

Postoperative Complication Rates of Skin Cancer Excisions Performed by Nurse Practitioners and Physician Assistants in Comparison with Physicians: Results from an All-Payer Claims Database in 2022

Carina Shiau, BS; Cynthia F. Griffith, MPAS; Peter A. Young, MPAS; Annalise Mabe, MPAS; Anthony Solhjoo, MPAS; John K. Geisse, MD; Gordon H. Bae, MD; Kelly C. Nelson, MD; Rebecca Vasquez, MD; Arash Mostaghimi, MD

UT Southwestern
Medical Center

1. Harvard Medical School, Boston, MA 2. Department of Dermatology, University of Texas Southwestern Medical Center, Dallas, TX 3. Department of PA Education, Stanford University School of Medicine, Stanford, CA 4. North Idaho Dermatology, Coeur d'Alene, ID 5. Solano Dermatology Associates, Vallejo, CA 6. Department of Dermatology, Stanford University School of Medicine, Stanford, CA 7. Department of Dermatology, MD Anderson Cancer Center, Houston, TX 8. Department of Dermatology, Brigham and Women's Hospital, Boston, MA

Introduction

- Between 2013 to 2021, the number of malignancy excisions billed to Medicare by NPs/PAs grew from 17,406 to 32,995 - an increase of 189.6% in just nine years. Shiau

Methodology

- An all-payer claims database was used to identify 216,184 adults who underwent excisions for cutaneous malignancies in 2022.
- We identified claims billed for adult patients between 01/01/2022-12/31/2022 using current procedural terminology (CPT) codes for skin malignancy excisions on the trunk, extremities, and head/neck.
 - 11600, 11601, 11602, 11603, 11604, 11606, 11641, 11642
- We then extracted the variables for each claim:
 - Date of service
 - National provider identifier (NPI)
 - License type (NP, PA, or MD/DO)
 - Practice location of rendering clinician
 - Patient age, sex, and diabetes status
- Outcomes measured included diagnosis codes:
 - Dehiscence (T81.30XA, T81.31XA, T81.31) within the 10-day global period
 - Prescription of oral antibiotics (doxycycline, minocycline, cephalexin, trimethoprim-sulfamethoxazole) dispensed between postoperative days 3-10 (as a proxy for suspected infections).
- Odds ratios (ORs) were used to evaluate for outcome discrepancies between NPs and PAs in comparison with physicians. Multivariate logistic regression (MLR) models were used to control for potential confounders of diabetes, wound defect diameter (based on CPT codes), and encounters where patients underwent multiple excisions (based on procedures billed with identical dates of service).

Results

- There were 22,969 unique clinicians identified (20,253 physicians, 1,104 NPs, and 1,930 PAs), who performed 330,743 malignancy excisions during 2022.
- Physicians performed 297,810 (90.0%) of procedures in the study and comprised 19,963 (86.9%) of operators.
- The unadjusted complication rates (dehiscence) during the 10-day global period:
 - 4.22% for PAs
 - 4.07% for NPs
 - 4.17% for Physicians
- The unadjusted incidence of antibiotic prescriptions during postoperative days 3–10:
 - 1.22% for PAs
 - 1.18% for NPs
 - 1.14% for Physicians
- Controlling for surgical defect size using MLRs showed that physicians had slightly lower odds of complications than PAs (OR: 1.13, CI: 1.12–1.15) and NPs (OR: 1.04, CI: 1.02–1.06).

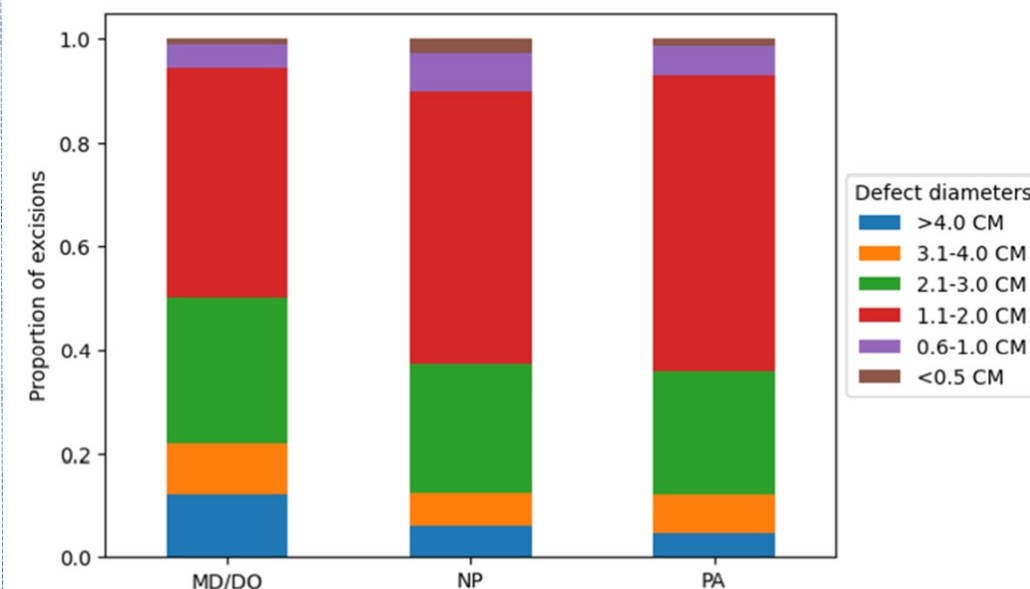


Figure: Wound defect diameters by operator type.

