

**Digital squamous cell carcinoma:**

**Case report and review of literature**

**Abstract**

Squamous cell carcinoma (SCC) is one of the most common primary malignancies affecting the upper limb and especially the hand. Digital SCC is infrequently reported in the literature and presents a diagnostic challenge because of its relatively rare occurrence and mimicry of benign conditions. Many risk factors have been identified including immunosuppression, Human PapillomaVirus (HPV), trauma, chronic scars, and exposure to radiation and carcinogens. Treatment varies from Mohs micrographic surgery to amputation.

After review of literature, rates of recurrence and metastasis seem to be higher for SCC affecting the hand compared to other sites and digital SCC has a high rate of recurrence with a low metastatic rate.

Through this paper we report the case of a 70-year-old woman with SCC of the fourth right finger that extended from the proximal nailfold to the ventral finger, and we aim to highlight the importance of an early diagnosis, leading to an early treatment which is the only guarantor of an effective treatment with digit preservation and good function.

**Keywords:** Squamous cell carcinoma, hand, digits, amputation, hand surgery

**Introduction**

Squamous cell carcinomas (SCC) appear to be the most common skin malignancy of the hand [1]. In contrast, digital SCC is relatively rare [2]. Lesions are often misinterpreted as common benign conditions, leading to delayed diagnosis. A wide range of treatment options is available, from Mohs micrographic surgery technique to amputation, passing by wide excision with adequate margins. Digit preservation and good function is an important consideration, however, this may not be achievable following wide excision of the SCC and in case of bone invasion, leading to ray amputation [3]. The prognosis for patients with digital SCC is usually favorable following treatment of the cancer [2].

35 **Case report**

36 A 70-year-old woman was seen for treatment of a voluminous ulcerating keratotic and  
37 circumferential mass developed at the expense of the distal part of the right fourth finger. The  
38 tumor has been evolving since 6 months. It was first developed from the proximal nailfold  
39 with an intact nail plate and then has expanded circumferentially to cover all the distal  
40 phalange and the palmar face of the distal interphalangeal joint (Figures 1a, 1b). There was  
41 no regional lymphadenopathy, and no metastasis was identified at the initial assessment.

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43  
44 **Figure 1a** : Dorsal view of the tumor of  
the fourth right finger

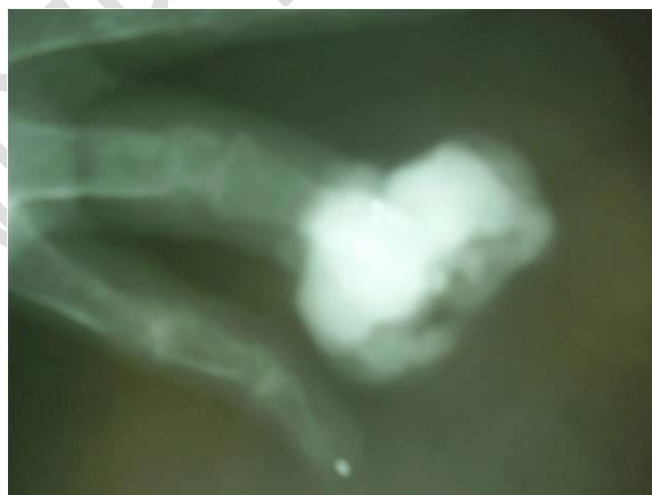


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46 **Figure 1b** : Palmar view of the tumor of  
the fourth right finger

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46 The radiographic study of the involved digit revealed an important invasion of the soft tissues  
47 and the bone; third phalange and distal interphalangeal joint (DIPJ) (Figure 2).

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49  
50 **Figure 2** : X-ray image of the tumor invading soft  
tissues, third phalange and DIPJ

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52 The medical history taking revealed no history of radiation or exposure to carcinogens.

53 A biopsy specimen of the tumor area revealed an invasive well-differentiated squamous cell  
54 carcinoma. Because of the size of the tumor, its location, the age of our patient, added to the  
55 unavailability of the Mohs micrographic surgery technique, we favored to amputate the fourth  
56 through the first phalange (Figure 3).



57  
58 **Figure 3** : Distal tip after amputation of the fourth  
59 right finger through the first phalange

60 We didn't perform any adjuvant treatment. Our patient was seen for the last time at one year  
61 post-operative without noticing any sign of recurrence or extension of the cutaneous tumor  
62 and then lost of sight.

### 63 64 65 **Discussion**

66 Squamous cell carcinoma is one of the most common primary malignancies affecting the  
67 upper limb. In a retrospective review of a large cohort of 407 patients with hand skin  
68 malignancies at the John Radcliffe hospital, squamous cell carcinoma comprised 78 %, basal  
69 cell carcinoma 11.3 %, and melanoma 3.9 % [1].

70 According to the findings of Philip et al., SCC of the dorsal hand is common. In contrast, SCC  
71 on the nonsun-exposed ventral fingers is rare [2]. Gormley et al. proved that periungual and  
72 distal dorsal finger SCC, often associated with HPV, is only occasionally observed [4].

73 This is in accordance with the findings of Askari et al., who worked on SCC involving  
74 exclusively the hand [4], as well as the findings of Sayed et al., SCCs involving dorsum of the  
75 hand and digit occur most frequently. Webspace and palmar SCCs are less common [3, 5].

76 Diagnosis may be delayed because the clinical presentation of digital SCC can vary widely  
77 and often mimics other more common benign conditions. It typically presents as a  
78 periungual, verrucous plaque or subungual nodule, potentially associated with a variety of  
79 nail plate changes, such as onycholysis, longitudinal melanonychia, erythronychia, and  
80 leukonychia [4].

