

Principles of Surgical Treatment of Malignant Melanoma



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KEYWORDS

- Melanoma • Sentinel lymph node biopsy • Completion lymphadenectomy
- Wide local excision

KEY POINTS

- Surgery remains the best chance for cure and regional disease control in patients with melanoma, and most patients will be cured of their disease.
- Multiple randomized controlled trials have established guidelines for adequate resection margins of primary cutaneous melanoma.
- Status of the sentinel lymph node is the most important prognostic factor in patients without clinical nodal disease, and biopsy should be considered in appropriate patients.
- Sentinel lymph node biopsy should be considered for intermediate-thickness (1–4 mm), thick (>4 mm), and high-risk thin melanomas (<1 mm) without clinically involved nodes.
- Completion lymphadenectomy is recommended for patients with tumor-positive sentinel lymph nodes.

INTRODUCTION

Although melanoma represents less than 5% of all skin cancers, it is responsible for the bulk of skin cancer-related deaths.¹ Nevertheless, despite this aggressive reputation, most patients with cutaneous melanoma will be surgically cured of their disease. Early detection allows for curative resection, and 5-year survival for all stages of melanoma is 91%.² In patients with early invasive melanoma, 5-year survival rates increase to 97%.³ Even for those with more advanced disease, the lack of highly effective adjuvant therapy means that surgery still offers the best chance at improved survival or cure. Furthermore, with the incidence increasing at approximately 3% per year, a sound knowledge of the surgical management of melanoma is critical for any general surgeon.⁴ This review outlines the surgical treatment of melanoma, including principles of wide local excision (WLE) and management of the regional lymph nodes (**Box 1**).

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Box 1
Pearls and pitfalls
Pearls

- SLNB indicated even for thin melanomas in the setting of ulceration or mitotic index greater than 1/mm²
- No evidence to suggest margins greater than 2 cm improve recurrence or survival even for thick melanomas
- Fine-needle aspiration is initial step for palpable nodal disease

Pitfalls

- Failure to perform lymphoscintigraphy at the time of SLNB resulting in missed in-transit lymph nodes (epitrochlear, popliteal, and so on)
- Failure to perform therapeutic lymphadenectomy in the setting of palpable metastatic disease with unknown primary melanoma

MANAGEMENT OF PRIMARY CUTANEOUS MELANOMA
Background

The aggressive nature of melanoma has long been recognized. Hunter published the first account in 1787, with a case including nodal metastasis. He was followed by Laennec, who noted several visceral metastases and dubbed the disease process “*melanosis*.”⁵ William Norris reported the “first genuine good case of melanoma” in 1820.⁵ Norris⁶ may have been the first to endorse WLE and recommended surgery “not only to remove the disease, but to cut away some of the healthy parts.” Based on lymphatic spread in a single patient, Handley recommended 5-cm excision margins in 1907.⁷ Wide excision with up to 5-cm margins remained the standard of care for more than 50 years, until this dogma came under scrutiny in the 1970s.^{8,9} Since then, multiple randomized controlled trials have helped establish contemporary guidelines (**Table 1**).

Thin Melanoma (<1 mm)

One of the earliest challenges to wide excision came in 1977, when Breslow and Macht¹⁰ reported no adverse events in a small series of patients with thin cutaneous melanoma who underwent excision with a narrow margin. Multiple subsequent

Table 1
Recommended margins of WLE

Thickness (mm)	WLE Margin (cm)
In situ	0.5–1
<1	1
1–2	1–2 ^a
>2–4	2
>4	2 ^b

^a A higher risk of local recurrence may be seen with 1-cm margins in this category.

^b Larger margins can be considered if there is a high risk of local recurrence, although there is no evidence to suggest greater than 2 cm margins are beneficial.

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