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FINDING A MASS WITHIN THE ORAL CAVITY: WHAT ARE THE COMMON CAUSES AND HOW SHOULD A GP MANAGE THEM?

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ABSTRACT

A 24-year-old male presented with worsening right buccal pain and numbness of the anterior right tip of the tongue. A fixed, hard, non-tender mass was found on the right floor of the mouth. Subsequently, maxillofacial surgery evaluation, MRI scan of the head and neck, and biopsy confirmed a low-grade hyalinising clear cell carcinoma, likely of salivary gland origin. This clinical encounter led to a review for the variety of masses that can occur in each site in the oral cavity and the common masses that may present to a GP. A suggested management approach is presented. In addition, common salivary gland pathologies are highlighted, and salivary gland tumours as was present in this patient are further discussed.

Keywords: Masses in oral cavity, numbness of the tongue, jaw pain, buccal pain, floor of mouth, salivary gland pathology, salivary gland tumour, hyalinising clear cell carcinoma

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PATIENT'S REVELATION: WHAT HAPPENED?

CDR, a 24-year-old Chinese male, presented with worsening right buccal pain and numbness of the anterior right tip of the tongue. The right buccal pain of one-week duration was intermittent, dull and throbbing in nature, was also felt in the sublingual region and associated with numbness of the anterior tip of the tongue. It was exacerbated by talking and eating but did not affect speech or swallowing. Each episode of pain would induce a headache. There was no history of trauma or chronic mechanical irritation to the region. He did not have any dental implants, had good dentition, and all his wisdom teeth removed six months earlier. This was his first episode of buccal pain with numbness of the tongue.

CDR reported that he had become aware of a slow-growing mass in the right sublingual region in the past year, but he had not sought treatment as it had not caused any pain.

On physical examination, CDR was alert, with a blood pressure of 130/66 mmHg, pulse rate of 70 beats per minute and was afebrile. He was in significant pain, with a pain score of 8/10. Examination of the oral cavity revealed a 3.6 cm fixed hard mass centred on the mid and posterior sublingual space located just deep to the mucosa of the right floor of mouth and close to the lingual cortex of the right mandible more superiorly (Figure 1). The mass could be palpated from the submental triangle of the neck. Medially, the mass bulged across the midline without extension across the midline raphe, causing the tongue to deviate to the right.

Figure 1. CDR's mass within the oral cavity

During deep palpation, the mass bled slightly. It was non-tender, fixed and could not be displaced in the horizontal plane. When displaced superiorly, the severity of jaw pain and numbness was reported as lessened, suggesting lingual nerve proximity.

A salivary gland tumour was suspected, and he was referred to a head and neck surgeon. Contrast-enhanced CT scan, MRI scan of the head and neck, and ultrasound-guided fine needle aspiration biopsy confirmed the diagnosis of a salivary gland tumour without evidence of local invasion or metastasis. Core biopsy showed clear cell carcinoma, likely of salivary gland origin, with low mitotic activity. A PET-CT scan of the abdomen and pelvis ruled out a metastatic renal cell carcinoma, which is the most commonly included differential diagnosis in previous studies on clear cell carcinoma of the salivary glands.[1,2]

A right modified neck dissection which included resection of the primary tumour, five levels of lymph nodes, the inner temple of the right mandible, and reconstruction using a right sternocleidomastoid muscle flap was performed.

Final pathology confirmed a malignant hyalinising clear cell (HCC) tumour which was seen to arise from the sublingual gland.

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GAINING INSIGHT: WHAT ARE THE ISSUES?

CDR had a slow-growing mass in the oral cavity over one year but sought treatment only when he experienced a sudden acute onset of severe pain and numbness. He was fortunate to have been timely referred and the malignant sublingual salivary gland removed while it was still localised.

In a GP setting, patients may present acutely or be incidentally found to have a mass in the oral cavity during a routine examination. Hence, this clinical encounter serves as an excellent lesson and brings about a search for answers to the following questions:

1. What are the different masses that can be found within the oral cavity?

2. What is an appropriate management approach to masses in the oral cavity by a GP?

3. What are the common salivary gland pathologies that a GP should be aware of?

STUDYING THE MANAGEMENT: HOW DO WE APPLY IN OUR CLINICAL PRACTICE?

PET CT scan abdomen and pelvis: Indications & advantage over CT scan thorax, abdomen & pelvis

PET CT scan was performed in CDR. This imaging study serves two purposes: to look for primary renal tumour, and to look for distant metastases from the salivary gland tumour, i.e. to stage the disease. Metastatic renal cell carcinoma is the most commonly included differential diagnosis in previous studies of clear cell carcinoma of the salivary glands.

Given the high cost of PET CT scan, a reasonable alternative would be a CT scan of thorax, abdomen & pelvis; the latter also serves both purposes of looking for a renal primary and staging of the disease.

The advantage of the PET-CT scan over the CT TAP scan is that the former is a functional scan that measures the metabolic activity of the tumour, which may provide insights into the biological aggressiveness of the tumour. It may also indicate metastases where the size of lymph nodes involved are not enlarged by MRI criteria.

