HEAD AND NECK SKIN CANCER: CAUSES, IDENTIFICATION, REFERRAL AND PREVENTION

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AIM

To raise awareness of the causes and types of skin cancer affecting the head and neck

LEARNING OBJECTIVES

An enhanced knowledge of skin cancer of the head and neck, including its prevention, causes and appropriate referral pathways

Aligned to GDC development outcomes: A,C,D

LEARNING OUTCOMES

Dental hygienists and therapists should feel confident to:

- Raise the matter of skin cancer with patients
- Give appropriate advice about risk factors and prevention of skin cancer
- Manage appropriate referrals

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Deadline for submissions: 28 August 2023

ABSTRACT

Overexposure to ultraviolent (UV) radiation is the main risk factor for developing skin cancer.[1] All skin types, at any age, can be damaged by UV radiation, however for some individuals the risk is greater.

Currently there is no national screening programme for skin cancer in the UK.[2] Dental hygienists and dental therapists are ideally placed to be on the front line for early detection and identification of potential skin cancers, especially of the head, face and neck. Thorough knowledge of potential skin cancer susceptibility, identification and referral process is therefore essential.

It is beyond the scope of this article to examine the many types of skin cancer. Rather, this article focuses on the most common skin cancers of the head and neck – a key domain of the dental hygienist and therapist's extra oral soft tissue examination.

KEY WORDS

skin cancer, basal cell carcinoma, squamous cell carcinoma, melanoma

Causes of skin cancer

Almost all melanoma and non-melanoma skin cancers are caused by prolonged or repeated exposure to UV radiation from the sun or sunbeds.[3] People of all skin colours can be susceptible to skin cancer and it is unknown why an individual would develop one type of skin cancer over another, outside of the predisposing factors listed below. The following groups are at greater risk of developing the disease:[4]

1. Individuals with a particular skin type
   - Fairer skin types that do not tan easily due to less of the protective pigment melanin
2. Sunbed users
   - Sunbeds emit UVA and UVB radiation, both of which damage the skin
   - The International Agency for Research on Cancer classifies sunbeds as a Group 1 carcinogen[5]
3. Individuals who are at an increased risk of sunburn
   - People who work outdoors or who spend prolonged periods of time outdoors
   - Those with a previous history of sunburn
4. Individuals with an increased number of moles on the body

- People with more than 100 moles
- People with large or unusually shaped moles

5. Individuals with a family history of skin cancer or melanoma
6. Individuals who have a condition that lowers immunity (such as diabetes) and those people taking immunosuppressants. All immunosuppressive treatments, either pharmacological or physical, have the potential to impair the skin's immune system network of cells and cytokines, thus leading to an increased incidence of skin cancer.[6]

Types of ultraviolet radiation

UV radiation can both damage cell DNA and cause rapid cell growth which encourages tumour development. There are three types of UV rays of different wavelengths.[3]

1. UVA: long wavelength
   - Linked to long-term skin damage
   - Able to penetrate the skin to the hypodermis, causing redness and soreness
   - Can cause skin cancers, but not the most common cause compared to UVB[3]
2. UVB: medium wavelength
   - Able to penetrate the skin to the epidermis
   - Directly causes changes in cell DNA
   - Main form of UV radiation which causes skin cancer[3]
3. UVC: short wavelength
   - The most dangerous form of UV radiation
   - Blocked by the ozone layer

Types of skin cancer

The most common types of skin cancer of the head, face and neck are:[7]

Keratinocyte carcinomas, in particular:

- Basal cell carcinoma
- Squamous cell carcinoma

Melanomas, in particular:

- Superficial spreading melanoma
- Nodular melanoma
- Lentigo maligna melanoma

Non-melanoma skin cancer is significantly more common than melanoma, with more than 156,000 new cases reported in the UK last year compared to approximately 16,700 cases of melanoma.[8] Melanoma has a much poorer 5-year survival than non-melanoma cancer and unfortunately the incidence rate of melanoma has risen faster in the last 25 years than any other type of skin cancer.[8]

Figure1: **Basal cell carcinoma on the upper lip**

Skin cancer in people of colour

Skin cancers occur less often in people of colour, but when they do, they tend to be diagnosed at a later stage, meaning the prognosis is worse.[9] It has been found that late-stage melanoma diagnoses are more common in Hispanic and Black patients than in non-Hispanic white patients.[10] This could be the case for a number of reasons:

- Low public awareness of the risk of skin cancer among people of colour (people of colour might present less often to medical professionals for skin checks)
- The places on the body where skin cancers tend to occur in people of colour are often in less sun-exposed areas , making detection more difficult (for example, the most common location for melanoma in patients of colour is the soles of the feet)[9]

