# Skin Cancers of the Hand and Upper Extremity

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Skin cancers represent the most common primary malignancies of the hand. They typically present as painless lesions on areas of high sun exposure, such as the dorsum of the hand and upper extremity. The most common malignancy is squamous cell carcinoma, followed by basal cell carcinoma and melanoma. The key to successful treatment is early and accurate diagnosis and treatment. Unlike open biopsies, which are indicated for deep soft tissue and bone lesions, biopsies for skin cancer can be performed under local anesthesia in the office setting in the form of shave or punch biopsies. A number of nonsurgical treatment options are available for treatment. However, when surgical excision is indicated, appropriate margin resections are dictated by the grade and stage of the malignancy. *(J Hand Surg 2012;37A:171–178.* 

**Key words** Basal cell, hand tumor, melanoma, skin cancer, squamous cell.



More than 2 million cases of skin cancer are diagnosed each year.[1] Skin cancer can be readily detected on routine skin examination, which underscores the importance of recognition and early treatment. Many nonmelanoma skin cancers are located in areas of intense sun exposure. The skin of the hand and upper extremity is no exception. Skin cancers of the upper extremity are common and are often readily apparent on physical examination.

Skin cancer can arise in any layer of the skin. Malignant transformation of the upper layers of the epidermis can produce squamous cell carcinoma (SCC), lower layers of the epidermis can develop into basal cell carcinoma (BCC), pigmented cells or melanocytes can produce melanoma, and the neuroendrocrine cells of the skin can result in Merkel cell carcinoma (MCC). It is important to obtain a detailed history regarding sun exposure, personal and family history of skin cancer, duration of lesion, changes in appearance of the lesion, and other symptoms such as pain, tenderness, or pruritus. Physical examination must include location, size, and consistency, in addition to any associated ulceration or bleeding. A neurologic examination might be deemed necessary should the size or depth of the lesion be of concern. An evaluation of proximal lymphadenopathy in the epitrochlear and axillary distribution should also be noted.

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## DIAGNOSIS

The initial step in diagnostic evaluation of a potential skin cancer of the upper extremity should be a biopsy. Unlike open biopsies for deep soft tissue and bone lesions, biopsies for skin cancer can be performed under local anesthesia in the office setting. Often, shave biopsies are sufficient; however, a punch biopsy should be considered for indurated, atrophic, and/or pigmented lesions.

A shave biopsy can be performed by infiltrating the lesion locally with lidocaine, with or without epinephrine. A sample can be obtained by either using a half blade for shave biopsy or by simply using a 15 blade in a tangential fashion. Hemostasis can be obtained with aluminum chloride 20% solution, Monsel solution, or through electrocautery.

A punch biopsy can be performed by infiltration with local anesthesia as well. The size of the punch biopsy is generally determined by the size of the lesion to be sampled. Punch devices range in size from 1.5 to 8.0 mm. An adequate sample can be obtained in most cases

with a 4-mm punch sampling of the lesion. The sample should be directed toward either the most indurated or most pigmented portion of the lesion. Hemostasis of punch biopsies of less than 4 mm in size can usually be achieved by Monsel's solution, cautery, Gelfoam (Pfizer, New York, NY) or closure with a simple suture. Punch biopsies greater than 4 mm in size can often require hemostasis by a simple suture.

Subsequent treatment is based on the type of skin cancer present, histologic differentiation, and size and location of the lesion. It is essential to have skin specimens evaluated by a trained dermatopathologist.

**EDUCATIONAL OBJECTIVES**

- State the skin cancers from the various layers of skin.
- List the risk factors for squamous cell carcinoma.
- Discuss the differences between actinic keratosis and squamous cell carcinoma.
- Discuss the indications for Mohs surgery for skin cancers of the upper extremity.
- Describe the risk factors and locations of basal cell carcinomas of the upper extremity.
- Summarize the differences between squamous cell carcinoma and basal cell carcinomas with respect to presentation, treatment, and outcome.

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## SQUAMOUS CELL CARCINOMA

Squamous cell carcinoma makes up approximately 20% of all skin cancers; it is often located in areas of intense ultraviolet light or sun exposure. There are approximately 200,000 new cases of SCC each year. Risk factors include fair skin, cumulative over-exposure to ultraviolet radiation, advancing age, outdoor vocation, and sunnier geographic locations. The hand and upper extremity are at risk for SCC development; however, SCC is most often found on the head and neck.[5] Other causes that place the upper extremity at increased risk include arsenic exposure,[2] chronically damaged skin (such as is caused by burns), exposure to human papillomavirus,[3] and exposures to polyaromatic hydrocarbons.[4]

The common precursor for SCC is an actinic keratosis (AK). The vast majority of AKs are predominantly found on the dorsum of the hands and upper extremity.[5] Actinic keratoses represent a marker for increased risk of skin cancer overall, as they indicate a history of intense ultraviolet exposure. The rate of progression from individual AK to SCC ranges from 6% to 10%.[6]

On physical examination, AKs are identified as discrete erythematous scaling or keratotic papules[7] (Figure 1). The typical patient is elderly with fair skin. Actinic keratoses typically develop on areas of high sun exposure, such as the dorsum of the hand. They can be hyperkeratotic with thickened scale or pigmented. They are typically irregular but discrete, measuring less than 1 cm. Although they can be found singly, multiple lesions are more commonly found together.[7] They are typically asymptomatic but occasionally are associated with tenderness or spontaneous bleeding.

Actinic keratoses do not require biopsy unless a high index of suspicion exists for SCC or if the AK does not respond to therapy. Treatment options for AKs include cryotherapy,[8] chemical peels,[8] topical immunomodulators such as imiquimod,[9] 5-fluorouracil,[10] or photodynamic therapy.[11]

Squamous cell carcinomas can present in similar fashion but often have more induration, potential ulceration, or associated spontaneous bleeding[5] (Figure. 2). Like AKs, SCCs are more common in elderly patients and develop in areas of high sun exposure. They are also discrete, with well-defined borders and palpable induration; however, they are typically larger than AKs and most often present singly. Bowen disease, or SCC *in situ*, presents as a discrete, erythematous, scaling plaque that can often be misdiagnosed as a dermatitis.[12] They can also present with varying degrees of pigment, mimicking malignant melanoma.[13]

Keratoacanthomas represent a particular type of SCC that often develops rapidly over days to weeks on sun-exposed areas. They are identified as discrete, dome–shaped, erythematous nodules with a central keratinous core. They have the potential to show spontaneous regression, although they can also progress to invasive SCC.[14] They can present as solitary lesions, multiple lesions (generalized eruptive keratoacanthomas of Gryzbowski),[15] familial syndromes (familial keratoacanthomas of the Ferguson-Smith),[10] within the context of genetic disorders (Muir-Torre syndrome),[16] or associated with immunosuppressive therapy.[17,18] They have also been noted as a postoperative complication around surgical sites for skin cancer excision.[19]

Squamous cell carcinoma has an associated risk of metastatic risk, which reinforces the importance of early identification and treatment. Recently, the American Joint Committee on Cancer Staging (AJCC) has adopted staging criteria for SCC.[20] For suspected SCC, a biopsy should be obtained. Shave biopsy is often sufficient; however, deep shave saucerization or punch biopsy are preferable because they can provide a more accurate sampling of the lesion. High-risk lesions are ones that display rapid growth, are greater than 2 cm at