The surgeon had felt in this instance that PET-CT scan would give more information than the CT TAP scan.

CAUSES OF MASSES WITHIN THE ORAL CAVITY

The oral cavity is the space which extends from the lips anteriorly, towards the junction of the hard and soft palates as well as the circumvallate papillae posteriorly and is flanked laterally by the cheeks. Within this area, a variety of benign or malignant masses may present. These masses can arise from any tissue type found within the oral cavity, which is linked to the occurrence of each diagnosis.

In Figure 2 below, a list of masses that could arise from each site of the oral cavity is given and elaborated briefly. Among the more common oral masses are: torus palatinus, torus mandibularis, pyogenic granuloma, mucocele, fibroma, leukoplakia and squamous cell carcinoma – photographs of these are shown in Figure 3. It is to be highlighted that squamous cell carcinoma may present in various subsites of the oral cavity.

Figure 2. Types of oral masses by site[3]

Types of oral masses by site

1) **Lip**
   - Mucus retention cysts – Obstructed salivary duct resulting in epithelial proliferation
   - Mucocele – Extravasation of mucin from ruptured salivary duct into oral soft tissues
   - Squamous cell carcinoma (SCC) – Accounts for 90% of lip cancers

2) **Tongue**
   - Granular cell tumour – Submucosal mass found most commonly on the tongue
   - Papilloma – Benign squamous proliferation due to human papillomavirus (HPV) infection
   - Leukoplakia – Premalignant white plaque that does not wipe off
   - Erythroplakia – Premalignant red mucosal plaque
   - Fibroma – Reactive response to local irritation or masticatory trauma
   - SCC

3) **Floor of mouth**
   - Wharton duct – Main salivary duct of the submandibular gland; easily mistaken for mass
   - Ranula – Mucocele associated with the sublingual gland
   - Sialolithiasis – Salivary gland stones within the salivary duct
   - Dermoid cyst – Secondary to the entrapment of the midline epithelium during closure of the mandibular and hyoid branchial arches
   - Torus mandibularis – Bony protuberances on lingual surface of anterior mandible; Usually bilateral
   - SCC

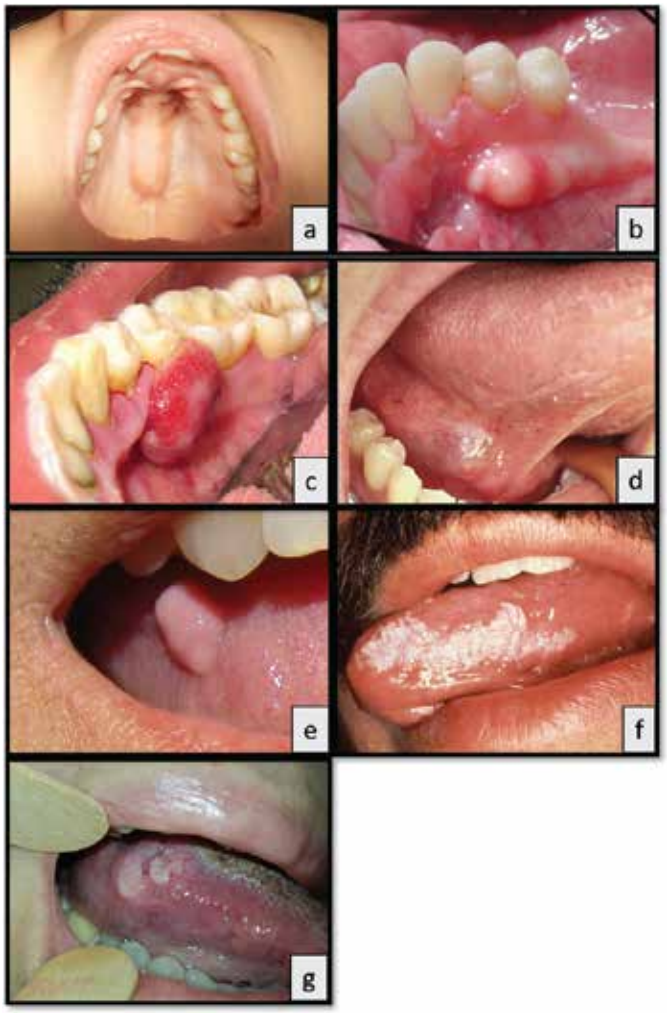
4) **Buccal mucosa**
   - Stensen duct – Main salivary duct of the parotid gland; easily mistaken for mass
   - Fibroma
   - Verrucous carcinoma – Wartlike; Well-differentiated squamous cell neoplasm
   - SCC

5) **Palate**
   - Torus palatinus – Bony protuberance on hard palate; Usually found in mid-line
   - Necrotizing sialometaplasia
   - Nasopalatine duct
   - Melanoma
   - Minor salivary gland tumours
   - SCC

6) **Alveolar ridge**
   - Pyogenic granuloma – Erythematous and commonly ulcerative gingival nodule

7) **Odontogenic**
   - Periapical cyst – Cyst of the jaws developing at the apex of a nonvital tooth

