes and Histopathological Risk Factors in Periocular Basal Cell Carcinoma: A Single-Centre Study of 100 Patients

Henry Junior Osagie[1], Radomir Babovic[2,3], Segun Awotesu[3], Dragana Kacavenda Babovic[4]

[1]James Paget University Hospital, Department of General Surgery, Great Yarmouth, United Kingdom
[2]University of East Anglia, Norwich Medical School, Norwich, United Kingdom
[3]James Paget Hospital, Department of Ophthalmology, Great Yarmouth, United Kingdom
[4]Norfolk and Norwich University Hospital, Department of Histopathology, Norwich, United Kingdom

Abstract

Objectives: To evaluate the histological subtypes, surgical margin status, and high-risk features of periocular basal cell carcinomas (BCC) excised over a one-year period at a secondary referral centre in England.

Materials and Methods: This retrospective audit included 100 consecutive periocular BCC excisions performed at James Paget University Hospital between August 2024 and August 2025. Demographic, clinical, and histopathological data were extracted from operative records and histopathology reports. Surgical margins were classified as complete (≥0.4 mm), close (0.1-0.3 mm), or incomplete (tumour present at the inked margin or <0.1 mm). Fisher's exact test was used to evaluate the association between infiltrative histological subtype and the presence of perineural invasion.

Results: Of the 100 patients included (58% male, 42% female; mean age 75.7 years), nodular BCC was the most common histological subtype (83%), followed by infiltrative (14%), superficial (2%), and basosquamous (1%) variants. Complete excision was achieved in 83% of cases, while close and incomplete margins were observed in 8% and 9% of excisions, respectively. Perineural invasion was identified in 2% of tumours, both of which demonstrated infiltrative histology. The infiltrative subtype showed a statistically significant association with perineural invasion (p=0.007). The majority of BCCs were located in the medial canthus (56%), an anatomically complex region associated with increased surgical difficulty and a higher risk of incomplete excision.

Conclusion: High rates of complete excision were achieved in this cohort of periocular BCCs. Infiltrative histological subtype was associated with an increased risk of perineural invasion and incomplete excision, particularly when located in the medial canthus. These findings support a risk-adapted surgical strategy as well as consideration of Mohs micrographic surgery for aggressive tumour subtypes and anatomically complex periocular locations.

Keywords: Basal cell carcinoma, periocular tumours, Mohs micrographic surgery

Introduction

Basal cell carcinoma (BCC) is the most common cutaneous malignancy, accounting for approximately 75% of all non-melanoma skin cancers.[1] It predominantly arises in sun-exposed areas, with the periocular region representing one of the most cosmetically and functionally sensitive anatomical sites. Although nodular BCC is the most frequent histological subtype, infiltrative and basosquamous variants demonstrate more aggressive biological behaviour, with higher rates of incomplete excision, perineural invasion (PNI), and tumour recurrence. Periocular BCCs may result in significant morbidity due to eyelid distortion, involvement of the lacrimal drainage system, and, in advanced cases, orbital invasion, stressing

Cite this article as: Osagie HJ, Babovic R, Awotesu S, Kacavenda Babovic D. Surgical Outcomes and Histopathological Risk Factors in Periocular Basal Cell Carcinoma: A Single-Centre Study of 100 Patients.
Turk J Ophthalmol. 2026;56:229-235

Address for Correspondence: Henry Junior Osagie, James Paget University Hospital, Department of General Surgery, Great Yarmouth, United Kingdom
E-mail: doctorhenry.uk@gmail.com
ORCID-ID: orcid.org/0009-0007-0262-019X

Received: 01.03.2026
Revision Requested: 19.05.2026
Last Revision Received: 06.06.2026
Accepted: 21.06.2026
Publication Date: 26.08.2026

DOI: 10.4274/tjo.galenos.2026.49394

the importance of optimal surgical management and accurate histopathological risk stratification.

This study was conducted in the far eastern part of England, centred on Great Yarmouth and the surrounding area, which has a predominantly Caucasian population of approximately 200,000 residents, an older age demographic, and relatively high cumulative ultraviolet (UV) exposure, particularly related to outdoor and agricultural activity common in East Anglia. Over a one-year audit period (August 2024 to August 2025), 100 periocular BCCs were excised at James Paget University Hospital, serving this population, signifying a considerable local disease burden. For comparison, Lin et al.[2] reported an incidence of approximately 22 periocular BCC cases per 100,000 population in an English region. The higher case volume observed in our cohort may reflect regional demographic factors, referral patterns to the oculoplastic service, and possible limitations of national incidence estimates, which may underrepresent private referrals or untreated lesions.