Discussion

- A strength of this study is its use of data from insurance payers rather than a single institution, which allowed tracking individual patients temporally across various clinical settings (including facilities not affiliated with the operators, such as emergency departments and urgent care centers).
- All operator type's unadjusted rate of AEs fell within the expected range for clean-contaminated procedures (0.5%-7.8%), reinforcing evidence that skin cancer excision is generally low-risk. Aasi, Harding, Delpachitra
- Unadjusted complication rates for NPs/PAs were similar to physicians, which may reflect appropriate case selection by operators.
- Larger surgical defects and encounters for multiple excisions were associated with increasing likelihood of complications and receiving antibiotics.
- When correcting for confounding influences of surgical defect size, patients with DM were 2x as likely to receive oral antibiotics, consistent with existing literature. Harding

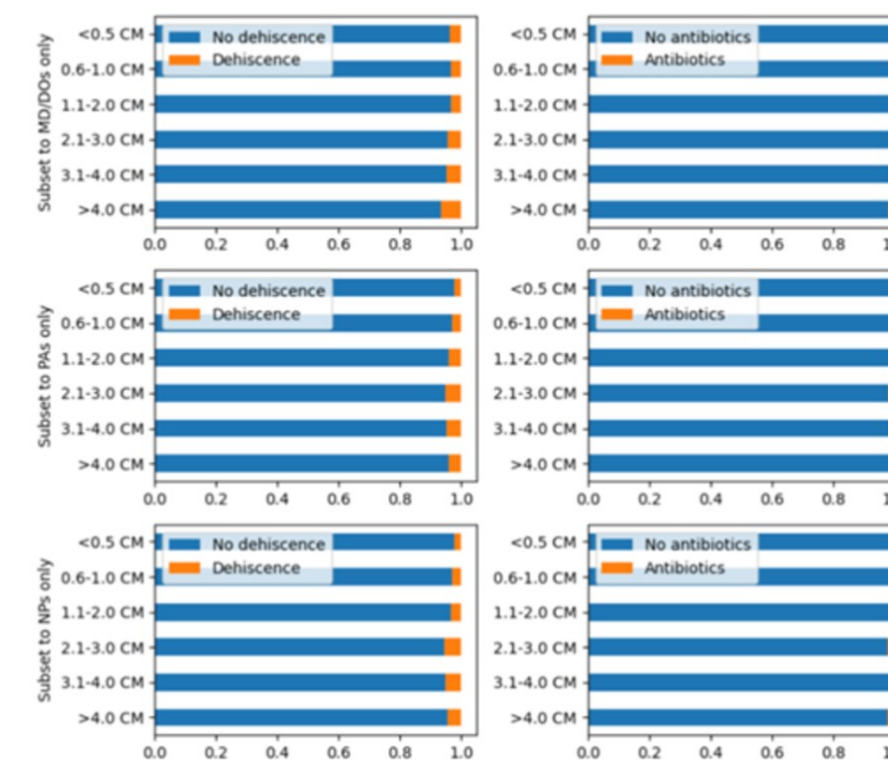


Figure: In all clinician cohorts, patients were more likely to receive antibiotics or experience complications with larger surgical wound defects

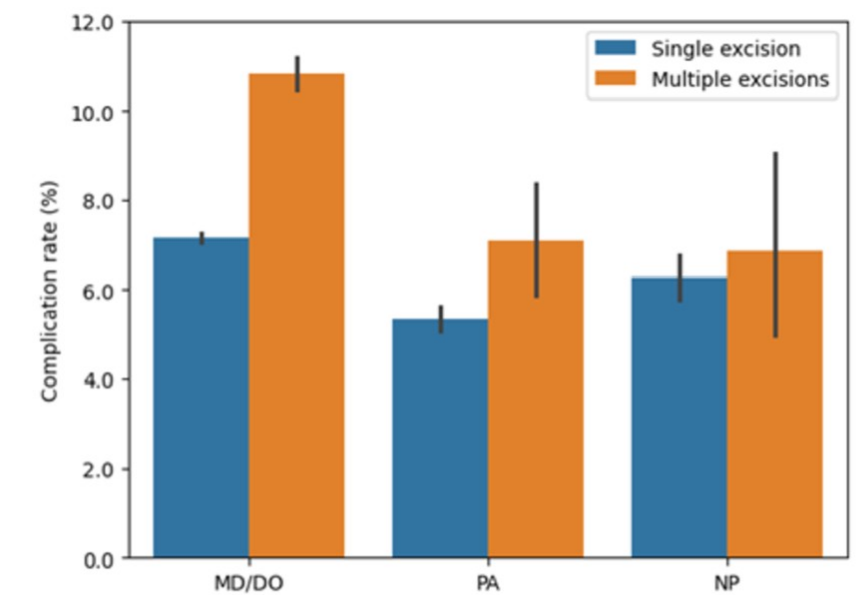


Figure: Complication rates in physicians (MDs/DOs), PAs, and NPs, separated by Number of excisions performed (single versus multiple)

Limitations

- Patients' smoking status was unavailable
- While estimating infection rates from diagnosis codes and prescriptions is less definitive than culture-confirmation, using the latter with our large sample was impracticable
- Our findings are limited to outcomes only during the global period; complication rates after this might differ overall and/or between operator groups.

Conclusion

- Post-excision complications were uncommon for all clinician types in this study, falling within the expected range for clean-contaminated procedures. This reinforces existing evidence that dermatologic surgeries are low-risk and suggests that patient safety is preserved when these procedures are performed by NPs/PAs.

References

- Available on request.

Disclosures

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