Early detection of mouth cancer – improving success

Philip Lewis explores why mouth cancer is often discovered late and what can be done to address this.

I am sure all general dental practices are carrying out screenings for the early detection of mouth cancer at every examination appointment and more frequently, if possible. Why so often? Because tumours can spread very rapidly. Imagine a patient who only attends for examination once a year. If a very early lesion goes undetected at that appointment and is not rediscovered until 12 months later, there is likely to have been serious progression. So, further examinations should be carried out whenever possible, for example, at a hygiene or filling appointment between check-ups.

The early detection screening includes palpation of the head and neck to identify suspect swellings, examination of the skin of the face and neck for unusual lesions, and a thorough examination of the intraoral tissues, as well as the anterior part of the pharynx. The things we look for are essentially any departure from normal that cannot be easily explained. So, on the skin, we may be looking for:

- Lumps, especially of irregular form
- Encrusted lesions that readily bleed
- Changes in texture of existing lesions
- Pigmented lesions, either new ones or existing lesions that have changed
- Persistent sores on the vermilion borders.

The best source of background information is the patient. People know their own bodies and are generally very aware of changes, so questions such as ‘has you noticed that? Has it changed recently? Is that lump new?’ will provide a wealth of information to help the clinician in deciding whether further investigation is indicated. The intraoral examination will involve looking for:

- Red, white or mixed red and white patches on the mucosa
- Lumps of unexplained cause
- Ulcers that persist for more than three weeks
- Teeth that become loose in the apparent absence of periodontal disease
- Bleeding from the mouth or pharynx again in the apparent absence of periodontal disease
- Changes in normal texture
- Pigmented lesions

In addition, reports of ‘something stuck in the throat’, altered sensation or persistent hoarseness of the throat should also arouse suspicion.

Factors that increase the risks of mouth cancer include:

- Smoking, or the use of tobacco in any form
- Regular drinking of alcohol, especially spirits
- Increasing age
- Gender (men are more likely to develop mouth cancer than women)
- Social deprivation and nutritional deficiencies
- Infection with some strains of the human papilloma virus.

Despite these known alerting indications, a significant number of sufferers exhibit no identifiable risk factors, so everyone over the age of 16 should be routinely examined.

Figure 1: Skin lesions on the face must be carefully examined, especially if the patient reports recent change

Figure 2: Lesions can arise anywhere, but the side of the tongue and floor of the mouth are high-risk areas

Figure 3: An advanced squamous cell carcinoma of the tongue. Because of its late discovery treatment was aggressive and life-changing

Figure 4: Information for the public (including instructions on self-examination) is available free of charge from the Mouth Cancer Foundation

Figure 5: Do not 'assume'. This blue lesion looks like – and is – an amalgam tattoo, but find the evidence. In this case, a radiograph confirms amalgam particles under the gum

How can things be improved?

The early detection and treatment of mouth cancer not only saves lives, but saves the quality of life for sufferers by reducing the need for aggressive treatments. In addition, it saves the quality of life for all around them; friends and family who will be drawn into the distress and apprehension that accompanies the condition. Living with mouth cancer can be a lonely experience. The Mouth Cancer Foundation provides information and support through its website (www.mouthcancerfoundation.org) and forums.

To put some numbers to this, early detection leads to an average 50% five-year survival rate, while cancer detected late carries a survival rate of less than 10%.

Broken down, these figures become even more meaningful. The severity, or 'stage', of mouth cancer is assessed from a consideration of three factors:

- T: the size of the discreet tumour
- N: whether lymph nodes have been infiltrated
- M: the presence or absence of metastases

From these three criteria the stage of the disease can be determined, so, for example, a tumour of less than 2cm diameter with no evidence of spread to lymph nodes or remote organs would be termed stage one. A tumour at this stage will often be visible to the naked eye, but, sadly, only 4% of lesions are detected this early. If detected, the patient may expect a chance of five-year survival of up to 94%.

Most cases are discovered at much later stages. At stage two, the survival rate will have dropped to about 65%. A total of 88% of cancers are identified at stages three and four when lymph gland involvement and
metastases may be present. Patients diagnosed at stage three have no better than a 27% chance of five-year survival, while only 5% of patients diagnosed at stage four will be alive after this time period.