Our research provides updated regional data and aims to evaluate surgical clearance outcomes, histological subtypes, and high-risk pathological features in a contemporary cohort of periocular BCCs managed at a secondary centre in England.

Materials and Methods

The study was conducted in accordance with the principles of the Declaration of Helsinki and received approval from the James Paget University Hospital's Audit Service (26/03/2025; approval no: 1705/2025). According to the NHS governance guidelines, approval from the Research Ethics Committee is not required for clinical audit studies evaluating current clinical practices. Written informed consent was obtained from all of the participants.

A retrospective audit was conducted of 100 consecutive periocular BCC excisions performed between August 2024 and August 2025. All patients who underwent surgical excision of a histologically confirmed periocular BCC in the Ophthalmology Department of James Paget University Hospital within this one-year period were included in the study.

Data were collected from operative records and histopathology reports, including patient age and sex, tumour laterality (right or left), precise periocular location, histological subtype, excision margin status, and the presence of PNI or vascular invasion. In routine oculoplastic practice at our unit, a 3-mm clinical excision margin from the visible or clinically perceived tumour edge was generally aimed for where anatomically feasible. The clinical margin was marked preoperatively using a surgical caliper. However, the final planned margin was individualised according to tumour size, clinical definition, anatomical location, suspected histological risk, and the need to preserve eyelid position, lacrimal drainage function, and periocular cosmesis. In anatomically constrained sites, particularly the medial canthus, or in lesions with poorly defined borders or suspected aggressive histology, the margin was adjusted according to surgical judgement.

Histopathological margin clearance was recorded separately for peripheral and deep margins where available. These histological measurements were extracted from the final pathology report and are distinct from the intended clinical excision margin marked at surgery. Histological margins were classified according to the Royal College of Pathologists and local histopathology reporting recommendations. Margins were defined as complete if both peripheral and deep margins measured ≥0.4 mm, close if any margin measured 0.1-0.3 mm without tumour at the inked edge, and incomplete if tumour was present at the inked margin or within <0.1 mm of it.[3,4]

Statistical Analysis

Data were presented as frequencies and percentages for demographic and clinical variables. Group comparisons were performed using parametric or non-parametric tests as appropriate. Fisher's exact test was applied to assess the association between histology subtype and the presence of PNI, given the small number of PNI-positive cases. A p value of <0.05 was considered statistically significant. Statistical analyses were performed using IBM SPSS Statistics for Windows version 20.0 (IBM Corp., Armonk, NY, USA).

Results

Patient Demographics

A total of 100 consecutive periocular BCC excisions (n=100) in 100 patients were analysed. The cohort comprised 58% males (n=58) and 42% females (n=42). The mean age at surgery was 75.7 years (range: 45-93 years). Female patients presented at a slightly younger mean age than male patients (73.3 vs. 77.6 years, respectively). Left-sided lesions were marginally more common (53%, n=53) than right-sided lesions (47%, n=47).

Histological Subtypes

Nodular BCC was the most common histological subtype, accounting for 83% of cases (n=83). Infiltrative BCC comprised 14% (n=14), superficial BCC 2% (n=2), and basosquamous BCC 1% (n=1). A small number of tumours demonstrated mixed histological features and were classified as infiltrative if any infiltrative component was present. While nodular BCC represented the majority of

cases, infiltrative subtype accounted for a disproportionate number of high-risk features.

Surgical Outcomes

Overall, 83% of tumours (n=83) were excised with histologically clear margins meeting the pre-set criteria for complete excision (≥0.4 mm clearance). Margins were classified as close (0.1-0.3 mm) in 8% of cases (n=8), and incomplete excision (tumour at ink or within <0.1 mm) occurred in 9% of cases (n=9). In the majority of incompletely excised cases, re-excision was subsequently undertaken where feasible, or patients were referred for further management. The high complete-excision rate reflects an emphasis on achieving adequate margins at the initial surgical procedure (Table 1). Mean histological clearance of all 100 cases was 1.52 mm peripherally and 2.27 mm in depth. Nodular BCCs demonstrated mean peripheral and deep clearances of 1.52 mm and 1.93 mm, respectively. In contrast, infiltrative tumours showed lower mean clearances (1.34 mm peripherally and 1.33 mm in depth) and a substantially higher rate of incomplete excision (28.6%) (Table 2).

