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De-Escalation of Surgery in Melanoma

Bruce M. Brenner, MD, MEHP, FACS

ACS Cancer Programs

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Disclosures

- None

Objectives

- To review the history of the surgical management of melanoma
- To list seminal studies in the development of current melanoma surgery guidelines for primary site and draining lymphatics
- To preview some of the current and future studies that may further de-escalate melanoma surgery

Introduction

- Melanoma remains one of the most deadly cutaneous neoplasms
- Melanoma incidence has continued to increase
- Radical resection and lymphadenectomy for melanoma may cause significant morbidity and affect quality of life
  - Need for reconstruction
  - Wound complications
  - Lymphedema
- There has been a significant move towards de-escalating surgical treatments for melanoma

Historical Perspective

- Excision margins
  - Wide excision has been standard since late 19th/early 20th Century
  - Margins of 5cm were recommended for many years
    - Based on finding of atypical melanocytes up to 5cm from primary in resection specimens
- Management of Lymphatic Basins
  - En-bloc resection of lesion with draining lymphatics and lymphatic basin became standard [1]
  - Elective node dissection replaced en-bloc dissection
    - Improved survival with microscopic vs macroscopic nodal metastases [2]

[1] McCUNE WS, LETTERMAN GS. Malignant melanoma; ten-year results following excision and regional gland resection. Ann Surg. 1955 Jun;141(6):901-9.
[2] Roses DF, Harris MN, Gumport SL, Michelassi F, Coffey JA, Dubin N. Regional lymph node dissection for malignant melanoma of the extremities. Surgery. 1981 Jun;89(6):654-9.

Current Surgical Recommendations (NCCN)

Margin Recommendations	
Thickness	Surgical Margin
In – Situ	5 mm
≤ 1 mm	1 cm
> 1 to 2 mm	1 - 2 cm
> 2 mm	2 cm

- Lymphatic Staging
  - Consider Sentinel Node Biopsy for T1b
  - Sentinel Node Biopsy for ≥ T2
- No routine completion node dissection for positive SLN
- Therapeutic node dissection for clinically positive node(s)

NCCN Clinical Practice Guidelines in Oncology (NCCN Guidelines®) for Cutaneous Melanoma 2.2025. © National Comprehensive Cancer Network, Inc. 2025. All rights reserved. [Accessed 3/1/25]

Landmark Margin Trials

- WHO Trial for melanomas ≤ 2 mm Breslow thickness (1988) [1]
  - No difference in outcomes for margins of 1 cm vs 3 or more cm
- Intergroup Trial for truncal or extremity melanomas 1 to 4 mm in thickness (1993) [2]
  - No difference in local recurrence or survival for 2 vs 4 cm margins
  - Decreased need for skin graft and length of stay
- Swedish Trial for melanomas 0.8 to 2 mm in thickness (1996)
  - No difference in recurrence or survival for 2 vs 5 cm margins

[1] Veronesi U, et al. Thin stage I primary cutaneous malignant melanoma. Comparison of excision with margins of 1 or 3 cm. N Engl J Med. 1988 May 5;318(18):1159-62.
[2] Balch CM, et al. Efficacy of 2-cm surgical margins for intermediate-thickness melanomas (1 to 4 mm). Results of a multi-institutional randomized surgical trial. Ann Surg. 1993 Sep;218(3):262-7; discussion 267-9.
[3] Ringborg U, et al. Resection margins of 2 versus 5 cm for cutaneous malignant melanoma with a tumor thickness of 0.8 to 2.0 mm: randomized study by the Swedish Melanoma Study Group. Cancer. 1996 May 1;77(9):1809-14.

Recent and Ongoing Margin Trials

- MelmarT Trial for melanoma > 1 mm (2018)
  - 1 vs 2 cm resection margins
  - All patients had Sentinel Node Biopsy
  - Increased need for reconstruction and wound necrosis rate in 2 cm group
- MelmarT – II Trial: 1 vs 2 cm margins for melanoma > 1 mm with ulceration or > 2 mm (Ongoing)
  - All patients will have Sentinel Node Biopsy
  - Primary endpoint is disease-free survival
  - Secondary endpoints are local recurrence, surgical complications, overall survival and several others

Moncrieff MD, et al. 1 Versus 2-cm Excision Margins for pT2-pT4 Primary Cutaneous Melanoma (MelMarT): A Feasibility Study. Ann Surg Oncol. 2018 Sep;25(9):2541-2549.