81 Several risk factors of digital SCC have been identified after review of literature. SCC of the  
82 ventral finger has rarely been described in patients without an apparent tumor-associated  
83 risk factor [2].

84 The main potential causative agent in digital SCC is Human PapillomaVirus (HPV). Although  
85 its oncogenic potential and its association with cervical and anogenital cancers has been well  
86 established, the role of HPV in development of cutaneous SCCs remains less clear. SCCs of  
87 the distal digit and periungual skin, however, appear to be an exception, with mounting  
88 evidence to suggest that SCCs in this location are overwhelmingly associated with the  
89 mucosal oncogenic HPV subtypes [6, 7]. Gormley et al. proved that although low-risk human  
90 papillomavirus (HPV) subtypes are commonly associated with benign digital verrucae, digital  
91 SCC can be associated with high-risk, oncogenic HPV subtypes including HPV-16, -33, -51,  
92 and -73. The majority of reports linking HPV and digital SCCs have implicated the HPV-16  
93 subtype [4].

94 Added to the previously documented risk factors for SCC including chronic scars, chronic  
95 ulcers, radiation therapy and exposure to ultraviolet light, many other risk factors have been  
96 observed especially in individuals with digital SCC. We mention the exposure to carcinogens  
97 like arsenic, polycyclic hydrocarbons, grease and oil, as well as some congenital conditions  
98 like epidermolysis bullosa, Huriez syndrome and syndactyly [2, 3]. Recurrent bacterial or viral  
99 infections and antecedent of trauma are potentially involved in the occurrence of digital SCC.  
100 Immunosuppression, whether it is congenital or acquired after HIV infection or following  
101 organ transplant, may also increase the risk of digital SCC [2, 4].

102 Multiple treatment options exist for SCC of the hand. Wide surgical excision is indicated with  
103 4 mm margins for tumors with a diameter of less than 2 cm, and 6 mm margins for those  
104 larger than 2 cm or with less favorable grade [6]. Askari et al. noted a reduction in the  
105 recurrence rate when reconstruction required a flap or skin graft compared with primary  
106 closure, and this suggests the importance of wide margins during primary excision to  
107 decrease recurrence, as flaps and grafts tend to be used in cases involving large resections  
108 [5].

109 For SCCs involving only soft tissue, Mohs micrographic surgery offers the highest cure rates  
110 [4]. It has been suggested to decrease recurrence and metastasis rates, but this wasn't  
111 noted in Askari et al. study where no significant difference in overall survival or recurrence  
112 rates was found for lesions treated with Mohs surgery or wide excision [5]. Furthermore, this  
113 technique is not routinely available as in the case of our department.

114 Amputation is the treatment of choice for bony invasion [4] like in the case of our patient, and  
115 may be discussed under certain instances to reduce the risk of recurrence [3].

116 The role of sentinel lymph node biopsy ( SLNB ) in treatment of SCC of the hand remains  
117 controversial. Several reports have suggested that SLNB may be useful in cases of high-  
118 grade tumors, perivascular or perineural invasion, increased depth, or history of recurrence  
119 [7, 8]. In Askari et al. study, 4 patients underwent SLNB. All had clinical lymphadenopathy  
120 and 2 had positive nodes. One of the 2 eventually had formal lymphadenectomy, but it is  
121 unclear whether this was beneficial to overall survival [5]. With no conclusive evidence in the  
122 literature that routine SLNB produces a survival benefit for hand SCC, SLNB may be  
123 appropriate only in cases of clinical lymphadenopathy or large tumors (> 2 cm), both of which  
124 are linked to a higher risk of lymph nodes metastasis [9, 10].

125 Patients should be counseled appropriately and informed that close follow-up should be  
126 observed alongside that of self-surveillance for recurrence or indeed signs of metastasis [3].

127 Rates of recurrence and metastasis are higher for SCCs affecting the hand as compared to  
128 other body sites [3]. Askari et al. report recurrence rates of 50 % at 10 years and metastasis  
129 rates of 2 % at 20 years [5]. Schaivon et al. report recurrence rates of 22 % at 9 years and a  
130 metastatic rate of 28 % at 10 years following wide local excision or amputation of SCCs  
131 involving the hand [11].

132 Furthermore, different regions of the hand seem to have different prognosis; SCC occurring  
133 in the webspaces or on the dorsum of the proximal phalanges are more sinister malignancies  
134 with a greater propensity for metastatic spread [1]. According to the findings of Sayed et al.,  
135 SCC affecting the nail unit has a high recurrence and a low metastatic rate, whereas, SCC  
136 involving the palm and webspaces are aggressive and this is true despite amputation of the  
137 affected site [3]. The high rate of recurrence of digital SCCs may be a result of persistence of  
138 oncogenic HPV at the margins of resection. Thus, aggressive treatment of individual lesions  
139 and of genital reservoirs for HPV on patients and their sexual partners is warranted [4].

## 140 **Conclusion**

141 Digital SCC is a relatively rare tumor and presents a diagnostic challenge because of its  
142 relatively rare occurrence and mimicry of benign conditions [4]. A range of treatment options  
143 exist for its management, from Mohs micrographic surgery to amputation, which is indicated  
144 under certain instances [3]. A regular and prolonged follow-up is imperative to detect  
145 potential signs of recurrence or metastasis. Future studies should focus on the role of SLNB  
146 in improving overall survival and decreasing recurrence [5].

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## 148 **Competing interests**

149 The authors declare that they have no competing interests.

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