These statistics bring the need for early detection into sharp focus. Even short delays in the provision of treatment can reduce survival chances significantly and increase the need for extensive surgery, tissue transplants, radiotherapy and/or chemotherapy, with the attendant life-changing consequences this can have.

So, how are we doing? Well, actually not very well. Despite all our efforts, the incidence of mouth cancer has risen by about 40% in the last 10 years alone and continues to do so. There are about 8,000 new diagnoses in the UK each year and more than 2,000 deaths. There are a number of reasons why this may be, including:

- People are living longer. Despite advances in dentistry, a significant number of older people are edentulous and do not regularly attend dental examinations. Sadly, the risk of mouth cancer increases with age. Lack of mobility and difficulty travelling also adds to the infrequent attendance of this group.
- Access to general dentistry is limited in a number of areas, especially for those seeking NHS treatment.
- Young adults are often irregular attenders. The rise in incidence of mouth cancer associated with infection with the HPV virus often affects this group.
- Social deprivation and poor nutrition are also believed to be risk factors. Again, individuals in this group are less likely to be regular attenders.
- The public is largely unaware of the signs and symptoms of mouth cancer and slow in reporting lesions to clinicians.
- Some dental practices may still be unsure of how to carry out a reliable screening. Early lesions may go unnoticed.

Identification

There needs to be more professional education to help clinicians screen and identify early lesions. Ideally, these screenings should take place frequently as lesions can progress quickly.

At a national level, initiatives to encourage regular attendance should be introduced and access to services improved.

The public also needs educating on the signs and symptoms of mouth cancer and the importance of reporting suspicious lesions early. People should be made aware a mouth cancer screening is an integral and important part of their dental examination. We hear too often the expression 'just a check-up', which, by implication, devalues the importance of this vital procedure.

Clearly, we need to do more to improve early detection and so enhance survival rates for sufferers and the quality of life for both them and all around them.
How can the screening procedure itself be enhanced? At present, the introral examination relies on visual screening. Using a bright light and magnification, all areas of the mouth and anterior part of the throat are carefully screened. Deviations from normal are recorded and either reviewed within weeks or referred for a specialist opinion.

The visual exam presents several opportunities for lesions to be missed. The exam is operator-sensitive. It is essential the examiner is well-trained and able to carry it out efficiently. Covering up a lesion with a mirror being used to retrace the tissues can result in the lesion being overlooked, unless a protocol is in place to avoid this.

Clinicians need to be experienced in dental anatomy and pathology. For example, a pathological lump may be dismissed as a normal anatomical structure. In the same way, we may ‘assume’ on the basis of past experience rather than seek firm evidence. For example, a pigmented lesion within the oral cavity may be assumed to be a melanotic macule or a lesion on the vermilion border assumed to be a cold sore without consideration of the differential diagnosis.

Also, access may be limited, the patient may be uncooperative, and tissues may be difficult to manipulate.

These are some of the drawbacks that can reduce reliability of the visual exam, however, being aware of them allows us to compensate.

Exciting new technologies are under development. Sensors that detect cancer-related molecules on the breath may be available as early detection devices within the next few years, but, at present, we have to rely on the visual examination.

To enhance the efficiency of the visual examination a number of adjuncts have become available. These devices seek to make early lesions easier to see by increasing contrast and highlighting aberrant cells.

Devices range from simple fixed-wavelength light sticks to large handheld machines that allow the placement of a DSLR camera to provide high-quality images. There are others that rely on multi-spectral technology using various filters to highlight both dysplasia and blood supply.

For an adjunct to become a realistic tool for everyday early detection a busy general practice, it must be:

- Quick and easy to use.
- Cost-effective.
- Reliable.
- Reproducible.

Quick and easy is a prerequisite. It has been shown that, with experience, a full extraoral and introral early detection examination can be efficiently completed within two minutes. However, even this short period can be onerous in a busy practice and anything that lengthens the procedure may well be rejected unless proved to be of significant benefit.