Basal cell carcinoma

Basal cell carcinoma (BCC) is the most common form of skin cancer and occurs in sun exposed areas, especially the face, top of the head, neck and ears (Figure 1). The tumour is caused by uncontrolled growth of basal cells in the epidermis. Since BCC grows slowly and rarely spreads, it is essentially curable and causes minimal long-term damage, if treated early.[11,12]

Signs and symptoms[11,12]

- Pink, red or white shiny bump
- Pigmented brown or black bump especially in those with darker skin
- Red scaly patch with or without discomfort
- Flat white, yellow or waxy patch
- Ulcer which opens up, bleeds and crusts over only to reopen again
- Pink growth with elevated border and depression in the middle

Figure 2: **Squamous cell carcinoma on the ear**

Asymmetry
Melanoma is likely to be an irregular shape whilst a mole is usually symmetrical

Border
Melanoma is likely to have a blurred or irregular border compared to the well-defined border of a mole

Colour
Melanoma tends to be more than one colour (brown mixed with a black, red, pink, white or blue tint) in contrast to the one brown shade of a mole

Diameter
Melanoma is usually more than 6mm in diameter, while a mole is smaller (not bigger than the blunt end of a pencil)

Evolving
Change in shape, in particular becoming raised, is a sign of a melanoma

Figure 3: **Comparison of ABCDE for melanoma and benign mole**

Squamous cell carcinoma

Overall, squamous cell carcinoma (SCC) is the second most common type of non-melanoma skin cancer but is also the most frequent form of skin cancer in people of colour.[9] The majority of cases of SCC occur on sun exposed areas like the face, neck, ears, lips and forearms (Figure 2). Skin SCC is often accompanied by pain and tenderness.[13]

Signs and symptoms[13]

- A firm lump with a rough or crusted surface; there can be a lot of surface scale and sometimes even a spiky horn sticking up from the surface
- Red, violet, purple, grey or dark brown patch in pigmented skin
- Scaly patch with irregular borders that sometimes crusts or bleeds
- An elevated growth with a central depression that occasionally bleeds
- An open sore that bleeds or crusts and persists for weeks
- A wart-like growth that crusts and occasionally bleeds

Melanoma

Melanoma arises in melanocytes (melanin producing cells) and the moles produced. Unlike other forms of skin cancer, melanoma can metastasise quickly to other areas of the body, such as lymph, bone and brain. In women, melanoma is most commonly found on the lower legs, while in men, it usually develops on the head, neck, chest and back.[14] This variation is thought to be partly due to genetics, and in part to do with differences in the way that men and women are exposed to sunlight.[14]

Melanoma identification

It can be difficult to tell the difference between a melanoma and a benign mole but the ABCDE list is a useful method of differentiation (Figure 3). In addition, any skin abnormality that does not look like other changes on the patient's skin should be treated with suspicion. This is called the 'Ugly Duckling Sign.'[16]

Superficial spreading melanoma

Superficial spreading melanoma normally grows outwards rather than downwards into the skin (Figure 4). It is the most common type of melanoma, accounting for 60% - 70% of cases and is most often seen in fair skinned people aged between 30 - 50 years.[8]

Signs and symptoms[17]

- Flat or slightly elevated, especially as they grow
- Dark brown with different shades, including black, blue or pink
- Asymmetrical with irregular borders
- Greater than 6 mm in diameter

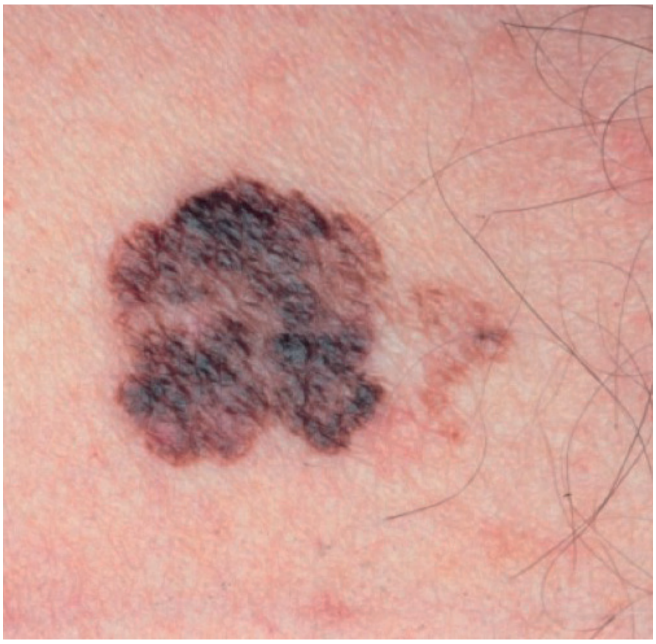

Figure 4: Superficial spreading malignant melanoma

Figure 5: Nodular malignant melanoma

Nodular melanoma

Nodular melanoma is the most aggressive and fastest growing form of melanoma which can quickly grow downwards into deep layers of the skin (Figure 5).[1]

