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Original Research

Surveyed dermatologists are less likely to curette invasive squamous cell carcinoma in solid organ transplant recipients

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ABSTRACT

Background: The risk of squamous cell carcinoma (SCC) is increased in solid organ transplant recipients (OTRs), and preferential treatment modalities vary among clinicians.

Objectives: The purpose of this study was to survey dermatologists regarding practice patterns for electrodesiccation and curettage (EDC) of SCC in OTRs and nontransplant patients.

Methods: An 18-question survey was sent to dermatologist members of the International Transplant Skin Cancer Collaborative, Association of Professors of Dermatology, and American College of Mohs Surgery. Differences in EDC practice patterns for treatment of SCC in OTRs and nontransplant patients were evaluated.

Results: Dermatologists in this study (N = 227) were more likely to treat SCC with EDC in nontransplant patients (67.4%) than in OTRs (48.0%; P = .0003). Dermatologists who perform EDC in both groups (n = 108) were unlikely to use EDC on the H-zone of the face; they were more likely to EDC tumors on non-H-zone areas of the face and neck in nontransplant patients compared to OTRs (P = .0007). Dermatologists were more likely to use EDC over surgery in nontransplant patients compared to OTRs with the following demographics: dementia or psychiatric disease (P = .04), multiple medical comorbidities (P = .03), or anticoagulation medications (P = .02). Conclusions: In OTRs with SCC, 48% of clinicians would consider EDC. The main factors that affect the decision to perform EDC include tumor location and patient comorbidities.

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Introduction

The number of solid organ transplantations continues to rise, with more than 33,000 transplantations performed in the United States in 2016 (OPTN/SRTR 2015 Annual Data Report, 2017). Because of the necessary immunosuppressive regimens in solid organ transplant recipients (OTRs), the incidence of cutaneous malignancy is increased, with more than half of OTRs experiencing at least one type of cutaneous malignancy (Euvrard et al., 2003). Unlike the general population, where the incidence of basal cell carcinoma is highest, the most common cutaneous malignancy among OTRs is squamous cell carcinoma (SCC) (Garrett et al., 2017). SCC in solid organ transplant patients presents at a younger age and with more aggressive features, including a higher risk for local recurrence, metastases, and mortality (Carucci et al., 2004; Chockalingam et al., 2015). These features often make management of SCC in this patient population more challenging. SCC in transplant patients is commonly treated with surgical excision or Mohs micrographic surgery (MMS). However, recent evidence suggests that a number of clinicians also use destructive methods such as electrodesiccation and curettage (EDC) for lower risk lesions (Zwald and Brown, 2011). The purpose of this study was to electronically survey dermatologists regarding their practice patterns for treatment of SCC in OTRs versus non–organ transplant patients. Furthermore, we aimed to specifically delineate differences in dermatologist practice patterns regarding use of EDC for SCC in OTRs versus nontransplant patients. Our hypotheses were that dermatologists are (1) less likely to use EDC for invasive SCC in transplant patients compared with nontransplant patients and (2) are less likely to use EDC in high-risk areas of the body in transplant patients compared with nontransplant patients.
Methods

An 18-question voluntary survey was electronically administered to members of the International Transplant Skin Cancer Collaborative (ITSCC), the Association of Professors of Dermatology (APD), and the American College of Mohs Surgery (ACMS) (Supplemental Document). The survey was approved by the Washington University School of Medicine Institutional Review Board. Providers were asked the same set of questions regarding treatment of biopsy-proven SCC with EDC in OTRs versus nontransplant patients. The study population included dermatologists with membership in any of the three organizations: ITSCC, APD, or ACMS. In analysis of intrasubject variability for EDC practice patterns for OTR and nontransplant patients, dermatologists who responded “never” to EDC on transplant patients were excluded. To detect a 20% difference between dermatologists who would consider EDC in (1) transplant patients and (2) nontransplant patients, assuming \( \alpha = 0.05 \) and power = 0.80, we would need 92 dermatologists per group. A \( \chi^2 \) analysis was used to compare the rate of EDC for solid organ transplant patients between private and academic dermatologists. McNemar’s test was used to evaluate intrasubject variability between EDC practice patterns for solid organ transplant and nontransplant patients based on tumor and patient characteristics.

