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Early Detection of Oral Cancer: How Do I Ensure I Don't Miss a Tumour?

Abstract: The GDC recommend that early detection of oral cancer should form part of every dental surgeon's Continuing Professional Development. It is arguably the most serious condition that can arise within the oral cavity and regular screening practices may also help mitigate spurious claims of prior negligence for failure to detect the cancer at an early stage. Results for routine screening of the entire oral mucosa, together with risk status assessment, should be recorded in a patient's notes at every visit (both negative and positive findings).

Clinical Relevance: A knowledge of how to detect oral cancer early is an essential part of the dentist's armamentarium.

Dent Update 2013; 40: 462–465

The General Dental Council (GDC) of the UK made certain topics (eg medical emergencies, disinfection) core subjects for Continuing Professional Development (CPD). More recently (2012), they have issued guidance that has made the early detection of oral cancer, along with legal and ethical issues and complaints handling, a recommended topic.¹

As dental surgeons, we have a responsibility to screen for potentially serious conditions within the mouth. Another reason for this recommendation regarding oral cancer is the possibility that some patients may claim professional negligence for failure to identify their oral cancer at an early and more manageable stage. One of the best ways to guard against both eventualities is to screen all the oral mucosal surfaces every

time the patient presents for treatment, regardless of the nature of the treatment (or the age of the patient), and to record the findings, even if negative. Once it becomes routine practice, it can be easily carried out. In the absence of any other clinical technique that can reliably confirm malignancy (other than biopsy), we are left with the use of a powerful dental light and mirrors for detecting signs and symptoms suggestive of cancer, particularly altered oral mucosal appearance in patients with increased risk of such disease (see below).

Before examining the oral mucosa, medical and social histories should be obtained because these may indicate increased level of risk exposure. What risk factors are most relevant? Although tobacco is associated with the majority of oral cancers (at least 75% of cases), its use has reduced significantly over the last two decades. According to the Tobacco Manufacturers Association, in 1990 there were 102 billion cigarettes consumed in the UK.² By 2009, this had reduced by over 40%,² yet the percentage of the population smoking had not fallen to such an extent. In 2010, approximately 1 in 5 people were classified as smokers, with the greatest drop being seen in men.³ Hidden within the statistic showing a reduction of cigarettes bought is an increase in hand-rolled tobacco. In 1990,

18% of men and 2% of women stated that they smoked mainly hand-rolled cigarettes, but by 2010 this had risen to 39% and 23%, respectively.⁴ Without a filter, this would be expected to deliver a higher concentration of carcinogens to the oral mucosa. It is important that relevant risk factor exposure is recorded (not least for comparison the next time they attend), but also to help create an opportunity to provide risk factor advice, such as smoking cessation support in those ready to accept such change.

One of the reasons that tobacco consumption has dropped is without doubt due to the increased cost of a packet of cigarettes, as well as the ban on smoking in public buildings and vehicles (buses/trains). The other highly relevant risk factor for oral cancer (other than HPV) is that of alcohol. Concerns over the rise in alcohol-related mortality rates and cost to the economy have served to focus minds on how to reduce such intake. The personal, social and economic costs of alcohol have been estimated to be up to £55 billion for England and £7.5 billion for Scotland⁵ (of which costs to the UK NHS is estimated to be £2.7 billion).⁶

On the basis that increased cost reduces consumption, the Scottish Government is seeking to raise the price of alcohol by applying a minimum charge of 50p/unit of alcohol (UK Government had

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proposed 45p/unit). This policy (termed Minimum Unit Pricing) is supported by groups such as the Alcohol Health Alliance (whose members include medical bodies, charities and alcohol campaigners).⁵

Rising alcohol cost can have a positive influence on disease. Research in Canada has shown that, between 2002 and 2009, the percentage of deaths caused by alcohol in British Columbia dropped more than expected when the minimum price increased. An increase in minimum price by 10% was associated with a 32% reduction in alcohol-attributed deaths.⁷

