FULL THICKNESS SKIN GRAFTS OBTAINED FROM THE SKIN OVERLYING SENTINEL NODES

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Abstract. Background. Surgical treatment of skin melanoma with skin margins in accordance with tumor thickness often necessitates covering the surgical defect with full or partial thickness skin grafts. When selective sentinel node biopsy is indicated, traditional procedures require 3 incisions: 1 in the region of the primary tumor covered by the graft, 1 in the axilla or groin corresponding to the site of the selective sentinel lymphnode biopsy, and 1—almost always the most uncomfortable—in the donor site for the skin graft.

Patients and methods. We present 10 patients attended in our department who underwent an alternative technique to reduce the number of wounds. A full thickness skin graft was obtained from the axillary or inguinal region covering the sentinel node.

Results. Sentinel node biopsy was positive in 1 patient, who subsequently underwent inguinal lymphadenectomy. Only 1 mild postoperative complication was reported in a patient with partial graft loss. The mean hospital stay was 6.2 days. After follow-up ranging from 11 to 56 months, no local recurrences or metastases had been detected.

Conclusion. The technique we present has the advantage of further simplifying surgical treatment for melanoma. It reduces the problems associated with sentinel node dissection by affording a wider access and is also associated with less morbidity.

Key words: melanoma, sentinel lymph node, grafts.

Introduction

The treatment of skin melanoma in the initial stages is currently based on appropriate surgical treatment using standardized skin margins in accordance with tumor thickness. Excision with appropriate surgical margins can
cause defects that, in specific locations, and especially in
the limbs, can be difficult to close and may even require
dermo-epidermal or full-thickness skin grafts. These grafts
add another factor to the comorbidity associated with the
intervention.1-3

In those cases in which the characteristics of the
primary tumor indicate selective sentinel node biopsy and
the skin melanoma is located on the limbs, the traditional
technique requires 3 incisions: 1 in the region of the
primary tumor covered by the graft, 1 in the axilla or groin
corresponding to the selective sentinel node biopsy site,
and 1 in the donor site for the skin graft. To reduce the
number of wounds, it may be useful to obtain the full-
thickness skin graft from the axilla or groin corresponding
to the skin overlying the sentinel node, thereby simplifying
the surgical technique and reducing the comorbidity
associated with the intervention.

We present 10 patients treated with this technique in
the Melanoma Unit of the Dermatology Department at
the Hospital San Cecilio, Granada, Spain, and report the
results obtained using this technique and its advantages.

Material and Methods

This was a retrospective study covering the period from
December 2002 to June 2006. We analyzed 10 cases of
patients with skin melanoma located on a lower limb,
who underwent primary tumor excision, selective sentinel
node biopsy, and repair of tissue loss using skin overlying
the region of the sentinel node.

All patients underwent prior excision-biopsy and
histological analysis confirmed the clinical diagnosis
of skin melanoma, except for patient 2, who underwent
excision of the primary tumor in a different center (and
whose histological data were unobtainable), and patient
10, who attended our service for recurrence after “laser”
therapy (as reported by the patient).

Once the diagnosis was confirmed, the primary tumor
scar was resected again with margins determined according
to the Breslow thickness (1 cm when Breslow thickness <1
mm and 2 cm if >1 mm), and the selective sentinel node
biopsy was performed during the same operation. All the
patients had previously undergone lymphangiography and
sentinel node resection was performed under fluoroscopic
guidance. Although selective sentinel node biopsy was
indicated by Breslow thickness, in our department we
also take into account the general clinical situation of the
patient. The sentinel node was approached via a circular
skin excision the size of the defect produced by resection
of the primary tumor scar (Figure 1). The donor site was
closed in layers, and the graft was cleaned and secured in
the receptor area for 6 to 7 days, during which period the
patients were kept in relative rest with the limb elevated.

