ORAL CANCER SCREENING

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Abstract
The term ‘oral cancer’ encompasses neoplastic lesions involving the lip, oral and oropharynx. The vast majority of these lesions are squamous cell carcinomas. Risk factors include tobacco and alcohol use and, particularly for oropharyngeal cancers, exposure to human papillomavirus. Visual screening for oral cancers in the mouth necessitates an appreciation of the presentation of oral lesions that have an increased risk of malignant transformation. Recent evidence reviews by the US Preventative Services Task Force and the Cochrane Collaboration have concluded that at the current time, there is insufficient evidence to recommend oral cancer screening in the general population. However, because of the potentially serious outcomes for patients and impact on quality of life, opportunistic visual screening opportunities should be part of general oral examinations for patients visiting health professionals, particularly dental practitioners.

The general term ‘oral cancer’ encompasses neoplastic lesions involving the lip, oral cavity and oropharynx; the vast majority of these lesions are squamous cell carcinomas. This neoplasm is the sixth most common cancer that occurs globally, however there is wide geographic variation with respect to numbers of cases and site of occurrence. Worldwide, the majority of cases occur in South East Asia, Latin America and Eastern Europe.

The risk factors for oral cancer are well characterised and include tobacco and alcohol use, as well as other factors in specific geographical areas such as areca nut. Most importantly, tobacco in its various forms has been linked to an increased risk of oral cancer and this risk is potentiated by alcohol. Historically, most patients with oral cancer are in older age groups with a peak incidence between 64-70 years of age. Recently however, there have been increasing reports of patients less than 40 years of age presenting with oral cancer.

In Australia, the most common site for oral cancer to occur is the lip, attributed to ultraviolet light exposure. In the Australian Indigenous population, it has been reported that while the overall incidence of cancers is comparable to that of the general population, certain cancers, including oral cancer, have a significantly higher incidence. It has been postulated that the reasons for the difference in this population are due in part to high tobacco smoking prevalence and increased alcohol consumption, and possibly diets low in fruit and vegetables.

Recent reports have indicated that the overall incidence of oral cancer in Australia is stable, however the specific incidence of oropharyngeal cancer is increasing, particularly in males, and it has been suggested that this may be related to the effect of human papillomavirus (HPV). In recent years there has been increased recognition for the role of HPV in the development of oropharyngeal cancers. Clinically, the role of HPV is potentially significant, as there is evidence that HPV-related oral cancers may respond differently to treatment and may have better treatment outcomes.

Potentially malignant disorders and clinical presentation of oral cancer
Visual screening for oral cancers in the mouth necessitates an appreciation of their presentation, as well as the presentation of oral lesions that have an increased risk of malignant transformation. These are referred to as potentially malignant disorders. The most commonly described potentially malignant disorders include leukoplakias and erythroplakias. Leukoplakia is defined as a “white plaque of questionable risk having excluded (other) known diseases or disorders that carry increased risk for cancer”. Erythroplakia on the other hand, is defined as a “fiery red patch that cannot be characterised clinically or pathologically as any other definable disease”. The malignant transformation rate of leukoplakia is approximately 1%, while it has been suggested that almost all erythroplakias will undergo transformation. Other important potentially malignant disorders that have been discussed include lichen planus and oral submucous fibrosis, as well as other conditions such as actinic cheilitis and immune deficiencies. Oral submucous fibrosis is particularly a problem in South East Asia and is associated with chewing areca or betel nut.

Figure 1: Clinical photographs showing examples of leukoplakia (A) on the anterior lingual aspect of the mandible and erythroplakia on the lateral border of the tongue (B).
Given this result, the conclusions of the US Preventative Service Task Force and Cochrane reviews, have not been able to recommend screening by visual inspection reduces the death rate for oral cancer and there is no evidence of other screening methods. However, there is some evidence that it might be helpful to reduce death rates in patients who use tobacco and/or alcohol.

The clinical appearance of oral cancer itself can be varied and also depends on its anatomical location in the mouth and the stage at which it presents. Broadly, oral cancer can present as leukoplakias or erythroplakias, long-standing ulcers or lumps or swellings on the mucosa (figure 2).

**Screening**

Despite not being the most common cancer to affect the population in Australia, oral cancer is associated with serious outcomes for patients. Furthermore, in those patients who do survive, there are often significant issues associated with quality of life as a result of debilitating surgery and long-term toxicities associated with treatment such as radiotherapy and chemotherapy.

Accordingly, there is a need to detect oral cancers early if their occurrence cannot be prevented by modification of risk factors. Despite this need, various evidence reviews, most recently the US Preventative Service Task Force and Cochrane reviews, have not been able to recommend large-scale screening programs for oral cancer.

The evidence base for oral cancer screening largely consists of one randomised controlled trial conducted in Kerala, India. This study included 191,873 participants, who were all older than 35 years, who were allocated to either an intervention or a control arm. In the intervention group, the participants underwent a visual examination by a trained examiner; the control group participants had no screening examination undertaken. Four rounds of screening occurred between 1996 and 2010. A 15-year follow-up of the study concluded that there was a sustained reduction in oral cancer mortality, but this was statistically significant only in the participants who underwent all four screening rounds and who were users of tobacco and/or alcohol. Given this result, the conclusions of the US Preventative Service Task Force were “...that the current evidence was insufficient to assess the balance or benefits and harms or screening for oral cancer in asymptomatic adults.”

The Cochrane Systematic Review found “…that overall there is not enough evidence to decide whether screening by visual inspection reduces the death rate for oral cancer and there is no evidence of other screening methods. However, there is some evidence that it might help reduce death rates in patients who use tobacco and alcohol.” The Cochrane review noted that the Kerala study did demonstrate that screening produced a ‘stage-shift’ in that in the screened population, oral cancer was diagnosed at an earlier stage, which is an important factor in survival from cancer. However, it was acknowledged that the Kerala study was undertaken in a population with high oral cancer incidence, which is very different from countries such as the United States, United Kingdom and Australia. The Cochrane review also indicated that opportunistic visual examination as part of a systematic oral examination by dentists and oral health practitioners was recommended for all patients, particularly those who used tobacco and or alcohol.

**Conclusion**

There is no doubt that early detection of cancer reduces morbidity associated with the disease as a consequence of more conservative surgery and a reduced need for adjunctive treatment such as radiotherapy and chemotherapy. Despite the current lack of evidence to support population based screening programs for oral cancer, because of the potentially serious outcomes for patients and impact on quality of life, opportunistic visual screening opportunities should be part of general oral examinations for patients visiting health professionals, particularly dental practitioners.

**References**