High-Risk Features

The medial canthus was the most common site for BCC, accounting for 56% of all cases. Notably, infiltrative tumours showed a strong predilection for this location, with 8 of 14 infiltrative BCCs (57.1%) arising in the medial canthal region (Table 3). Incomplete excision was more common and statistically significant in medial canthal tumours (p=0.021) (Table 4). Achieved histological mean margin clearance was lower in the medial canthal area (Table 5). PNI was identified in 2% of cases (n=2). Both tumours demonstrating PNI exhibited infiltrative histology. No definite vascular invasion was identified in any case. However, 14% of histopathology reports did not explicitly comment on PNI (5%) or vascular invasion (9%).

Table 1. Histological subtypes and excision margin of periocular BCC (n=100)

Histopathological subtype	n (%)	Complete excision, n (%)	Close margin, n (%)	Incomplete excision, n (%)
Nodular	83 (83.0)	73 (88)	5 (6.0)	5 (6.0)
Infiltrative	14 (14.0)	7 (50)	3 (21.4)	4 (28.6)
Superficial	2 (2.0)	2 (100)	0 (0)	0 (0)
Basosquamous	1 (1.0)	1 (100)	0 (0)	0 (0)
Total	100 (100)	83 (83.0)	8 (8.0)	9 (9.0)

Data are presented as number (n) and percentage (%); Incomplete excision was more common in infiltrative BCC: p=0.045 (Fisher's test)
BCC: Basal cell carcinoma

Table 2. Histological margin distances according to histopathological subtype

Histopathological subtype	n (%)	Peripheral margin (mm), mean (range)	Deep margin (mm), mean (range)
Nodular	83 (83.0)	1.52 (0.0-5.6)	1.93 (0.1-6.1)
Infiltrative	14 (14.0)	1.34 (0.0-3.8)	1.33 (0.2-4.2)
Superficial	2 (2.0)	2.00 (1.8-2.2)	3.45 (3.1-3.8)
Basosquamous	1 (1.0)	1.20 (1.2-1.2)	2.40 (2.4-2.4)
Total	100 (100)	1.52 (0.0-5.6)	2.27 (0.1-6.1)

Data are presented as number (n) and percentage (%)

Table 3. Distribution of periocular BCC type by site

Location	Nodular, n (%)	Infiltrative, n (%)	Superficial, n (%)	Basosquamous, n (%)	Total, n (%)
Medial canthus	48	8	0	0	56 (56.0)
Lower lid	27	1	2	1	31 (31.0)
Lateral canthus	3	2	0	0	5 (5.0)
Eyebrow	5	3	0	0	8 (8.0)
Total	83 (83.0)	14 (14.0)	2 (2.0)	1 (1.0)	100 (100)

Data are presented as number (n) and percentage (%)
BCC: Basal cell carcinoma

Table 4. Histological margin clearance by anatomical location				
Location	**n (%)**	**Complete excision, n (%)**	**Close margin, n (%)**	**Incomplete excision, n (%)**
Medial canthus	56 (56.0)	42 (75.0)	6 (10.7)	8 (14.3)
Lower lid	31 (31.0)	28 (90.3)	2 (6.5)	1 (3.2)
Lateral canthus	5 (5.0)	5 (100.0)	0 (0.0)	0 (0.0)
Eyebrow	8 (8.0)	8 (100.0)	0 (0.0)	0 (0.0)
Total	100 (100.0)	83 (83.0)	8 (8.0)	9 (9.0)
Data are presented as number (n) and percentage (%); Incomplete excision was more common in medial canthal tumours: p=0.021 (Fisher's test)				

Table 5. Histological margin distances by anatomical location			
Location	**n (%)**	**Peripheral margin (mm), mean (range)**	**Deep margin (mm), mean (range)**
Medial canthus	56 (56.0)	1.21 (0.0-5.3)	1.00 (0.1-5.8)
Lower lid	31 (31.0)	1.69 (0.0-3.4)	2.4 (0.2-6.1)
Lateral canthus	5 (5.0)	2.60 (0.3-5.6)	3.8 (1.8-4.2)
Eyebrow	8 (8.0)	2.12 (1.2-3.8)	2.0 (0.8-3.0)
Total	100 (100)	1.52 (0.0-5.6)	2.27 (0.1-6.1)
Data are presented as number (n) and percentage (%)			

The association between infiltrative histology and the presence of PNI was statistically significant (Fisher's exact test, p=0.007), underscoring that infiltrative tumours were significantly more likely to demonstrate perineural spread than non-infiltrative subtypes.