Results

A total of 227 surveys were returned, including 120 (52.9%) from dermatologists in an academic setting and 107 (47.1%) from private practice. The combined approximate active membership of the ITSCC, the APD, and the ACMS is 2200 to 2300 members. Therefore, the survey response rate approximates 10%, which is an underestimate because a significant percentage of physicians are members of more than one of the organizations. Of the 227 dermatologists in this study, 118 (52.0%) would never use EDC for invasive SCC in an OTR versus 74 (32.6%) who would never use EDC for invasive SCC in a nontransplant patient (Table 1). Interestingly, one physician would use EDC for invasive SCC in OTRs but not in nontransplant patients. Overall, dermatologists were more likely to treat a biopsy-proven SCC with EDC in nontransplant patients than in OTRs (P < .0003). There was no difference in the rate of EDC use for treatment of SCC in OTRs between private and academic dermatologists (P = .67).

Among dermatologists who would consider performing EDC for treatment of SCC in both OTRs and nontransplant patients \((n = 108)\), there was no difference in practice patterns for SCC located on the H-zone of the face (defined as forehead, periorbital area and temples, nose, cutaneous lip, and ears) \((P = .22)\), extremities \((P = .50)\), or trunk \((P = .68)\) (Table 2). Dermatologists were more likely to perform EDC for treatment of SCC on other areas of the face and neck in nontransplant patients \((29.6\%)\) compared with OTRs \((15.7\%, P = .0007)\). There was no difference in practice patterns between the two groups of patients based on histology of SCC, including well differentiated \((P = 1.00)\), moderately differentiated \((P = .16)\), and poorly differentiated \((P = 1.00)\) SCC.

In clinical practice, some clinicians may perform a biopsy on a lesion and treat with EDC on the day of biopsy. In cases where the final pathology report upstaged the lesion, clinicians were asked if they would employ surgical excision or MMS based on the final pathologic diagnosis. The decision to pursue further excision or MMS after EDC did not differ between OTRs and nontransplant patients based on the following pathology findings: SCC in situ \((P = 1.00)\), well-differentiated \((P = .68)\), moderately differentiated \((P = .77)\), and poorly differentiated \((P = .77)\) SCC.

Dermatologists were more likely to treat SCC with EDC over surgical intervention in nontransplant patients compared with OTRs with the following demographic characteristics: significant dementia or psychiatric disease \((P = .04)\), multiple medical comorbidities \((P = .03)\), or blood thinners in addition to or stronger than 81 mg aspirin \((P = .02)\). There was no difference in practice patterns based on patients with a history of staphylococcal infection \((P = 1.00)\).

Discussion

More than 33,000 patients received a solid organ transplant in 2016, and the number of transplantations has steadily increased over the last decade (OPTN/SRTR 2015 Annual Data Report, 2017). Potent immunosuppressive medications are required after solid organ transplant to prevent transplant rejection. Likely because of immunosuppression, there is a noted increase in cancer

### Table 1

<table>
<thead>
<tr>
<th>Clinician practice patterns for the management of SCC in OTRs and nontransplant patients ((n = 227)) clinicians.</th>
<th>Solid organ transplant patients</th>
<th>Nontransplant patients</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frequency of EDC for SCC</td>
<td></td>
<td></td>
<td>0.0003</td>
</tr>
<tr>
<td>Never</td>
<td>118 (52.0%)</td>
<td>74 (32.6%)</td>
<td></td>
</tr>
<tr>
<td>Rarely (&lt;10% of the time)</td>
<td>67 (29.5%)</td>
<td>84 (37.0%)</td>
<td></td>
</tr>
<tr>
<td>Sometimes</td>
<td>39 (17.2%)</td>
<td>63 (27.8%)</td>
<td></td>
</tr>
<tr>
<td>Frequently (&gt;75% of the time)</td>
<td>3 (1.3%)</td>
<td>6 (2.6%)</td>
<td></td>
</tr>
</tbody>
</table>

EDC, electrodesicication and curettage; OTR, organ transplant recipient; SCC, squamous cell carcinoma.

