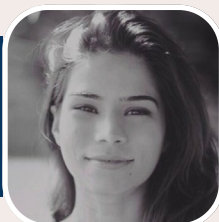


The role of orthodontic therapists in detecting mouth cancer



By **Joyce Rebelo**¹

Mouth cancer (or oral cancer), is a growing concern in healthcare due to its rising incidence and challenging prognosis when detected at later stages. For dental professionals, early detection is key to improving patient outcomes, and orthodontic therapists (OTs) are uniquely positioned to play a critical role in identifying early signs of oral cancer. With regular patient interaction throughout orthodontic treatment, orthodontic therapists are ideally positioned to

Author information

¹Joyce Rebelo is a University of Bristol graduate and qualified in orthodontic therapy, accredited by the Royal College of Surgeons, Edinburgh. Based in the South of England, she has a wealth of experience working in both NHS and private orthodontics. She also has a keen interest in dental journalism. This is her first article for *BDJ Team*.

contribute to early detection by performing thorough oral checks during routine visits, educating patients on self-examinations and risk factors, and consistently monitoring any changes in the oral cavity over time.

This article will explore the prevalence and presentation of mouth cancer, highlight the role of orthodontic therapists in its early detection, and provide practical tips for orthodontic therapists aiming to enhance their knowledge and skills in mouth cancer detection for patients undergoing various types of orthodontic treatment.

Understanding mouth cancer

Prevalence and presentation

Mouth cancer is a type of head and neck cancer that typically arises in the tissues of the oral cavity or oropharynx. It affects the lips, gums, tongue, cheeks, floor of the mouth, tonsils, and throat. The prevalence of mouth cancer is steadily increasing in the UK. The latest data indicate that over 8,800 new cases of oral cancer are diagnosed in the UK each year, and 3,034 lives are lost to mouth cancer annually.¹ Globally, mouth cancer affects approximately 650,000 people each year,¹ making it the sixth most common cancer worldwide. It affects both men and women, but research indicates that one in 55 men and one in 108 women will be diagnosed with oral cancer at some point in their lives, highlighting that men are more likely to be affected.² Adolescents and young adults represent a much smaller proportion of cases, but recent trends show a rise in incidence due to factors like the increase in smoking and

human papillomavirus (HPV) infections among younger populations.³ Additionally, with the increasing popularity of vaping, monitoring potential health effects is crucial. Studies suggest that certain e-cigarette chemicals, especially when heated, may damage oral cells, potentially increasing cancer risk over time.⁴

Oral cancer can present differently in adolescents and adults. While the likelihood of developing mouth cancer is lower in adolescents, they can still show subtle early signs that may be mistaken for trauma from orthodontic appliances or typical oral changes.

Common signs and symptoms indicative of oral cancer:

- Unusual lumps or swellings anywhere on the lips or in the mouth, jaw or neck that persist for more than three weeks
- Unusual red or white patches anywhere on the lips or in the mouth that persist for more than three weeks
- Persistent sores or ulcers that do not heal
- Persistent soreness, pain, or discomfort
- Unusual bleeding within the oral cavity.

Other symptoms to be aware of include:

- Unusual lump or thickening of the lip
- Numbness of tongue or other area of the mouth
- Unexplained loosening of teeth
- A chronic sore throat or hoarseness that persists for more than six weeks
- Difficulty swallowing, chewing, or moving the jaw or tongue
- Ear pain that persists for several days.⁵

Why orthodontic therapists are well-positioned to detect mouth cancer

1. Regular and prolonged patient contact

Although not everyone undergoes orthodontic treatment, those who do, benefit from the regular and prolonged contact they have with orthodontic therapists throughout their treatment. Orthodontic therapists typically see their patients every 6–8 weeks during orthodontic treatment, allowing for regular, scheduled interactions. This frequent contact enables OTs to closely monitor any abnormalities or changes in the oral cavity over time. Given that orthodontic treatment can last from several months to a few years, this places orthodontic therapists in an ideal position to detect subtle changes that might go unnoticed in less frequent dental visits. This continuity of care offers a distinct advantage, allowing orthodontic therapists to spot abnormalities that could indicate mouth cancer.

2. Focused training in oral anatomy and pathology

Orthodontic therapists undergo comprehensive training that includes in-depth study of oral and facial anatomy, as well as common oral pathologies. This knowledge base makes them adept at distinguishing between typical orthodontic-related issues and signs of potential mouth cancers, such as unexplained lumps, unusual red or white patches, or non-healing sores in the mouth, lips, and throat.

3. Close observation of high-risk areas

Orthodontic procedures involve close inspection of areas where oral cancers are likely to develop, such as the lips, tongue, gums, and inner cheeks. At appointments, OTs can identify irregularities in the tissues or investigate discomfort reported by patients. This proximity and attention to detail is crucial when spotting signs of oral cancer at its earliest stages.

