

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 **amputation of the finger** [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 **diabetic** woman was seen for treatment of a voluminous ulcerating keratotic
37 and circumferential mass developed at the expense of the distal part of the right fourth finger.
38 **She was right handed and worked as a housemaid for 40 years.** The tumor has been
39 evolving since 6 months. It was first developed from the proximal nailfold with an intact nail
40 plate and then has expanded circumferentially to cover all the distal phalange and the palmar
41 face of the distal interphalangeal joint (Figures 1a, 1b). **She didn't report any loss of weight or**
42 **deterioration of general condition.** There was no regional lymphadenopathy, and no
43 metastasis was identified at the initial assessment.

44



45 **Figure 1a** : Dorsal view of the tumor of
46 the fourth right finger



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

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

50



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

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

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



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

62 We didn't perform any adjuvant treatment. Our patient was seen for the last time at one year
63 post-operative and then lost of sight. She was in a good health. The finger amputation stump
64 was well padded and we didn't notice any sign of recurrence or extension of the cutaneous
65 tumor. No regional lymphadenopathy has been noticed.

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68 Discussion

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

73 According to the findings of Philip et al., SCC of the dorsal hand is common. In contrast, SCC
74 on the nonsun-exposed ventral fingers is rare [2]. Gormley et al. proved that periungual and
75 distal dorsal finger SCC, often associated with HPV, is only occasionally observed [4]. This is
76 in accordance with the findings of Askari et al., who worked on SCC involving exclusively the
77 hand [4]. Sayed et al., as well, concluded that SCCs involving the dorsum of the hand and
78 the digit occur most frequently. Web space and palmar SCCs are less common [3, 5].

79 Diagnosis may be delayed because the clinical presentation of digital SCC can vary widely
80 and often mimics other more common benign conditions. It typically presents as a
81 periungual, verrucous plaque or subungual nodule, potentially associated with a variety of

82 nail plate changes, such as onycholysis, longitudinal melanonychia, erythronychia, and
83 leukonychia [4].

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

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

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

105 Multiple treatment options exist for SCC of the hand. Wide surgical excision is indicated with
106 4 mm margins for tumors with a diameter of less than 2 cm, and 6 mm margins for those
107 larger than 2 cm or with less favorable grade [6]. Askari et al. noted a reduction in the
108 recurrence rate when reconstruction required a flap or skin graft compared with primary
109 closure, and this suggests the importance of wide margins during primary excision to
110 decrease recurrence, as flaps and grafts tend to be used in cases involving large resections
111 [5].

112 For SCCs involving only soft tissue, Mohs micrographic surgery offers the highest cure rates
113 [4]. It has been suggested to decrease recurrence and metastasis rates, but this wasn't
114 noted in Askari et al. study where no significant difference in overall survival or recurrence
115 rates was found for lesions treated with Mohs surgery or wide excision [5]. Furthermore, this
116 technique is not routinely available as in the case of our department. Biopsy specimens with
117 PCR-based detection of HPV could be performed alongside that of Mohs surgery to remove
118 both tumor and HPV infection in order to reduce the risk of recurrence, but access for
119 facilities suitable for HPV testing may be limited [3]. An additional surgical stage beyond the
120 tumor-free plane at completion of Mohs micrographic surgery may be reasonable [4].

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

123 The role of sentinel lymph node biopsy (SLNB) in treatment of SCC of the hand remains
124 controversial. Several reports have suggested that SLNB may be useful in cases of high-

125 grade tumors, perivascular or perineural invasion, increased depth, or history of recurrence
126 [7, 8]. In Askari et al. study, 4 patients underwent SLNB. All had clinical lymphadenopathy
127 and 2 had positive nodes. One of the 2 eventually had formal lymphadenectomy, but it is
128 unclear whether this was beneficial to overall survival [5]. With no conclusive evidence in the
129 literature that routine SLNB produces a survival benefit for hand SCC, SLNB may be
130 appropriate only in cases of clinical lymphadenopathy or large tumors (> 2 cm), both of which
131 are linked to a higher risk of lymph nodes metastasis [9, 10].

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

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

139 Furthermore, different regions of the hand seem to have different prognosis; SCC occurring
140 in the web spaces or on the dorsum of the proximal phalanges are more sinister
141 malignancies with a greater propensity for metastatic spread [1]. According to the findings of
142 Sayed et al., SCC affecting the nail unit has a high recurrence and a low metastatic rate,
143 whereas, SCC involving the palm and web spaces are aggressive and this is true despite
144 amputation of the affected site [3]. The high rate of recurrence of digital SCCs may be a
145 result of persistence of oncogenic HPV at the margins of resection. Thus, aggressive
146 treatment of individual lesions and of genital reservoirs for HPV on patients and their sexual
147 partners is warranted [4]. **Given this association between HPV and digital SCC, it would be
148 interesting to introduce a screening algorithm in order to predict early development of this
149 type of cancer. An early diagnosis leads to an early treatment which is the only guarantor of
150 an effective treatment with digit preservation and good function.**

151

152 **Conclusion**

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

159 **Disclaimer regarding Consent and Ethical Approval:**

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161 As per university standard guideline, participant consent and ethical approval have
162 been collected and preserved by the authors

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164 **Competing interests**

165 The authors declare that they have no competing interests.

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UNDER PEER REVIEW