Melanoma is the most common malignancy of the foot and ankle. (1) Melanoma of the foot or ankle is more likely to be misdiagnosed or diagnosed later than melanomas of other sites. (1-2) A malignant lesion is often misdiagnosed for a nonhealing ulcer, subungal hematoma, verruca or fungal nail changes. (2-3) By the time the melanoma is correctly diagnosed, the tumors are usually thicker and at a more advanced stage resulting in poorer prognosis.

In this report, we describe our experiences with the surgical management and long-term follow-up results for melanoma in the foot and ankle of 5 patients. We attempted to evaluate the distinguishing features of melanoma of the foot. Each melanoma was classified according to its site on the foot, the surgical margins, complications, and minimum 12-month follow-up were investigated. Our case series may serve as a reference point for determining treatment strategies in the future.

Methodology

- Between 2013 and 2016, five patients who had primary cutaneous melanoma in the foot or ankle were seen at a single institution. A retrospective analysis and evaluation review of these five patients were done.
- The hospital records were reviewed with attention paid to the basic demographics, the site of involvement, depth and stage of the lesion, whether there had been a delay in diagnosis, surgical management of lesion, additional procedures, sentinel lymph node biopsy results, and 12-month follow-up.

Results

- All 5 patients had both the initial biopsy and the operative excision at our institution. The first lesion was the sentinel lymph node biopsy. Of the five patients, three were female and two were male. The mean age at the time of presentation was 59.8 years (range: 38-80).
- Lesions on or near the toe occurred in one of our patients and was treated with amputation of the toe.
- One lesion that was located on the posterior heel required a split thickness skin graft. All other foot lesions were treated with wide excisions followed by Wound Vac therapy for secondary intention skin closure. Dissection of the inguinal lymph nodes was performed therapeutically in all five patients by a general surgeon as the same institution.

Case Reports

Case #1: 59 yo white female presented with a planter 1st metatarsal ulcer that has been present for 3 years. It was noted to be ulcerated and bleeding for 1 month. A punch biopsy was done prior to ultimate wide excision with 1.5 cm margins with negative margins and negative SLNB. The patient's wound completely healed 5 months post-operatively.

Case #2: 54 yo Vietnamese male presented with a painless planter 1st metatarsal head ulcer. A shave biopsy was done prior to ultimate left wide local excision with 1.5 cm margins with NPWT and left axillary SLNB both of which were negative. The patient's wound healed completely at 3.5 months.

Case #3: 80 yo white male who presented with a plantar 5th metatarsal head ulcer over a pressure ulcer that had been present for many years. A shave biopsy was done before an ultimate right foot partial plantar amputation and right inguinal SLNB, both of which were negative. The patient's wound healed at 4.5 months.

Case #4: 67 yo black female who presented with a right posterior heel ulcer that has been present for years. A shave biopsy was done before an ultimate right heel wide excision with 2 cm margins and right inguinal SLNB, both of which were negative. Patient also had a split thickness skin graft over the surgical site as it is a nonhealing surface. At 1 month s/p STSG, the wound is healed.

Case #5: 67 yo black female who presented with a right posterior heel ulcer that has been present for many years. A shave biopsy was done before an ultimate right heel wide excision with 2 cm margins and right inguinal SLNB, both of which were negative. The patient's wound healed at 4.5 months.

Treatment Protocol

- The standard treatment plan for malignant melanoma was wide local excision and reconstruction with sentinel lymph node biopsy.
- We adopted wide local excision on the Brodieskel technique. The surgical margin was 0.5 cm for all lesions, 1 cm for lesions < 1 mm in depth, 2 cm for lesions 1.01-2.0 mm in depth, and 3 cm for lesions >2.0mm in depth.

Case Images

Image 1. 4 months s/p

Image 2. a) Planter 1st metatarsal malignant melanoma at presentation b) 6 weeks s/p c) 8 months s/p

Image 3. a) Planter right heel malignant melanoma at presentation b) 5 weeks s/p c) 4 months s/p - healed

Image 4. a) Posterior heel malignant melanoma lesion presentation b) 1 month s/p with 100% take of STSG c) 2 months s/p - healed

Results

- Among the 5 patients, 3 were female and 2 were male. The mean age at the time of presentation was 59.8 years (range: 38-80).
- In our case series, the decision to perform a biopsy of the suspicious lesion was based on clinical experience. The presentation of the foot was the chronic site of involvement, found in four out of five patients. Of the five patients, only one lesion was found on the posterior heel.
- Once a diagnosis of melanoma is made, the biopsy scar and any remains of the lesion need to be removed to eradicate any remaining tumor. The size of surgical margins depends on the tumor thickness. Extending the resection beyond 2 cm does not appear to decrease local recurrence rates (4). The one patient that did not have a weightbearing surface lesion had a split thickness skin graft applied to the large defect, which helped expedite healing.

Sentinel lymph node biopsy (SLNB) has been an established recommendation in patients with intermediate thickness tumors (0.76 to 4.0 mm) and no clinical evidence of nodal or metastatic disease. By using a combination of isotope lymphatic mapping and lymphoscintigraphy, we can place a small isotope in the injection site, the sentinel lymph node can be identified in more than 95% of patients with intermediate thickness tumors.

In this study, all patients had a SLNB that was done and all were negative. The most recent follow-up has all been positive, which no patients requiring subsequent treatment, medically or surgically.

This case series details the successful surgical management and reconstruction of melanoma in the foot and ankle and may serve as a reference point for determining treatment strategies.