Discussion

This one-year audit of 100 periocular BCC excisions demonstrates high rates of complete surgical excision and provides insight into the histological risk profile of different BCC subtypes. Overall, 83% of tumours were completely excised with clear histological margins, which compares with the 83.7% complete excision rate reported by Lin et al.[1] in a multicentre and multispecialty cohort of 1012 periocular BCCs. In their series, infiltrative BCCs were also disproportionately associated with incomplete excision (12.6%) despite achieving wider mean peripheral margins (2.06 mm) and a mean deep clearance of 1.90 mm. Notably, although our cohort achieved a smaller mean peripheral clearance (1.52 mm vs 2.06 mm) but a greater mean deep clearance (2.27 mm vs 1.90 mm), the overall complete excision rate was higher. This variation may reflect differences in case mix, referral patterns to a tertiary oculoplastic service, tumour location distribution, surgical decision making, or histopathological reporting practices. Collectively, these findings reinforce the concept that histological subtype, particularly infiltrative growth patterns, is a more critical determinant of margin positivity than absolute measured clearance, supporting a risk-adapted surgical approach for periocular BCC.[1,5]

A modest predominance of left-sided periocular tumours was observed in our cohort, with 53% of BCCs occurring on the left side and 47% on the right side. Although driving-related UV exposure has been implicated as a factor in the left-sided predominance of head and neck cancers,[6] this is unlikely in the UK, where drivers sit on the right side of the vehicle. In temperate climates such as the UK, cumulative lifetime UV exposure is more strongly influenced by outdoor activities, including walking, gardening, and recreational pursuits, than by time spent driving. Gorman et al.[7] also reported a statistically notable excess of left-sided facial lentigo maligna in a UK cohort. Similarly, Brewster et al.[8] demonstrated a consistent left-sided predominance of invasive melanoma across numerous countries, with left-to-right tumour ratios of approximately 1.1 or greater, and an estimated 18% excess of left-sided melanomas in Scotland.

Women in this audit presented with periocular BCC at a mean age approximately 4.3 years younger than men. This observation mirrors findings reported in other Western populations and may be explained by several interacting factors. Epidemiological studies have demonstrated age-dependent sex differences in BCC incidence, with a relative increase in cases among younger women and later presentation among men.[9] Women's periocular skin is often thinner and subject to closer cosmetic scrutiny, which may facilitate earlier detection of subtle lesions. Behavioural factors may also contribute, as women are generally reported to be more proactive in seeking medical evaluation for changes in appearance or health concerns.[10] Historical differences in UV exposure patterns may further

influence age at presentation; men have traditionally experienced greater cumulative occupational sun exposure, possibly leading to later-onset disease, whereas women may experience more intermittent but intense UV exposure earlier in life. Finally, healthcare-seeking behaviours influenced by social and cultural factors may result in delayed presentation among men, particularly for lesions perceived as minor.[11] These findings imply that targeted evaluation of periocular lesions may be beneficial in older men or individuals with significant sun exposure histories.

Nodular BCC constituted the majority of BCCs in our series (83%). This rate is higher than that reported by Ho et al.[12] in their large excision study (around two-thirds). The smaller subset of lesions with an infiltrative histology pattern (14%) demonstrates a distinctly higher-risk profile. All cases of PNI occurred in infiltrative-type tumours, and these lesions were more frequently associated with close or involved surgical margins. This observation is consistent with the established behaviour of infiltrative BCC, characterised by irregular microscopic tumour strands extending beyond the clinically apparent margins, thereby increasing the likelihood of incomplete excision with standard surgical techniques.[13]

