Clinical and Histological Margins in Melanoma - Executive Summary

This document explains how much healthy skin should be removed around a melanoma during surgery, and how to judge whether enough was removed once the pathologist has examined it under the microscope. It draws on current guidelines and the research behind them to give practical, plain-language guidance for clinicians. This summary strips out the references and technical detail — see the full document for the evidence behind each point.

Key Messages

1. There are two different "margins", and they are not the same size.

The clinical margin is the width of normal-looking skin the surgeon removes around the visible tumour. The histological margin is the distance from the tumour to the cut edge, measured under the microscope. The histological margin is always smaller than the clinical margin due to tissue shrinkage once it is removed and processed in the lab.

2. Recommended clinical margins scale with how deep the melanoma has grown.

Guidelines recommend 5–10 mm for melanoma in situ, 10 mm for thin invasive melanomas, 10–20 mm for moderate-thickness melanomas, and 20 mm for thick melanomas. Excision is also taken down to the deep fascia rather than through it, since removing the fascia itself has not been shown to improve outcomes.

3. Lentigo maligna needs special care because it spreads in ways that are hard to see clinically.

This subtype, usually found on sun-damaged skin of the head and neck, often extends well beyond its visible edge and can involve hair follicles resulting in melanoma cells remaining in the epidermis but down at the level of the dermis necessitating an appropriate deep margin. Wider margins, careful mapping of the lesion's true extent, and Mohs surgery (a technique that checks the entire margin under the microscope during the operation itself, rather than sampling a small fraction of it afterwards) all improve the odds of fully clearing the disease. Where surgery isn't suitable — for example in frail or elderly patients — non-surgical options like imiquimod cream or radiotherapy are sometimes used, though neither is as reliable as surgery and neither has been tested in a randomised trial.

4. For thicker melanomas, cutting more than 1 cm has not been shown to add benefit — but this is still being tested.

Current evidence comparing 1 cm and 2 cm margins for thicker melanomas mostly shows no difference in recurrence or survival, though the evidence isn't from a randomised trial and one large study did find a difference. A major trial (MelMarT-II) is now testing 1 cm versus 2 cm directly, and its results are awaited before this question can be considered settled.

5. Wider margins mainly reduce local recurrence — not necessarily the risk of dying from melanoma.

These are two different outcomes. Trials comparing wider margins (for example 4 cm versus 2 cm) generally show no added survival benefit, even though wider excision does tend to lower the chance of the cancer returning at the same site. One UK trial did find a survival advantage for a wider margin in thicker melanomas, so the picture is not entirely settled, but overall survival benefit from ever-wider margins is not well established.

6. Rare, more aggressive subtypes need individual judgement, not the standard formula.

Desmoplastic, mucosal, acral, and spitzoid melanomas behave differently from typical melanoma and often call for a more tailored approach to margins, lymph node assessment, and additional treatment, rather than defaulting to the standard margin guidance.

7. "Clear histological margin" isn't formally defined — but the evidence points to roughly 3 mm as a reasonable benchmark for melanoma in situ

No guideline explicitly states how many millimetres under the microscope counts as a "clear histological margin." Working backwards from the minimum recommended clinical margins and accounting for tissue shrinkage suggests a histological margin of at least 3mm is generally achieved in practice. Directly supporting this, one study found that a histological margin greater than 3 mm was linked to a much lower local recurrence rate than a margin of 3 mm or less. So a histological margin greater than 3 mm for melanoma in situ can reasonably be treated as adequate in most cases.

8. A new trial (the WoW trial) is asking whether patients with a thin melanoma (Breslow thickness ≤1.0 mm pT1) could avoid a second procedure altogether. The outcomes won't be available for 5-10 years, meanwhile you should adhere to the current guidelines

The hypothesis of the WoW study regarding the primary and secondary objectives is that the recurrence risk after the excision of a thin melanomas (no WLE) will be non-inferior to 2 excisions of thin melanoma (with WLE) at both 5 and 10 years of follow-up. The hypotheses regarding the tertiary outcomes are that a single excision will lead to fewer postoperative complications.

Eligible patients will have no prior history of melanoma and will have recently been diagnosed with a single primary invasive cutaneous melanoma of Breslow thickness ≤1.0 mm (pT1), in a location in which a WLE with a 10-mm clinical margin would usually occur, and will have a histopathologically verified free margin of at least 1.5 mm following the initial excision with a clinical margin of not more than 5 mm. Exclusions include desmoplastic or lentiginous (i.e., lentigo maligna or acral lentiginous) subtype and lesions located on a digit.

Bottom Line

Margins matter, but bigger is not automatically better. Current guidelines already reflect a reasonable balance between clearing the disease and avoiding unnecessary surgery for most melanomas. The clearest open questions are (1) whether 1 cm is really enough for thicker melanomas, and (2) whether some very-low-risk melanomas could be managed with less surgery than they receive today. Both are being actively studied, and practice should be guided by the published recommendations until those trials report.