Landmark Lymphadenectomy Trials

- WHO study in stage I Melanoma of the extremities (1977)
  - No improvement in survival with elective node dissection
- Sydney Melanoma unit study (retrospective, 1995)
  - No survival benefit for elective node dissection in melanoma > 1.5 mm
- Intergroup for Stage I and II Melanoma 1 – 4 mm in thickness (1996)
  - Survival advantage for elective node dissection in patients under age 60

Veronesi U, et al. Inefficacy of immediate node dissection in stage 1 melanoma of the limbs. N Engl J Med. 1977 Sep 22;297(12):627-30.
Coates AS, et al. Elective lymph node dissection in patients with primary melanoma of the trunk and limbs treated at the Sydney Melanoma unit from 1960 to 1991. J Am Coll Surg. 1995 Apr;180(4):402-9.
Balch CM, et al. Efficacy of an elective regional lymph node dissection of 1 to 4 mm thick melanomas for patients 60 years of age and younger. Ann Surg. 1996 Sep;224(3):255-63; discussion 263-6.

Landmark Sentinel Node Biopsy Trials

- Sentinel Node Feasibility Study (1992) [1]
  - SLN detected in 82% of lymphatic basins
  - Sentinel Node biopsy is highly accurate in detecting nodal metastases
  - False negative rate of under 1%
- MSLT Validation Trial (1999) [2]
  - Confirmed above results reproducible at multiple centers
  - Success rate of 95% with blue dye alone, 99 % with blue dye + radiocolloid

[1] Morton DL, et al. Technical details of intraoperative lymphatic mapping for early stage melanoma. Arch Surg. 1992 Apr;127(4):392-9.
[2] Morton DL, et al. Validation of the accuracy of intraoperative lymphatic mapping and sentinel lymphadenectomy for early-stage melanoma: a multicenter trial. Multicenter Selective Lymphadenectomy Trial Group. Ann Surg. 1999 Oct;230(4):453-63; discussion 463-5.

Recent Lymphadenectomy Trials

- MSLT- I for melanomas > 1 mm thickness (2006)[1]
  - Decreased Melanoma-specific survival in SLN positive vs negative
  - Improved survival in SLN positive patients vs those with palpable nodes
- MSLT - II for patients with SLN metastases (2017)[2]
  - Completion node dissection did not increase Melanoma-specific survival
- DeCOG-SLT for melanomas > 1 mm on the trunk, arms and legs (2016)[3]
  - Completion node dissection vs observation for SLN micrometastases
  - No difference in distant metastasis-free survival, OS, or nodal recurrence

[1] Morton DL, et al; MSLT Group. Sentinel-node biopsy or nodal observation in melanoma. N Engl J Med. 2006 Sep 28;355(13):1307-17.
[2] Faries MB, et al. Completion Dissection or Observation for Sentinel-Node Metastasis in Melanoma. N Engl J Med. 2017 Jun 8;376(23):2211-2222.
[3] Leiter Uet al; German Dermatologic Cooperative Oncology Group (DeCOG). Complete lymph node dissection versus no dissection in patients with sentinel lymph node biopsy positive melanoma (DeCOG-SLT): a multicentre, randomised, phase 3 trial. Lancet Oncol. 2016 Jun;17(6):757-767.

Ongoing Lymphadenectomy Trials

- EXCILYNT for patients with one clinically positive node
  - Excison of positive node only before systemic therapy or after neoadjuvant therapy
  - Outcomes include nodal-basin only recurrence and lymphedema rates
- OMIT for patients with clinical stage III Melanoma receiving neoadjuvant therapy
  - Omitting TLND in patients with major pathologic response in index node
  - Main endpoints include 2-year Local Recurrence- and Distant Metastasis-Free Survival

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Conclusions

- Surgical management of cutaneous melanoma has radically de-escalated
  - Changes are based on high quality evidence
- Further studies are ongoing to evaluate even less aggressive surgery
  - Outcomes being evaluated include surgical complications/morbidity, as well as survival
- Neoadjuvant therapy may play a role in further limiting the need for radical surgery in selected patients