

Digit Preserving Surgical Therapy For Invasive Melanoma of the Toe

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Statement of Purpose:

A common definitive treatment for invasive melanoma of a toe is amputation. The purpose of this case study is to investigate a curative surgical option which preserves the digit.

Level of Clinical Evidence: 4



post punch biopsy with residual pigmented lesion



post methylene blue injection & local excision

Literature Review:

Melanoma of the foot typically appears on the sole or underneath the nail but can appear anywhere. The rates of melanoma have been rising. The American Cancer Society estimates 96,480 new melanomas will be diagnosed in 2019. Of all melanomas, between 3 and 15 percent occur on the foot (1).

There are four main subtypes of melanoma; superficial spreading, nodular, acral lentiginous, and lentigo maligna. Although lentigo maligna typically occurs on the face, the other three subtypes can occur on the foot. Superficial spreading is the most common and most frequently found on the dorsum of the foot. Nodular melanoma, the second most common (15-30%), is characterized by a rapidly enlarging, often firm lump. It typically presents as a dark blue raised lesion. Acral lentiginous melanoma is the only type which arises equally across all skin types and is frequently observed in darker skin types (1).

Risk factors include overexposure to sunlight, family history of melanoma, fair complexion, blue or green eyes, or excessive number of moles (1).

Cutaneous malignant melanoma (CMM) accounts for 65% of skin cancer related deaths (2). Definitive treatment involves wide local excision of the melanoma down to deep fascia. Often times the consequence is a large soft tissue defect. Amputation has been employed to achieve disease free margins and skin closure.

Case Report:

61 year old female with 1 year history of pigmented skin lesion to dorsum of left second toe received initial punch biopsy from dermatologist. She was followed by a surgical oncologist for further care. A podiatric surgeon was consulted for assistance with surgical planning and skin closure. The punch biopsy revealed a mixed lentiginous & superficial spreading invasive melanoma with Breslow thickness of 0.8 mm. Patient presented to clinic with residual pigmented lesion with no history of ulceration.

Patient underwent lymphoscintigraphy at primary lesion and sentinel lymph node biopsy of three left inguinal lymph nodes. Next the incision was planned with 1 cm margin around periphery of the primary lesion – this represented oncologic resection dimensions measuring 2.5 cm x 2.5 cm. The planned incision was then extended into a vertical ellipse measuring 2.5 cm x 3.5 cm. A full thickness excision was performed. Then, a full thickness skin graft was harvested from the sinus tarsi within relaxed skin tension lines and donor site was closed primarily. The graft was debrided of fatty tissue and pie-crustured before being secured with Monocryl suture.



FTSG to second toe



Sinus tarsi donor site



6 month follow up

Results

Histologically, the wide excision specimen confirmed presence of mixed lentiginous & superficial spreading malignant melanoma 2.5 mm linearly and 0.4 mm in depth. The final depth of the lesion was 0.8 mm. All surgical margins were widely free of disease. Examination of the left inguinal sentinel lymph nodes were negative for any metastatic disease.

Clinically, the patient achieved full healing at 3 months with no surgical site infection or recurrence to date. The patient's toe initially had partial incorporation of the skin graft with a portion requiring secondary wound healing for full closure.

Analysis and Discussion:

Early detection of foot and ankle melanoma may be challenging due to its anatomic location. The lesions can also be easily misdiagnosed as a plantar wart or hematoma. A study investigating primary pedal melanomas over a 32 year period reported a 5 year survival rate of 52% involving the foot and ankle compared with 84% elsewhere on the lower extremity (3). Although foot melanoma only constitutes 1 percent of all skin cancers, it accounts for more skin cancer deaths than any other skin cancer (4).

A multispecialty approach is vital in achieving an early, accurate diagnosis and optimal treatment for the patient. In this case, we report a patient with malignant melanoma of the second toe who was treated by both a surgical oncologist and podiatric surgeon. NCCN guidelines were consulted to confirm 1 cm as the appropriate oncologic resection margin for the thin, invasive melanoma (5). Although the patient's melanoma falls outside MSLT-1 inclusion criteria, sentinel lymph node (SLN) biopsy with thin melanomas harboring a vertical growth phase has demonstrated clinical significance with a risk of 5-10% positive SLN biopsy (6).

The toe experienced only partial incorporation of the skin graft likely due to an attenuated blood supply as the immediate underlying subcutaneous tissue was excised with the primary lesion. Overall, this surgical treatment was successful in excision of the melanoma with negative margins, achieving skin closure, while avoiding amputation of the toe. The patient healed successfully and was grateful to avoid the toe amputation.

Although a simple toe amputation can provide a curative surgery, it can also have deleterious psychological effects. Patients may experience depression following the loss of a body part as well as anxiety/shame due to the aesthetic. This surgical treatment with a sinus tarsi pinch graft for skin coverage is a low risk, effective surgical option to avoid toe amputation in patients with thin, invasive melanomas.

References

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