### Table 2

<table>
<thead>
<tr>
<th>Practice patterns for the management of SCC in OTRs and nontransplant patients in clinicians who would consider EDC in both patient populations ((n = 108)) clinicians.</th>
<th>Solid organ transplant patients</th>
<th>Nontransplant patients</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Consider EDC of invasive SCC based on tumor characteristics</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>H-zone of face</td>
<td>4 (3.7%)</td>
<td>8 (7.4%)</td>
<td>0.22</td>
</tr>
<tr>
<td>Other face/neck</td>
<td>17 (15.7%)</td>
<td>32 (29.6%)</td>
<td>0.0007</td>
</tr>
<tr>
<td>Extremities</td>
<td>97 (89.8%)</td>
<td>103 (95.4%)</td>
<td>0.50</td>
</tr>
<tr>
<td>Trunk</td>
<td>103 (95.4%)</td>
<td>105 (97.2%)</td>
<td>0.68</td>
</tr>
<tr>
<td>Well-differentiated SCC</td>
<td>107 (99.1%)</td>
<td>106 (98.1%)</td>
<td>1.00</td>
</tr>
<tr>
<td>Moderately differentiated SCC</td>
<td>15 (13.9%)</td>
<td>20 (18.5%)</td>
<td>0.16</td>
</tr>
<tr>
<td>Poorly differentiated SCC</td>
<td>0 (0.0%)</td>
<td>1 (0.9%)</td>
<td>1.00</td>
</tr>
</tbody>
</table>

EDC, electrodesicication and curettage; OTR, organ transplant recipient; SCC, squamous cell carcinoma.
Based on available data, Stasko et al. (2004) have introduced a sim-
controlled studies that evaluate EDC for treatment of SCC in OTRs. 
Reschly and Shenefelt, 2010 ). However, there are no randomized
with well-documented efficacy in the literature ( Goldman, 2002;
for SCC in OTRs versus nontransplant patients included mul-
demic characteristics that differentially affected manage-
between OTRs and non-OTRs based on pathologic severity. Patient
and only one respondent would use EDC for poorly differentiated
differentiated to moderately to poorly differentiated SCC). No one
in OTRs compared to nontransplant patients.
For both OTRs and nontransplant patients, there was a trend of
decreasing EDC use with increasing pathologic severity (from well-
differentiated to moderately to poorly differentiated SCC). No one
surveyed would use EDC for poorly differentiated SCC in an OTR,
and only one respondent would use EDC for poorly differentiated
SCC in a nontransplant patient. Because of this trend, we were
likely underpowered to detect any differences in management
between OTRs and non-OTRs based on pathologic severity. Patient
demographic characteristics that differentially affected manage-
ment of SCC in OTRs versus nontransplant patients included mul-
tiple medical comorbidities, significant dementia or psychiatric
disease, and anticoagulation.
EDC is a reasonable approach for many localized skin tumors,
with well-documented efficacy in the literature ( Goldman, 2002;
Reschly and Shenefelt, 2010 ). However, there are no randomized
controlled studies that evaluate EDC for treatment of SCC in OTRs.
Based on available data, Stasko et al. (2004) have introduced a sim-
ple algorithm for managing SCC in OTRs. Aggressive EDC is an
option for superficial, slowly growing SCC, whereas surgical exci-
sion or MMS is preferred for larger tumors and SCC of the face or
neck. The results herein are consistent with these recommenda-
tions. Not surprisingly, clinicians in our study were unlikely to per-
form EDC in the H-zone area of the face (forehead, periorbital area
and temples, nose, cutaneous lip, and ears) regardless of transplant
status, because EDC is not considered the standard of care in these
areas. Although EDC is used in both transplant and nontransplant
populations for SCC, some aggressive SCCs require more definitive
surgical treatment with margin assessment to reduce the chance of
residual tumor and subsequent metastasis and mortality.
The primary limitations of this study are inherent to studies
using surveys, including selection and recall bias. In addition, we
are unable to calculate the exact response rate to our survey
because many physicians are members of more than one of the
surveyed organizations, but we are able to estimate a 10% response
rate. This is obviously a small proportion of all practicing dermatol-
ist. Among our respondents, the proportion of dermatologists in
academic practice was larger than the general dermatology work-
force, and overrepresentation of academia may have influenced
our results. However, there was no difference in the rate of EDC
for treatment of SCC in OTRs in academia compared with private
practice, making a large effect from academic overrepresentation
likely. Additionally, we did not categorize surveyed dermatolo-
gists by their primary practice pattern (e.g., general dermatology,
medical dermatology, surgical/procedural dermatology), as use of
EDC may differ based on subspecialty type. Finally, although it is
clear from our results that a sizable portion of clinicians would
consider EDC for treatment of SCC in OTRs, there are no studies
that directly compare outcomes of EDC to excision or MMS in this
population. Further prospective studies would be helpful to stratify
OTRs diagnosed with SCC for optimum definitive therapy.

Conflict of Interest
None

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ivate donation from the Rusty Hager Family for statistical analysis.

Study Approval
The authors confirm that any aspect of the work covered in this
manuscript that has involved human patients has been conducted
with the ethical approval of all relevant bodies.

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