4. Patient education and early intervention

Orthodontic therapists are often trusted by their patients and can use this relationship to educate them on self-examination and warning signs of oral cancers. If an OT identifies a potential issue, they are also trained to refer patients promptly to the orthodontist, a general dentist or specialist for further evaluation, allowing for faster intervention if cancer is detected.

Scope of practice

The General Dental Council (GDC) defines the scope of practice for orthodontic therapists as including:

- Providing patients with oral hygiene advice

and appliance care instructions

- Adjusting and monitoring appliances under the prescription of an orthodontist or dentist
- Taking intra-oral and extra-oral records and measurements
- Documenting abnormalities, referring for further evaluation as necessary.

Although diagnosis and treatment planning is outside the scope, the orthodontic therapists' scope of practice does support recognising and documenting potential oral pathology, including signs of mouth cancer. By being trained to perform a thorough visual check at appointments, orthodontic therapists can significantly aid in early detection and facilitate timely referrals, contributing to early intervention efforts.⁶

Conducting effective mouth cancer screenings

Essential tips for orthodontic therapists

To enhance their role in mouth cancer detection, orthodontic therapists can use a systematic approach to oral checks during orthodontic appointments. Some tips are:

- **Examine the lips:** Look for any persistent lesions, sores, swellings, or colour changes. Pay attention to white or red patches that cannot be wiped off as these may be precursors to more serious conditions.⁷ Learn to differentiate these lesions from cold sores or angular cheilitis. Early-stage lip cancer often looks like a non-healing mouth sore. Unlike cold sores, which typically heal within two weeks, lip cancer lesions persist. While these signs are less common in younger patients, it's crucial to document any unusual findings and consider the patient's history of habits like lip biting or lip product use that may cause irritation
- **Buccal mucosa:** Regular checks of the inner cheek are essential since orthodontic appliances can cause irritation, so it's essential to differentiate between appliance-related sores or ulcers from unusual more persistent lesions that do not heal within three weeks. Pull back the cheeks and look for any white or red patches or unexplained lumps. Any lesions lasting beyond three weeks should raise suspicion¹
- **Gingivae:** Check for swelling, lesions, or unusual pigmentation, particularly around fixed appliances, which can sometimes mask abnormalities. Be vigilant for abnormalities like persistent lesions, colour changes, or hard lumps that may indicate mouth cancer. Also, note any irritation or inflammation that could suggest sensitivity to orthodontic materials, such as metal or latex allergies.

Differentiate these from conditions like gingivitis or gingival hyperplasia, where symptoms like redness, swelling, tingling, or itching may point to an allergic reaction rather than a localised infection, requiring further evaluation

- **Observe the tongue and floor of the mouth:**

Ask the patient to stick out their tongue and gently lift it to inspect the underside and sides. Use a mouth mirror to examine the floor of the mouth. You must look for unusual lumps, unusual patches, unusual colour changes, or lesions that would not be otherwise visible. Any abnormalities that persist beyond two weeks may indicate a need for further evaluation. Encourage patients to report any pain or discomfort in these areas

- **Palate and throat:** Using a mouth mirror, carefully inspect the palate and the throat. Look for asymmetry, swelling, or unusual red or white patches. Appliances such as an Upper Removable Appliances, Nance Appliances, and Rapid Maxillary Expanders often rest on the palate and can cause local irritation such as swelling and soreness. During each visit, check the hard and soft palates for any non-appliance related colour changes, growths, or ulcerations, documenting any changes over time. Persistent changes in tissue texture or colour may signal something more serious
- **Accurate documentation:** Make detailed notes on the location, size, and appearance of any abnormalities, along with any symptoms the patient reports, such as discomfort, pain, or tenderness. Where possible, and with the patient's consent, taking photos of lesions can be valuable for comparison, especially if there are changes in appearance over time. Ensure to communicate these findings to the orthodontist, who will determine if further action is required, and continue to monitor these observations across visits to track any changes.

Be attentive to appliance-related sores or ulcers that may mimic signs of oral cancer

Examples include:

- **Aphthous ulcers:** Painful, shallow sores that appear on the mucous membranes, often aggravated by braces
- **Irritation fibromas:** Benign growths due to chronic irritation from braces or wires, presenting as firm lumps
- **Cheek and lip lacerations:** Cuts or sores from friction against brackets and wires, which can appear red and inflamed
- **Stomatitis:** Inflammation of the mouth

lining, often causing redness and swelling due to appliance irritation

- **Oral mucocele:** Common, harmless, cyst-like swelling of the lip or mouth lining.

As these appliance-related lesions can sometimes be mistaken for oral cancer, accurate differentiation is crucial. Therefore, orthodontic therapists must exercise vigilance in accurately differentiating between routine appliance-related irritation and potential pathological changes.

