The Nose Knows That Margins Matter

Andrew T. Day, MD, MPH¹, Jordan R. Salley, BS¹, and Rajiv I. Nijhawan, MD²

¹Department of Otolaryngology-Head and Neck Surgery, UT Southwestern Medical Center, Dallas, TX; ²Department of Dermatology, University of Texas Southwestern Medical Center, Dallas, TX

Our colleagues, Massey et al., have executed an elegantly designed, matched retrospective cohort study.¹ The population presented with primary nasal keratinocyte carcinomas less than 3 cm in size, and approximately 90% were basal cell carcinomas (BCCs), 9% were squamous cell carcinomas (SCCs), and 1% were basosquamous carcinomas. Patients were treated at the Veteran Affairs Boston Healthcare System between 2000 and 2010. The exposure was the type of treatment. Patients who underwent total margin-controlled excision (TMCE; $n = 148$) were retrospectively, appropriately matched with patients who underwent standard excision (SE; $n = 148$) according to all but one reported exposure. The median diameter of tumors treated with SE (8 mm) was marginally larger than tumors treated with TMCE (7 mm, $p = 0.02$).

The primary analysis demonstrated that graft or flap reconstruction was significantly less common in TMCE patients (55%) relative to SE patients (72%, $p = 0.003$). According to their secondary analyses, there were no positive margins in TMCE patients, whereas among SE patients, 24% exhibited positive final postoperative margins, 18% were found to have positive margins after graft or flap reconstruction, and 9% had final positive margins that were ultimately never cleared. Additionally, a percentage of SE patients required systemic anesthesia (25%), operating room use (32%), hospitalizations (7%), and radiation oncology referrals (5%). No TMCE patients required these services. Thus, not surprisingly, the adjusted total cost of care was higher with SE versus TMCE.

Examination of the study's limitations—several of which are noted by the authors—is warranted prior to discussing the implications of its findings. The single-institution design, dissimilar allocation of tumor size between study arms, and lack of prospective randomization constrain its internal and external validity. Additionally, the authors attribute outcome differences to the designated exposure of interest (surgery type), yet do not characterize potential confounding exposures in oncology training and volume—particularly among surgeons performing SE. These limitations are underscored by comparing SE surgeon practice patterns with those of Smeets et al.,² a randomized controlled trial with its own biases.³ Smeets et al. compared office-based SE versus TMCE for 408 primary, > 1 cm BCCs of the H-zone of face in the Netherlands from 1999 to 2002.² Whereas 18% of the 204 cases treated with SE exhibited initial positive margins, all but one were cleared to final negative margins—although seven ultimately required TMCE to achieve this.²

Notwithstanding these limitations, Massey et al.¹ have contributed to the literature in several domains. First, their findings validate the National Comprehensive Cancer Network's recommendations regarding reconstruction after surgical excision of high-risk BCC⁴ and SCC.⁵ “Tissue rearrangement or skin graft placement” should only be performed following intraoperative complete circumferential peripheral and deep margin assessment (CCPDMA) or postoperative margin assessment.^{4,5} In their SE arm, real-time TMCE or staged reconstruction may have spared up to 18% of patients subsequent re-resection followed by revision reconstruction and 5% of patients referral to radiation oncology to avoid surgical clearance of residual positive margins. TMCE prior to reconstruction may also yield fewer complications given the need for fewer procedures.

Second, the study highlights significantly reduced use of flap or graft reconstruction among TMCE patients compared with SE patients. While there is general agreement that Mohs micrographic surgery (MMS) results in smaller tissue defects compared with SE,^{6,7} differences in flap or graft use had yet to be explored. Decreased defect size and potential decreased need for complex reconstructive surgery favor MMS for tumors involving high-risk areas of the face.

Third, given the additional operating room- and hospitalization-specific costs incurred by patients undergoing SE, this study contributes to evidence supporting office-based management of high-risk NMSCs of the face.⁸ According to their claims-based data analysis, Chen et al. argued that performing all NMSC treatment in an office-based setting would save Medicare \$70 million annually.⁹

Finally, although Massey et al. did not report local control rates within the cohort, the prevalence of final positive margins in the SE arm portends increased recurrences. Since oncologic outcomes already trend towards favoring MMS over SE for high-risk NMSCs,¹⁰ achieving ultimate final negative margins in SE patients is essential.

In conclusion, Massey et al.¹ have underscored important limitations of SE for primary, early NMSCs involving the nose. These findings are likely generalizable to tumors involving other high-risk locations. Considering the collective evidence, TMCE with MMS or CCPDMA may be preferred for these high-risk malignancies. Office-based surgery is favored. When SE is selected, complex reconstruction should be delayed until final negative margins are confirmed.

DISCLOSURES The authors declare no conflicts of interest.

REFERENCES

1. Massey PR, Gupta S, Rothstein BE, et al. Total margin-controlled excision is superior to standard excision for keratinocyte carcinoma on the nose: a VA nested cohort study. *Ann Surg Oncol*. 2021. <https://doi.org/10.1245/s10434-021-09604-9>.
2. Smeets NW, Krekels GA, Ostertag JU, et al. Surgical excision vs Mohs' micrographic surgery for basal-cell carcinoma of the face: randomised controlled trial. *Lancet*. 2004;364(9447):1766–72.
3. Otley CC. Mohs' micrographic surgery for basal-cell carcinoma of the face. *Lancet*. 2005;365(9466):1226–1227; author reply 1227.
4. Network NCC. Basal cell skin cancer (Version 1.2020). https://www.nccn.org/professionals/physician_gls/pdf/nmsc.pdf. Accessed February 4, 2021.
5. Network NCC. Squamous cell skin cancer (Version 2.2020). https://www.nccn.org/professionals/physician_gls/pdf/squamous.pdf. Accessed February 4, 2021.
6. Muller FM, Dawe RS, Moseley H, Fleming CJ. Randomized comparison of Mohs micrographic surgery and surgical excision for small nodular basal cell carcinoma: tissue-sparing outcome. *Dermatol Surg*. 2009;35(9):1349–54.
7. Bumsted RM, Ceilley RI. Auricular malignant neoplasms. Identification of high-risk lesions and selection of method of reconstruction. *Arch Otolaryngol*. 1982;108(4):225–31.
8. Ravitskiy L, Brodland DG, Zitelli JA. Cost analysis: Mohs micrographic surgery. *Dermatol Surg*. 2012;38(4):585–94.
9. Chen JG, Fleischer AB Jr, Smith ED, et al. Cost of nonmelanoma skin cancer treatment in the United States. *Dermatol Surg*. 2001;27(12):1035–8.
10. van Loo E, Mosterd K, Krekels GA, et al. Surgical excision versus Mohs' micrographic surgery for basal cell carcinoma of the face: a randomised clinical trial with 10 year follow-up. *Eur J Cancer*. 2014;50(17):3011–20.

Publisher's Note Springer Nature remains neutral with regard to jurisdictional claims in published maps and institutional affiliations.