Signs and symptoms[8,18]

- Black in colour (occasionally blue-grey in pigmented skin)
- Can also be white, brown, tan, red or skin colour
- Firm
- Raised or elevated
- Bleeding or oozing
- Fast growing

It may be differentiated from other types of melanoma using the EFG rule[19]: **E**levated in nature, **F**irm to touch and **G**rowing.

Lentigo maligna melanoma

Rare in pigmented skin, lentigo maligna melanoma develops from slow-growing, coloured patches of skin called lentigo maligna or Hutchinson's melanotic freckles. If it starts to invade deeper layers of the skin and form lumps (nodules), it becomes lentigo maligna melanoma.[8]

Signs and symptoms

- At least 6mm wide and can grow several centimetres (larger than other forms of melanoma)
- Smooth surface
- Brown patch but can also be pink, red or white
- Rare in black or brown skin

The referral process

It is important not to unduly alarm a patient when a skin abnormality is detected since in the vast majority of cases it will represent a benign condition. However, it is equally important that a specialist opinion is obtained. An explanation of what has been found should be given and the patient advised to see their general medical practitioner (GMP) relatively urgently. The clinician can also back up the need to see the GMP by requesting their patient's doctor's details and writing to them directly. If necessary, the GMP can then refer the patient to a dermatologist using the correct pathway following the National Institute for Health and Care Excellence (NICE) guidelines.[20]

1. **Basal cell carcinoma:** Routine referral should be made unless there is a particular concern about the skin abnormality, such as large size, which would suggest the need for a suspected cancer pathway referral and an appointment to see a dermatologist within two weeks.
2. **Squamous cell carcinoma:** Referral is always made via suspected cancer pathway.
3. **Melanoma:** All patients with suspected melanoma should be seen by a specialist within two weeks of assessment by their GMP.

This suspected cancer pathway should be followed for all pigmented skin lesions scoring three or more against the following weighted checklist:[20]

- Major features of the lesion (scoring two points each):
    - Change in size
    - Irregular shape
    - Irregular colour
- Minor features of the lesions (scoring one point each):
    - Largest diameter 7mm or more
    - Inflammation
    - Oozing
    - Change in sensation

Additionally, all suspected cases of nodular melanoma qualify for a suspected cancer pathway referral.

In the case of suspected skin cancer on the head and neck, then referral to a local oral and maxillofacial (OMFS) department is also an option. The referral should be made using the appropriate OMFS suspected cancer pathway.

Educating patients

All clinicians should make a careful clinical record of the exact location and nature of any detected skin abnormality, taking clinical photographs, if possible. Photography is an extremely helpful way of detecting changes in appearance over time. Any skin change noted should be brought to the patient's attention. Often simply highlighting the abnormality to the patient and garnering their response can be enough to allay any suspicions.

Dental hygienists and therapists have a key role in educating patients about how to avoid potential skin cancer. Whilst the public is more aware than ever before of the danger posed by overexposure to UV radiation, some misconceptions still exist. Particular focus on the use of sunscreens and the danger of sunbeds is vital. For instance, SPF 30 or above needs to be applied at least 30 minutes before sun exposure to offer adequate protection, and sunscreen needs to be re-applied at least every two hours, regardless of marketing claims of all day protection, and always directly after swimming.[21]

Lastly, patients should be encouraged to examine their own bodies for any abnormal area of skin which might not be observed in the dental surgery. Dental care professionals can advise that the best time to do this is before or after a shower or bathing, using a handheld mirror to see hard-to-reach areas. Promoting a skin health message, particularly of the head and neck, should be regarded as an integral component of the provision of holistic dental health care.

