Introduction: There has been concern that partial biopsy impairs accuracy of depth of invasion in melanoma. We sought to evaluate the accuracy of partial versus excision biopsy and determine if various biopsy techniques lead to differences in Breslow thickness which would alter surgical management.

Methods: A retrospective secondary analysis from 2003-2008 was performed comparing Breslow thickness after initial diagnostic biopsy to Breslow thickness following definitive excision. Cases were then reviewed to identify instances where initial and final Breslow thickness differed significantly enough to alter clinical decision making regarding surgical margins and sentinel lymph node biopsy. Guidelines for recommended surgical margins were based on the 2010 National Comprehensive Cancer Network guidelines. Indications for sentinel lymph node biopsy (SLNB) were based on the inclusion criteria for the Multicenter Selective Lymphadenectomy clinical trial; including intermediate thickness melanoma (1.2 - 3.5 mm).

Results: In 247 cases; shave biopsy was performed in 44%, punch biopsy in 24%, and excisional biopsy 32%. Mean initial Breslow thickness for all biopsy techniques was 0.97 mm. Mean Breslow thickness after wide local excision was 1.16 mm. Breslow thickness was underestimated in 15.6% shave, 30% punch, and 7.7% excisional biopsies ($p = 0.002$). Differences in Breslow thickness between initial biopsy and final pathology would have altered recommendations for surgical margin width in 6.4% shave, 8.3% punch, and 2.5% excisional biopsies ($p = 0.236$). Upstaging between initial and final Breslow thickness was substantial enough to warrant SLNB in 2.75% shave, 5.0% punch, and 0 excision biopsy cases ($p = 0.176$).

Conclusions: Upstaging of Breslow thickness between initial biopsy and final pathology altered recommended surgical margins and indications for SLNB more frequently with partial compared to excisional biopsies. This difference did not reach statistical significance. Further study is needed to determine the clinical impact of partial biopsies in the diagnosis of cutaneous melanoma.