In our cohort, the distribution of tumours across anatomical sites was significantly non-uniform, with the medial canthus representing the largest anatomical subgroup (56%). Notably, this area had the lowest achieved peripheral (1.21 mm) and deep (1.0 mm) mean margin clearance. This is an anatomically complex region containing the medial canthal tendon, angular vessels, and the nasolacrimal drainage system. Incomplete excision was more common in infiltrative BCCs (p=0.045), which were predominantly found in this anatomical area (57.1%). Malhotra et al.[14] reported in a periocular Mohs micrographic surgery (MMS) cohort that recurrences were most commonly at the medial canthus, with the infiltrating subtype as a significant predictor. These structures may act both as barriers and conduits for tumour spread, facilitating extension along tissue planes and perineural pathways, particularly via branches of the infratrochlear and supratrochlear nerves. Surgical excision in this region is challenging, as achieving wider margins risks functional impairment of eyelid position or lacrimal drainage. Furthermore, medial canthal BCCs may masquerade as benign inflammatory conditions such as chronic dacryocystitis, chalazion, or dermatitis, potentially postponing diagnosis and definitive treatment. Collectively, these factors help explain the increased rates of margin involvement and recurrence reported for infiltrative BCCs in the medial canthus.[3,4,7]

Given these considerations, an elevated level of suspicion and proactive management strategy is warranted for infiltrative or other high-risk periocular BCCs involving the medial canthus.[8] In our oculoplastic practice, a 3-mm clinical margin was generally aimed for where anatomically feasible and marked with a surgical caliper. This approach reflects the need to balance tumour clearance against preservation of eyelid position, lacrimal drainage function, and periocular cosmesis. However, in high-risk tumours, including infiltrative, morphoeic, basosquamous, recurrent, poorly defined, or medial canthal lesions, a fixed 3-mm margin may be insufficient or anatomically difficult to achieve. In such cases, particularly those that are infiltrative, recurrent, large, or adjacent to critical periocular structures, MMS offers superior margin control and high cure rates while maximising tissue preservation.[15] Finally, multidisciplinary team discussion is recommended for extensive or complex tumours, especially when PNI, nasolacrimal involvement, or orbital extension is suspected, to guide decisions regarding imaging, adjuvant radiotherapy, or alternative surgical approaches.

The high complete excision rate of 83% achieved in this audit is encouraging and compares favourably with previously published periocular BCC series, where reported clearance rates typically range between 80% and 85% for standard excision techniques.[1,2] Low-risk tumours demonstrated an excellent clearance rate of 93%, while even high-risk lesions achieved complete excision in 78.6% of cases, reflecting careful surgical planning and margin control in anatomically sensitive periocular sites.

In a tertiary centre series, Nemet et al.[16] reported that approximately one-quarter of periocular tumours had incomplete initial excision, with higher rates in medial canthal lesions. Weesie et al.[17] demonstrated a high complete excision rate of 99% for periocular BCCs treated with MMS. They also reported a low overall recurrence rate of 3% in the combined BCC and squamous cell carcinoma (SCC) cohort after a median follow-up of 46 months (total 20 BCC and 2 SCC recurrences). Their results support MMS as a preferred strategy for high-risk histology and anatomically constrained sites.

Study Limitations

In our study, variability was identified in the reporting of certain pathological features. In 5% and 9% of cases respectively, histopathology reports did not explicitly state the presence or absence of PNI or vascular invasion. Comprehensive pathology reporting is essential to guide postoperative management and surveillance. Current recommendations emphasise that pathology reports should

consistently include explicit statements regarding PNI, vascular invasion, histological subtype, and precise margin clearance in millimetres, even when these features are absent.[3]

Conclusion

Periocular BCC excision in this audit achieved a high rate of complete tumour clearance, with only a small proportion of cases demonstrating close or positive margins. This finding reflects effective surgical management of these common periocular malignancies. Nevertheless, a subset of BCCs, particularly those with infiltrative histology and those arising in the medial canthus, remain challenging in terms of tumour spread and PNI. These high-risk tumours accounted for all instances of PNI in this series and a high proportion of incomplete excisions.

The findings support an individualised, risk-adapted approach to periocular BCC management. Infiltrative or recurrent tumours, especially those located in anatomically high-risk regions, should encourage consideration of wider initial excision or MMS to optimise margin clearance. In addition, meticulous histopathological evaluation is essential, including standardised reporting of margin distances and perineural or vascular involvement, as this information is critical for guiding subsequent management and follow-up. Ongoing surveillance of surgical outcomes and future studies will help determine whether these strategies translate into reduced recurrence rates and improved patient care.

Ethics

Ethics Committee Approval: The study was conducted in accordance with the principles of the Declaration of Helsinki and received approval from the James Paget University Hospital's Audit Service (26/03/2025; approval no: 1705/2025). According to the NHS governance guidelines, approval from the Research Ethics Committee is not required for clinical audit studies evaluating current clinical practices.

Informed Consent: Written informed consent was obtained from all participants.