Course of action if abnormalities are spotted

If an OT observes an unusual lesion or persistent abnormality, they should act within the General Dental Council's (GDC's) scope of practice⁶ and deal with it appropriately. Here's a recommended course of action:

- **Document findings thoroughly:** Record details of the lesion's location, appearance, size, and any patient-reported symptoms. Take photographic evidence. This can be invaluable in tracking changes and provides valuable information for the orthodontist or dentist
- **Patient communication:** While orthodontic therapists cannot provide a diagnosis, they should inform the patient (and parents, for underage patients) that an area of concern was identified and will be reviewed further by the orthodontist or dentist to investigate the findings
- **Discuss regarding referrals:** Promptly communicate any concerns with the orthodontist or dentist, as they have the authority to make further diagnostic or referral decisions
- **Referral process:** The orthodontist or dentist may decide to refer the patient for further investigation. Orthodontic therapists may assist in coordinating this referral and providing patients with information about what to expect
- **Follow-up on referral outcomes:** As part of the patient's overall care team, it's best practice to stay informed about the referral outcome where possible, as this ensures continuous monitoring and an appropriate response if similar concerns arise in the future.

Best practices for mouth cancer screening

- **Establish rapport:** Foster a comfortable environment and build trust, particularly with adolescents. It helps them feel at ease during exams, making them more likely to report any discomfort or changes themselves
- **Create a routine:** Establish a structured

approach to ensure thoroughness. Begin with extra-oral areas and systematically progress to intra-oral checks

- **Engage the patient:** Explain each step simply, especially to younger patients, ensuring they understand why it's beneficial for their health. This can reduce anxiety and improve cooperation
- **Optimising lighting:** Poor lighting can obscure small signs, so using a reliable light source that illuminates the oral cavity clearly is essential. Magnification loupes can also help spot subtle abnormalities. Proper lighting and the use of mirrors improve visibility, particularly for hard-to-reach areas such as the throat, soft palate, and floor of the mouth
- **Observe changes over time:** Given the regular visits of orthodontic patients, tracking changes over time can provide valuable insights – particularly when recurring sores, swelling, or other abnormalities are observed across appointments
- **Photographic documentation:** Where permissible, use intra-oral/extra-oral photography including intra-oral scans to document abnormalities. Visual records aid in tracking changes across appointments
- **Keep up-to-date with training:** Engage in regular continuing professional development (CPD) on oral pathology to enhance your knowledge and ability to recognise abnormalities.

Educating patients on mouth cancer prevention and awareness

Orthodontic therapists can educate patients about the risk factors for mouth cancer and promote preventive measures. Discussing lifestyle choices, such as smoking and alcohol use, as well as the importance of regular oral examinations, can empower patients to take a proactive role in their oral health management. Encouraging good oral hygiene practices and awareness of changes in the mouth can also aid in early detection.

Key strategies for patient education

- **Highlight risk factors:** Remind adolescent and adult patients about the dangers of smoking, vaping, and excessive alcohol use, emphasising that these lifestyle choices can increase their cancer risk
- **Encourage regular self-exams:** Teach patients how to check for abnormalities in their mouths, empowering them to report any unusual findings between appointments. (Resources, including self-check posters, are available on the Mouth Cancer Foundation website)

- **Discuss HPV vaccination:** Since HPV is a leading cause of oral cancers, discuss the importance of HPV vaccination with patients or their guardians when relevant
- **Sun protection for lips:** Recommend lip balm with SPF to patients who spend significant time outdoors, as prolonged sun exposure can increase the risk of lip cancers.

Summary

Orthodontic therapists, through regular patient contact, are strategically positioned to support early mouth cancer detection efforts. By conducting systematic oral exams, documenting findings carefully, and working within the scope of practice, orthodontic therapists can significantly contribute to early detection and timely intervention, ultimately improving patient outcomes. With these approaches, orthodontic therapists can play a crucial role in the multidisciplinary healthcare team, supporting both orthodontic and general health.

References

1. Mouth Cancer Foundation. Mouth cancer facts and figures. Available at: <https://www.mouthcancerfoundation.org/mouth-cancer-facts-and-figures/> (accessed November 2024).
2. Cancer Research UK. What is mouth and oropharyngeal cancer? Available at: <https://www.cancerresearchuk.org/about-cancer/mouth-cancer/about> (accessed November 2024).
3. Moriarty C. Throat Cancers Are on the Rise: Why This Matters to You. Yale Medicine, 5 March 2020. Available at: <https://www.yalemedicine.org/news/throat-cancers-on-the-rise> (accessed November 2024).
4. Thirumal Raj A, Sujatha G, Muruganandhan J *et al.* Reviewing the oral carcinogenic potential of E-cigarettes using the Bradford Hill criteria of causation. *Transl Cancer Res* 2020; **9**: 3142–3152.
5. Cancer Research UK. Symptoms of mouth and oropharyngeal cancer. Available at: <https://www.cancerresearchuk.org/about-cancer/mouth-cancer/symptoms> (accessed November 2024).
6. General Dental Council. Scope of practice. September 2013. Available at: <https://www.gdc-uk.org/docs/default-source/scope-of-practice/scope-of-practice.pdf> (accessed November 2024).
7. Curaprox. Lip cancer. Available at: <https://curaprox.co.uk/blog/post/lip-cancer> (accessed November 2024).

<https://doi.org/10.1038/s41407-024-2823-8>