The Office for National Statistics (ONS) General Lifestyle Survey 2011 suggested that the UK is drinking less,⁶ however, that assumes that the people responding to the survey know what a unit of alcohol is. A survey of students at the Dundee University Student Union found that over 90% of people underestimated the number of units in a 5% pint of lager. There are many implications for the lack of knowledge regarding alcohol content of these frequently consumed beverages. If people didn't know the number of units in their drink, they are unable to monitor and manage their consumption accurately. Approximately 25% were aware of the maximum recommended daily alcohol intake⁸ and, to compound the problem, only half the respondents were aware that alcohol was a risk factor for oral cancer.⁸ The easiest way to calculate the number of units in a drink is to multiply the volume of drink by the alcohol percentage and divide by 1000, eg standard glass (175 ml) of 14% wine is 2.45 units. We found that 90% underestimated the alcohol content of a pint of lager, whilst nearly 50% underestimated the alcohol content of a standard glass (175 ml) of wine. Thus knowledge of the guidelines, with underestimation of the alcohol content, means that people are drinking more than they think they are (and is one explanation for the finding by Boniface and Shelton⁹ that 40% of alcohol sales are unaccounted for). The other explanation is a move towards a more narcissistic society, where people would rather preserve their self-image ahead of being truthful about their health.¹⁰ Additionally, in the Dundee survey, half of the people questioned thought that they exceeded their recommended daily maximum alcohol limit between 1 and 5 times per month, with

a further third claiming it occurred more than 5 times per month. But it is probably much more than this as a result of their underestimation of the number of units in different drinks consumed. Those who knew that alcohol was a risk factor for oral cancer drank less alcohol than those who did not ($p = 0.0037$). One conclusion that might be drawn from this finding is that education regarding alcohol as a risk factor for oral cancer (along with other initiatives) may help contribute to a reduction in consumption. Analysis of the discrepancy between alcohol sales figures and what people say they drink⁹ suggests that 75% of drinkers are drinking above the maximum recommended daily intake.¹¹ This is not surprising if people don't know the alcohol unit content of what they are drinking.⁸

The trend in tobacco and alcohol habits reported above may be the reason why oral cancer rates are increasing (the significance of HPV for oral cancer is still to be determined). Yet delays in diagnosis can be related to patient as well as professional factors.^{12,13}

There is still a lack of public awareness in regard to what oral cancer looks like. Given the finding that even many medical students and doctors appear unaware of the role of alcohol as a risk factor for oral cancer, or that erythroplakia and erythroleukoplakia are early signs of oral cancer, there is a powerful need to raise both public and professional awareness of oral cancer.^{14,15} To that end, the Ben Walton Trust has done much to raise such awareness, being a sponsor of the popular BMJ learning module 'Mouth Cancer – recognizing it and referring early'.¹⁶

A previous study found that GDPs were able to list a mean of 2.75 changes associated with oral cancer, compared to that of GMPs (a mean of 1.75 changes

identified).¹⁵ Whilst the majority of the clinicians surveyed identified ulceration (70% GMPs, 80% GDPs), few reported speckled leukoplakia or erythroleukoplakia.¹⁵

Those that graduated before the 1990s were probably taught that a typical oral cancer presented as a large ulcer, whose boundaries were raised and hard to palpation with blood seeping from the ulcerated area (Figure 1).

Little wonder that the prognosis was not good, late diagnosis being a significant factor in the poor survival rate.¹⁶ Whilst survival rates have improved modestly, early detection and prevention are likely to prove the most efficacious,¹⁷ with advances in surgical techniques having a particular impact on quality of life.

The work of Mashberg is shown in Table 1. The traditional characteristics of an oral cancer are mapped to their findings in 235 asymptomatic oral cancers.

It can be seen that, if we are to improve the early detection of oral cancer, then we must raise our index of suspicion and look for more subtle signs of change, such as colour. Whilst malignant pigmented lesions can arise in the mouth, at least 90% are squamous cell cancers, for which red and white are the most common colour change. The malignant transformation rate of white patches is much lower (variously



Figure 1. Typical image of an oral cancer in a textbook circa 1980.

Granular or smooth surface	82%
No elevation (with <1 mm)	80%
No ulceration	85%
No bleeding	98%
No induration	90%

Table 1. Characteristics of oral cancer in the asymptomatic early lesion (after Mashberg and Samit¹⁷).

quoted at around 5%) than a red lesion (erythroplakia) – up to 90%. Increased risk of malignant change in white patches has been associated with those that are non-homogeneous and greater than 200 mm.^{2,18} Although mouth cancer is more frequently observed in those over the age of 50, 1 in 10 cases now occur below the age of 45,¹⁹ so the view that an adult patient is too young to get an oral cancer is an outdated one (see the Ben Walton Trust²⁰).