During patient follow-up, the healing of the surgical
wound was closely monitored during the immediate
postoperative period and after the graft had stabilized. All
the patients have been undergoing periodic examinations
in our unit following the guidelines and complementary
tests recommended by the Spanish Consensus Group on
Melanoma.4

Results

The characteristics of the patients are summarized in the
Table. Nine patients presented localized melanomas on a
lower limb: 6 on the leg (mainly on the lower third) and
3 on the foot, whereas only 1 patient had the primary
tumor on an upper limb, specifically, on the back of the
hand. The sentinel node site was inguinal or axillary,
depending on whether an upper or lower limb was
affected. Thickness ranged from 0.6 mm to 6.5 mm, and
the selective sentinel node biopsy was negative in all
cases except in 1 patient, who subsequently underwent
inguinal lymphadenectomy, and was negative in the 14
isolated nodes. Patient 9, whose melanoma had a Breslow
thickness of 6.5 mm, underwent extensive preoperative
examination that included positron emission tomography
to rule out disseminated disease.

Hospital stay ranged between 2 and 11 days, with an
average of 6.2 days. A postoperative complication was
only observed in 1 patient, in whom the upper part of
the graft deteriorated and partial necrosis occurred. This
episode was resolved by minimal excision of the necrotic
area and closure by second intention, with subsequent
successful healing. The final outcome of the graft, both
from a functional and esthetic standpoint, was very good
in all cases, including the one which required partial
excision (Figure 2).

To date, patient follow-up has ranged from 11 to
56 months, depending on the date of the intervention.
During this period, no local recurrences have been
reported. Likewise, no metastases have been detected in
any of the patients.

Discussion

Several studies have established appropriate surgical
margins in the treatment of skin melanoma.5-12 The days
are long gone when patients underwent what can only
be described as mutilation in an attempt to increase
survival. Current margins are based on tumor thickness
measured in millimeters; thus margins of 1 cm are used
for melanomas with a thickness less than 1-2 mm,5-9 and
of 2 cm for those of over 2 mm.10-12 Larger margins have
no proven advantage regarding survival or recurrence, and

Clemente-Ruiz de Almirón A and Serrano-Ortega S. Full Thickness Skin Grafts Obtained From the Skin Overlying Sentinel Nodes

Actas Dermosifiliogr. 2009;100:780-4

781
A b

Figure 1. Intraoperative images of patient 3. A: Site where the sentinel node was found under fluoroscopic guidance. B: Detection and excision of the sentinel node through the defect left by the total skin graft. C: Result after excision of the sentinel node and defect closure. D: Result after securing on the leg the full thickness skin graft obtained from the sentinel node site.

Table 1. Characteristics of the Patients Included in the Series, Including Data on the Primary Tumor and Subsequent Outcome

<table>
<thead>
<tr>
<th>No.</th>
<th>Sex</th>
<th>Location</th>
<th>Age, y</th>
<th>Breslow, mm</th>
<th>Selective sentinel node biopsy</th>
<th>Complications</th>
<th>Hospital Stay, d</th>
<th>Recurrence</th>
<th>Metastasis</th>
<th>Follow-up, mo</th>
</tr>
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<tbody>
<tr>
<td>1</td>
<td>M</td>
<td>Leg</td>
<td>26</td>
<td>1.3</td>
<td>Negative</td>
<td>No</td>
<td>2</td>
<td>No</td>
<td>No</td>
<td>14</td>
</tr>
<tr>
<td>2</td>
<td>F</td>
<td>Foot</td>
<td>30</td>
<td>NS</td>
<td>Negative</td>
<td>No</td>
<td>8</td>
<td>No</td>
<td>No</td>
<td>11</td>
</tr>
<tr>
<td>3</td>
<td>F</td>
<td>Leg</td>
<td>25</td>
<td>2.5</td>
<td>Negative</td>
<td>No</td>
<td>7</td>
<td>No</td>
<td>No</td>
<td>11</td>
</tr>
<tr>
<td>4</td>
<td>M</td>
<td>Foot</td>
<td>70</td>
<td>2.5</td>
<td>Negative</td>
<td>No</td>
<td>7</td>
<td>No</td>
<td>No</td>
<td>13</td>
</tr>
<tr>
<td>5</td>
<td>F</td>
<td>Foot</td>
<td>25</td>
<td>0.9</td>
<td>Negative</td>
<td>No</td>
<td>8</td>
<td>No</td>
<td>No</td>
<td>15</td>
</tr>
<tr>
<td>6</td>
<td>F</td>
<td>Hand</td>
<td>44</td>
<td>0.9</td>
<td>Negative</td>
<td>No</td>
<td>4</td>
<td>No</td>
<td>No</td>
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</tr>
<tr>
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<td>F</td>
<td>Leg</td>
<td>21</td>
<td>0.9</td>
<td>Negative</td>
<td>No</td>
<td>3</td>
<td>No</td>
<td>No</td>
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<tr>
<td>8</td>
<td>F</td>
<td>Leg</td>
<td>59</td>
<td>1.6</td>
<td>Positive</td>
<td>Graft deterioration</td>
<td>11</td>
<td>No</td>
<td>No</td>
<td>55</td>
</tr>
<tr>
<td>9</td>
<td>F</td>
<td>Leg</td>
<td>55</td>
<td>0.6</td>
<td>Negative</td>
<td>No</td>
<td>8</td>
<td>No</td>
<td>No</td>
<td>56</td>
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<tr>
<td>10</td>
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<td>Leg</td>
<td>22</td>
<td>6.5</td>
<td>Negative</td>
<td>No</td>
<td>4</td>
<td>No</td>
<td>No</td>
<td>56</td>
</tr>
</tbody>
</table>