Cost efficiency can be an issue. The early detection examination is included in the NHS examination fee and should also be provided within private fees. It might be possible to charge for an enhanced examination including adjuncts and perhaps other services, such as saliva diagnostics and early caries detection, but this should be elective and in addition to a free periodic early detection screening.

However, there may still be very good reasons for employing an adjunct. These include:

- Better visibility: At the very least, these devices illuminate the examination area, drawing lesions into better relief.
- Increased attention: Using a device tends to concentrate a clinician’s mind to the task in hand and may result in a more thorough examination.
- Better patient awareness: Patients will see that special technology is being used. Indeed, clinicians should point out this is an excellent opportunity to educate and inform about the importance of early detection.
- Medico-legal protection: Devices, which allow simultaneous photography, can provide proof that an examination was carried out and, by default, that this was done thoroughly and carefully.
- The possibility of discovering an otherwise invisible lesion. Just about every manufacturer of adjuncts claims their system allows visualisation of lesions otherwise not visible to the naked eye. It would be truly wonderful if this were so, but studies tend to be limited and seldom confirmed by independent sources.

Nevertheless, a single such discovery would certainly justify the routine use of the adjunct.

On balance, there is a strong case for using adjuncts when possible and clinicians are encouraged to explore the various options.

**Goggles**

A relatively new adjunct to reach the market is Goggles. The system consists of filtered eyewear used in conjunction with a normal curing light to highlight lesions. Usefully, a further filter is included, which fits over the camera lens of a mobile phone, to allow capture of an image at the time of examination.

The Goggles device relies on the concept of autofluorescence. When irradiated with blue-violet light at a wavelength of 450nm, normal tissues respond by fluorescing at 515nm while aberrant tissues fluoresce at a lower wavelength. The filtered optical glass in Goggles makes this tissue look dark.

In this way, lesions may be visualised as dark areas on the mucosa and, as importantly, the full extent of the lesion can be detected without being undetectable to the naked eye becomes apparent. This knowledge is particularly important to secondary care clinicians planning biopsy or removal of the lesion.

Modern compound curing lights emit light in the 400nm to 500nm range. These lights are present in all dental surgeries, so no further equipment is necessary once the eyewear has been purchased.

**My Goggles experience**

I decided to put the Goggles system to the test. Here’s my evaluation.

As with all adjuncts, it is recommended that a standard visual examination is carried out first. The Goggles examination then follows. There is no need for a pre-remise with acetic acid, as with other systems, so this examination can proceed without delay.

The Goggles headset is donned and the mucosa re-examined in the light of a standard curing lamp. Goggles recommends this lamp is held at a distance of 20cm to 40cm from the mucosa, but this distance is too great to illuminate the tissues and needed to get closer. Dimming the room lights may have helped, but was not recommended in the instructions.

The introral tissues are carefully examined in a logical sequence. The use of a checklist is helpful here to ensure no areas are missed. Results are recorded in the usual way, a decision is made on whether further action is necessary can be made.

In the short time I had to evaluate the unit, I did not discover any notable pathology, but similarity was not distracted by false positives.

In conclusion, I found Goggles comfortable to wear and easy to use. The ability to take photos was very valuable although clearly the quality of the image relies on the quality of the mobile phone and the photographic skills of the operator, which, in my case, I admit are not ideal. Far better photos are available to view on the Goggles website (www.goggles.com).

Use of the product was not uncomfortable or threatening to the patient and results were encouraging. The price is not excessive when considering the obvious research and development costs gone into producing it.

Nothing is perfect, but my only negative comment is the necessity to ‘tie up’ one hand holding the lamp, leaving only one other for tissue control during the examination.

So, do we need adjuncts? That’s for individuals to decide, but it is worth remembering that just one lesion discovered early with the help of a product, such as Goggles, which might otherwise be overlooked could mean the difference between life and death for the patient. Early detection really is that important.

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**See me at the London Dentistry Show**

Philip will be speaking at the London Dentistry Show, being held at Olympia London on 13 to 14 September, giving an oral cancer update. To register for your free ticket to this unmissable event, visit www.londondentistryshow.co.uk.