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Using frozen section margin control technique to manage non-melanomatous skin lesions in high-risk sites☆

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Summary *Background:* In the UK, non-melanoma skin cancers (NMSCs) that are incompletely excised, recurrent or in sites high risk for incomplete excision are often offered Mohs micrographic surgery (MMS). Variations in waiting times and geographical access to MMS affect patient preference for other treatments. Our unit offers excision of such lesions under complete margin frozen section histological examination.
Methods: All NMSCs excised at our unit by complete margin frozen section histological analysis from 2010 to 2014 were retrospectively reviewed. The number of excisions required, complete excision rates and recurrences to date were analysed.
Results: Sixty-nine patients were treated using this technique with a total of 70 lesions excised. Approximately 71% of the excision margins were clear after primary excision, 27% at second excision and 1% at third excision. Patients had a mean follow-up of 12 months (range: 1–48) with no patients lost to follow-up and no recurrences reported to date. Ninety-eight percent of NMSC cases were completely excised and two cases were incompletely excised.
Conclusion: We have found the rates of excision and recurrence of the high-risk NMSCs excised at our unit to be comparable to those reported with MMS. In addition, our data show that around 29% of patients would have had incomplete margins on primary resection, thus justifying the use of this technique in this group. We suggest that this technique is a safe and useful alternative to MMS in areas where waiting times or geographical patient preference may prohibit its use.

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Introduction

Primary excision rates of non-melanoma skin cancers (NMSCs) are included in the audit analysis in most plastic surgery units in the UK. Mohs micrographic surgery (MMS) can be considered for treatment of basal cell carcinomas (BCCs) or squamous cell carcinomas (SCCs) that are incompletely excised and located at high-risk sites for recurrence. However, variation in waiting times and geographical access to this service throughout the UK affect patient preference and availability. Our unit offers excision of such lesions by complete margin frozen section analysis with the majority of patients undergoing reconstruction on the same day.

Method

All high-risk and recurrent NMSCs excised at Hull Royal Infirmary and Castle Hill Hospitals by complete margin frozen section control over a 4-year period from January 2010 to April 2014 were retrospectively reviewed. NMSCs located on the head, neck, hands and feet were considered high-risk sites for the purpose of this study. All patients who underwent frozen section margin control for NMSC excision were included in the study. Data collected included patient demographics, site of the lesion, number of resections required for clear margins on intraoperative histopathology, complete excision rates, histopathological diagnosis and recurrences to date. All operations were performed by two surgeons, with local anaesthetic infiltration of the site prior to surgery. The primary excision margin around the lesion was drawn in collaboration with national clinical guidelines as per British Association of Dermatologists and the British Oculoplastic Surgery Society with intention to achieve complete clearance on primary excision. BCCs were excised using a 3—4-mm margin of clinically uninvolved tissue surrounding the lesion; the margin was marked using loupe magnification under theatre lighting. SCCs were excised with 4—6-mm margins. SCCs of diameter >2 cm or those classified as moderately, poorly, or undifferentiated, extending into the subcutaneous tissue and those on the ear, lip, scalp, eyelids, or nose were removed with a 10-mm margin.

Two surgical techniques including annulus with deep disc method and periocular wedge excision were employed. Annulus with deep disc method involves tumour excision with vertical margins down to the next layer of anatomically normal tissue. An orientated strip extending through the full thickness of the excision and measuring approximately 1 mm transversely was excised from the entire peripheral excision margin; this was then sectioned into four specimens, orientated and sent for histopathological analysis. If any tumour was detected, then further tissue was resected from that area. This was repeated until tumour clearance was achieved. A separate disc was excised from the deep margin and examined through frozen sections cut parallel to the skin surface (Figures 1 and 2).

Full-thickness "wedge" resection technique was used for eyelid lesions or those located on the ear. The full-thickness wedge was excised en bloc, orientated and sent for frozen section histopathological analysis.

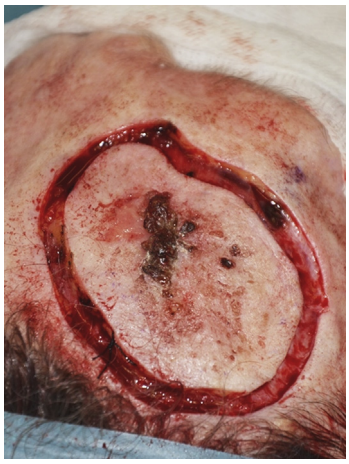

Figure 1 Lesion following outer peripheral excision of 1 mm.

Histopathological technique

Sectioning was performed using a freezing microtome. Wedge excisions were sliced via the bread loaf technique into 3—4-mm-thick slices sectioned at 30-μ intervals. The marginal strips and deep discs were sectioned en face parallel to the excision margin at 30-μ intervals. The 4—6-μ sections obtained were stained with haematoxylin and eosin, mounted on slides and examined using a microscope. If the margin was found to be involved at frozen section, the surgeon was informed by telephone and further 1 mm sequential slices were taken until no further tumour was identified. Once clear margins were confirmed, the resultant defect was reconstructed and all residual tissue specimens fixed in formalin for routine histopathological assessment. The resultant defect was closed directly, or reconstructed using a skin graft or local flap.

Results

Sixty-nine cases were reviewed and the results are summarised in Tables 1 and 2:

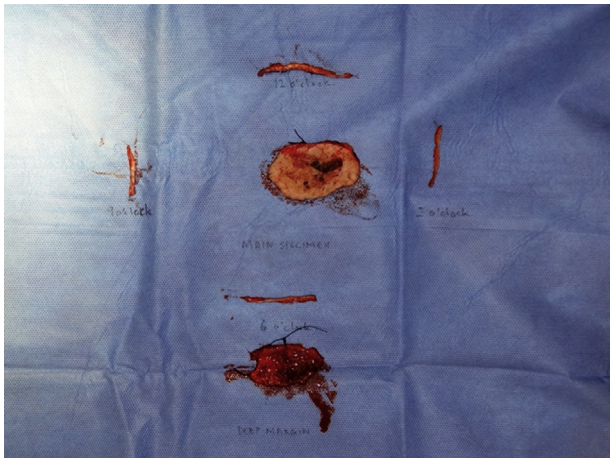

Figure 2 Final specimens sent for histopathological analysis, including the outer peripheral margin in four strips, the main body of the specimen and the deep margin.