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References

1. Non-melanoma skin cancer incidence. Cancer Research UK (2018).https://www.cancerresearchuk.org/health-professional/cancer-statistics/statistics-by-cancer-type/non-melanoma-skin-cancer#heading-Zero (Accessed 28 April 2023).
2. Screening for skin cancer. Cancer Research UK (2023). https://www.cancerresearchuk.org/about-cancer/skin-cancer/getting-diagnosed/screening#:~:text=There%20is%20no%20national%20screening,time%20to%20have%20successful%20treatment (Accessed 28 April 2023).
3. Ultraviolet (UV) Radiation. American Cancer Society (2019). https://www.cancer.org/healthy/cancer-causes/radiation-exposure/uv-radiation.html#:~:text=UVB%20rays%20have%20slightly%20more,other%20types%20of%20UV%20rays (Accessed 28 April 2023).
4. Risks and causes of skin cancer. Cancer Research UK (2023). https://www.cancerresearchuk.org/about-cancer/skin-cancer/risks-causes (Accessed 28 April 2023).
5. Sunbeds and UV radiation. International Agency for Research on Cancer, World Health Organisation (2009). https://www.iarc.fr/media-centre-iarc-news-32/ (Accessed 28 April 2023).
6. Gerlini G, Romagnoli P, Pimpinelli N. Skin cancer and immunosuppression. *Crit Rev Oncol Hematol.* 2005;**56(1)**:127-136. https://pubmed.ncbi.nlm.nih.gov/15978830/
7. Fijałkowska M, Koziej M, Antoszewski B. Detailed head localization and incidence of skin cancers. *Sci Rep.* 2021;**11(1)**:12391. Doi:10.1038/s41598-021-91942-5. https://pubmed.ncbi.nlm.nih.gov/34117314/
8. Types of melanoma. Cancer Research UK (2020). https://www.cancerresearchuk.org/about-cancer/melanoma/stages-types/types (Accessed 28 April 2023).
9. Skin cancer in people of colour. Skin Cancer Foundation (2023). https://www.skincancer.org/skin-cancer-information/skin-cancer-skin-of-color/ (Accessed 28 April 2023).
10. Hu S, Soza-Vento RM, Parker DF, Kirsner RS. Comparison of stage at diagnosis of melanoma among Hispanic, black, and white patients in Miami-Dade County, Florida. *Arch Dermatol.* 2006;**142(6)**:704-708. doi: 10.1001/archderm.142.6.704. https://pubmed.ncbi.nlm.nih.gov/16785372/
11. Basal Cell Carcinoma. NHS (2023). https://www.nhs.uk/conditions/non-melanoma-skin-cancer/#:~:text=Basal%20cell%20carcinoma%20(BCC)%20usually,black%20pigment%20within%20the%20patch (Accessed 28 April 2023).
12. Basal Cell Carcinoma (BCC). Skinsight (2022). https://skinsight.com/skin-conditions/basal-cell-carcinoma-bcc/#:~:text=The%20infiltrating%20type%20of%20basal,small%20crust%20due%20to%20bleeding (Accessed 28 April 2023).
13. Signs and Symptoms of Basal and Squamous Cell Skin Cancers. American Cancer Society (2019). https://www.cancer.org/cancer/basal-and-squamous-cell-skin-cancer/detection-diagnosis-staging/signs-and-symptoms.html (Accessed 28 April 2023).
14. Men and women: where is melanoma most common. SkinVision (2023). https://www.skinvision.com/articles/men-and-women-where-is-melanoma-most-common (Accessed 28 April 2023).
15. Symptoms of melanoma. Cancer Research UK (2020). https://www.cancerresearchuk.org/about-cancer/melanoma/symptoms (Accessed 28 April 2023).
16. Ugly Duckling Sign. Skin Cancer Foundation (2023). https://www.skincancer.org/skin-cancer-information/melanoma/melanoma-warning-signs-and-images/#uglyduckling (Accessed 28 April 2023).
17. Superficial spreading melanoma. https://www.cancercenter.com/cancer-types/melanoma/types/superficial-spreading-melanoma (Accessed 28 April 2023).
18. Symptoms of Nodular Melanoma. SkinVision (2023). https://www.skinvision.com/library/nodular-melanoma-symptoms/ (Accessed 28 April 2023).
19. The EFG rule. MoleSafe (2019). https://www.molesafe.com/skin-info/how-to-identify-melanoma#:~:text=THE%20E.F.G.%20Rule&text=rule%2C%20which%20can%20detect%20a,size%2C%20indicating%20their%20intense%20progression (Accessed 28 April 2023).
20. NICE guidelines for skin cancer recognition and referral. NICE (2021). https://cks.nice.org.uk/skin-cancers-recognition-and-referral#!scenario (Accessed 28 April 2023).
21. Sunscreen and sun safety. NHS (2022). https://www.nhs.uk/live-well/seasonal-health/sunscreen-and-sun-safety/ (Accessed 28 April 2023).

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