Abbreviations: F, female; M, male; NS, not stated.
thus are considered unnecessary. In terms of depth, the underlying fascia should be reached without excising it.\textsuperscript{13}

If we apply these margins, if the primary tumor is large, the resulting defects may also be large. This means that at certain sites (especially the limbs) it may be difficult to achieve closure by first intention or by using advancement flaps, and partial or full thickness skin grafts may be needed.\textsuperscript{1-3} These have some advantages, such as permitting better follow-up of possible local recurrence, but also have drawbacks, such as comorbidity associated with the need for a donor site (usually the thigh in our case) and a longer hospital stay. The use of full thickness skin grafts instead of dermo-epidermal grafts leads to a better esthetic result; on the one hand, the texture and color tend to be more similar to those of the recipient site, without the known “trapdoor effect,” and on the other, it avoids the need for creating a wound site (with a resulting scar) at the donor site.\textsuperscript{14} The most important limiting factor when performing a full thickness skin graft concerns closure or nonclosure of the donor site. This is not usually a problem in the case of skin covering the sentinel node in the groin, and closure can be achieved without major complications; furthermore, this skin tends to be sufficiently thick to minimize shrinkage of the graft in its final bed, leading to a better esthetic result. Closure can also be achieved in the axilla without difficulty.

Regarding morbidity, the use of full-thickness skin grafts only requires a few days of care until the stitches are extracted, whereas in the case of a partial thickness graft donor site, care should continue for several weeks until complete reepithelialization of the bed has occurred. Furthermore, in this case, hyperpigmentation or persistent erythemas frequently appear in the site, and often take months or years to heal.

No objective data are available on the possible influence of this technique on survival, since to date no comparative studies have been conducted with partial skin grafts. In principle, the use of full thickness skin grafts or advancement flaps does not negatively affect survival or increase local recurrences compared to the use of thinner grafts.\textsuperscript{7,14} However, only 3 studies have reported the outcomes of the use of this technique—all in a small series of patients. In a series of 16 patients, Dresler et al\textsuperscript{1} did not observe increased recurrence on the graft or metastasis at the donor site. These findings were confirmed by Chennoufi et al\textsuperscript{2} in a more recent series of another 16 subjects. In the largest and most recent series, Lewis et al\textsuperscript{3} included patients with melanoma and other tumors (Merkel cell tumor, basal cell carcinoma, and squamous cell carcinoma). Likewise, these authors did not observe any significant differences in the rate of recurrences in the full thickness skin graft group compared to the partial graft group. We did not observe cases of local recurrence or metastasis in any of our patients, but the study included a small series of cases; thus, long-term studies with more patients are needed to be able to more accurately assess any possible impact on survival or recurrences.

The technique presented has the advantage of simplifying yet further the surgical treatment of skin melanoma, decreasing the difficulties involved in sentinel node dissection by providing wider access and, in addition, decreasing the comorbidity associated with the intervention. Thus, we consider that the use of full-thickness skin grafts from the sentinel node site may be a good choice in certain patients, leading to better esthetic and functional results, without adversely affecting the oncological outcome while decreasing the morbidity associated with the procedure.

**Conlicts of Interest**
The authors declare no conflicts of interest.
References