Declarations

Authorship Contributions

Surgical and Medical Practices: R.B., S.A., Concept: H.J.O., R.B., Design: H.J.O., R.B., Data Collection or Processing: H.J.O., R.B., S.A., Analysis or Interpretation: H.J.O., R.B., S.A., D.K.B., Literature Search: H.J.O., R.B., S.A., D.K.B., Writing: H.J.O., R.B., S.A., D.K.B.

Conflict of Interest: No conflict of interest was declared by the authors.

Financial Disclosure: The authors declared that this study received no financial support.

References

1. Lin Z, Qidwai U, Igali L, Hemmant B. A multicentre review of the histology of 1012 periocular basal cell carcinomas. Eur J Ophthalmol. 2021;31:2699-2704.
2. Lin Z, Sheikh U, Igali L, Hemmant B. A 5-year review of 1220 malignant periocular tumours in an English county. Eye. 2023;37:1271-1274.
3. Slater D, Barrett P, Durham C. Standards and datasets for reporting cancers dataset for histopathological reporting of primary cutaneous basal cell carcinoma. London: Royal College of Pathologists; February 2019.
4. Nasr I, McGrath EJ, Harwood CA, Botting J, Buckley P, Budny PG, Fairbrother P, Fife K, Gupta G, Hashme M, Hoey S, Lear JT, Mallipeddi R, Mallon E, Motley RJ, Newlands C, Newman J, Pynn EV, Shroff N, Slater DN, Exton LS, Mohd Mustapa MF, Ezejimofor MC; British Association of Dermatologists' Clinical Standards Unit. British Association of Dermatologists guidelines for the management of adults with basal cell carcinoma 2021. Br J Dermatol. 2021;185:899-920.
5. Milenković AD, Milenković V, Petrovic M, Tomic A, Matejic A, Brkic N, Jovanović M. Infiltrative basal cell carcinoma of the head: factors influencing bone invasion and surgical outcomes. Life. 2025;15:551.
6. Butler ST, Fosko SW. Increased prevalence of left-sided skin cancers. J Am Acad Dermatol. 2010;63:1006-1010.
7. Gorman M, Hart A, Mathew B. A left-sided prevalence of lentigo maligna: a UK based observational study and review of the evidence. Dermatol Res Pract. 2015;2015:310270.
8. Brewster DH, Horner MJD, Rowan S, Jelfs P, de Vries E, Pukkala E. Left-sided excess of invasive cutaneous melanoma in six countries. Eur J Cancer. 2007;43:2634-2637.
9. Collier V, Musicante M, Patel T, Liu-Smith F. Sex disparity in skin carcinogenesis and potential influence of sex hormones. Skin Health Dis. 2021;1:27.
10. Heaton H, Lawrence N. Nonmelanoma skin cancer in women. Int J Womens Dermatol. 2019;5:2-7.
11. Levit S, Shoykhet J, Levit E. Comprehensive insights into basal cell carcinoma: causes, presentation, prevention, and modern therapeutic approaches. Cancer Med. 2025;14:71448.
12. Ho S, Brown L, Bamford M, Sampath R, Burns J. 5 years review of periocular basal cell carcinoma and proposed follow-up protocol. Eye. 2013;27:78-83.
13. Sexton M, Jones DB, Maloney ME. Histologic pattern analysis of basal cell carcinoma: study of a series of 1039 consecutive neoplasms. J Am Acad Dermatol. 1990;23:1118-1126.
14. Malhotra R, Huilgol SC, Huynh NT, Selva D. The Australian Mohs database, part II: periocular basal cell carcinoma outcome at 5-year follow-up. Ophthalmology. 2004;111:631-636.
15. Wong VA, Marshall JA, Whitehead KJ, Williamson RM, Sullivan TJ. Management of periocular basal cell carcinoma with modified en face frozen section controlled excision. Ophthalmic Plast Reconstr Surg. 2002;18:430-435.

16. Nemet AY, Deckel Y, Martin PA, Kourt G, Chilov M, Sharma V, Benger R. Management of periocular basal and squamous cell carcinoma: a series of 485 cases. Am J Ophthalmol. 2006;142:293-297.

17. Weesie F, Naus N, Vasilic D, Hollestein L, Van den Bos R, Wakkee M. Recurrence of periocular basal cell carcinoma and squamous cell carcinoma after Mohs micrographic surgery: a retrospective cohort study. Br J Dermatol. 2019;180:1176-1182.