The screening of all oral mucosal surfaces should be carried out (and recorded) every time a patient attends and be practice policy (and open to audit to ensure it's done). There is some evidence that oral visual screening can reduce oral cancer mortality, particularly among those in high risk groups.²¹ Dentists and DCPs should identify patients who are at increased risk of mouth cancer. One way is through the use of medical history sheets that include lifestyle questions. Even light drinking of alcohol has been linked to an increased risk (albeit small) for oral cancer.²² Accurate and comprehensive records of abnormalities or changes in oral tissues (including negatives for soft tissue examination) should also be entered in a patient's notes. Four key questions to ask that will help determine risk that the lesion may be malignant are:

- What is their exposure to risk factors? (Do they smoke/drink? How much do they drink?);
- What colour is the lesion? (red being most significant);
- Has the lesion been present for more than 2–3 weeks?;
- Is it painful? (most early oral cancers are asymptomatic).

Visual inspection of the entire oral mucosa is required (Figures 2 and 3). In particular, the so-called non-keratinizing, high-risk sites such as lateral tongue, floor of mouth, lingual aspect of the retromolar trigone. Any lesion (particularly if red) that has been present for at least 2 or 3 weeks (without obvious cause) should be referred to an oral specialist to exclude malignant disease. Other warning signs and symptoms for malignant disease in the orofacial region are shown in Table 2. They include

ulceration, particularly a single ulcer which is not painful (as pain tends to be a late manifestation of malignant disease arising in the oral mucosa). Remember that patients who have had a tumour in this region are more likely to get a second malignant tumour, especially within the first 2 years of diagnosis.

Where suspicion of malignancy arises, urgent referral to the local Oral and Maxillofacial Surgery department is required. It is best that the lesion is not biopsied in practice in order to preserve the appearance and avoid interference with specialist treatment planning, but a clinical photograph can be helpful. Enquiry by telephone or email to a designated referral hub should ensure that the patient is seen within 2 weeks.

A recent study found that increased education of dental practitioners led to an improvement in screening and, as such, ongoing professional education and vigilance is of prime importance in combating oral cancer.²³

Finally, those wishing to have

a better understanding of what the patient is actually going through are encouraged to read the book written by the late John Diamond (then husband to Nigella Lawson) entitled '*C: because cowards get cancer too*'. It should be mandatory reading for all clinicians.²⁴

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Figure 2. Typical appearance of an asymptomatic early oral cancer. Note the red appearance.



Figure 3. Another asymptomatic oral cancer displaying a red appearance. Note again the need for careful examination of the mucosa with a dental mirror.

- Ulcer (exclude trauma, drugs, systemic disease)
- Altered sensation eg numb cheek
- Unexplained pain in mouth (or neck)
- Loose tooth
- Facial palsy
- Blocked nose or bleeding from nose
- Facial swelling
- Double vision
- Unexplained swelling
- Change in voice
- Dysphagia
- Colour change (see text)

Table 2. Signs and symptoms of malignant disease in the orofacial region.

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Abstract

Should we always agree with peer-reviewed published research?

Efficacy of an Electric Toothbrush on Plaque Control Compared to Two Manual Toothbrushes. Parizi MT, Mohammadi TM, Afshar SK, Hajizamani A, Tayebi M. *International Dental Journal* 2011; **61**: 131–135

When I was in practice patients frequently asked my advice as to whether or not they should buy an electric toothbrush. My answer was always that the most important aspect of tooth cleaning was that every surface of every tooth must be methodically and systematically brushed. If the patient was doing this with a manual toothbrush then, I said, they did not need an electric one, and if they were not following such a regime then an electric brush would be no more effective. I still think this is basically correct but, following personal practice, clinical observation, and from reading research reports, I have learned that an

electric toothbrush, properly used, does indeed result in cleaner teeth! Having given these as presents to most of my family and friends and recommended them to patients I have been able to undertake a wide range of observations.

Imagine my surprise, therefore, when I read this paper in which the plaque-scores of three groups of 15 patients were followed over a two-week period. Two groups were allocated different branded manual toothbrushes and the third an electric brush. The research concluded that there was no statistically significant difference in plaque control over the study period. Why, I wondered, did this result not conform to my own clinical observations?

The answer to this question is the reason for the title given to this abstract. The 45 'volunteers' who formed the research groups were all undergraduate dental students who must surely have had a level of dental knowledge, experience and

manual dexterity totally different from the average patient. Perhaps the authors are, at this very minute, repeating the experiment with 45 'men in the street'. I do hope so, and I look forward to reading the results!

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CPD ANSWERS

June 2013

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| 2. B, C | 7. B, C, D |
| 3. B, D | 8. B, C |
| 4. A, C | 9. B, D |
| 5. B | 10. A, B |