Figure 3. Most common oral masses[4-7]

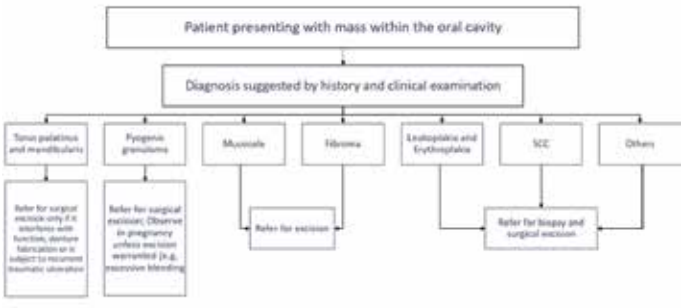


; a – Torus palatinus; b – Torus mandibularis; c – Pyogenic granuloma; d – Ranula (a type of mucocele); e – Fibroma; f – Leukoplakia; g – Squamous cell carcinoma

MANAGEMENT APPROACH TO MASSES IN THE ORAL CAVITY IN THE GP SETTING

The indications for referral to a head and neck surgeon are shown in figure 4. All oral masses suspected of being malignant should be referred expeditiously to a head and neck surgeon, who will then manage the patient with input from a radiologist and a pathologist.

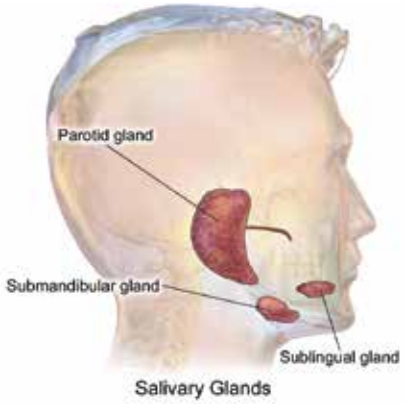
Figure 4. Management of oral masses in the adult patient[8]



What are the common salivary gland pathologies that a GP should be aware of?

There are three pairs of major salivary glands (parotid, submandibular and sublingual) as well as hundreds of minor salivary glands (Figure 5).

Figure 5. Anatomy of major salivary glands[9]



Patients with salivary gland pathologies (Figure 6) commonly present with palpable masses and complain of swelling and/or pain related to food intake. During clinical examination, it is important to note any external swelling, presence of secretions, to carry out bimanual palpation for stones, and a thorough examination of the facial (VII) nerve and regional lymph nodes. The differential diagnosis for the presence of masses within the oral cavity associated with buccal pain such as in CDR is extensive. Careful history-taking and clinical examination will provide clues to an underlying salivary gland pathology. From the table below, it is of note that attention must be paid to the onset, duration and pattern of symptoms, the presence of associated symptoms as well as the site at which symptoms occur to improve diagnosis of salivary gland pathologies.

Figure 6. Salivary gland pathologies[10]

1. Acute swelling and/or pain
○ Viral sialadenitis • Mumps • HIV ○ Bacterial sialadenitis
2. Recurrent unilateral swelling and/or pain
○ Sialolithiasis
3. Chronic bilateral swelling and/or pain
○ Autoimmune diseases – may coexist with dry eyes and mouth • Hypothyroidism • Mikulicz syndrome • Sjören's syndrome ○ Bulimia ○ Chronic alcoholism
4. Fixed swelling
○ Benign/Malignant salivary gland tumours ○ Acute lymphoblastic leukaemia ○ Sarcoidosis ○ Amyloidosis ○ Granulomatosis with polyangiitis ○ Idiopathic

Salivary gland tumours (Figure 7) commonly present as painless growing masses which are usually benign. They can occur in both major and minor salivary glands but are most commonly found occurring in the parotid glands. The most common type of salivary gland tumour is the pleomorphic adenoma,[11] which classically presents with an outward deflection of the ear. The gender distribution for salivary gland tumours is equal, and they often present in the age range of 50-59 years old.[12]

Figure 7. Types of salivary gland tumours[10]

Benign or Malignant	Malignant
Cystadenolymphoma	Mucoepidermoid carcinoma
Pleomorphic adenoma	Acinic cell carcinoma
	Adenoid cystic carcinoma
	Squamous/Adenoc

Signs and symptoms suggesting malignancy and conditions that may predispose to malignancy are listed below (Figure 8). In any case, any form of salivary gland swelling that is present for more than a month should be removed for assessment.[10]

Figure 8. Indications for urgent referral[13]

Indications for urgent referral

- Facial nerve weakness/palsy
- Rapid progression in size of the mass
- Ulceration and/or induration of the mucosa or skin
- Fixation of overlying skin
- Paraesthesia/Anaesthesia of neighbouring sensory nerves
- Intermittent pain with increasing severity
- History of previous skin cancer, Sjoren's syndrome, previous radiation to the head and neck region

CDR was diagnosed with having a hyalinising clear cell tumour, a rare salivary gland tumour that encompasses a broad age range.[14] Although it was a rare diagnosis that was made even more uncommon owing to his young age, his GP considered the possibility of a salivary gland tumour and correctly directed him towards definitive treatment from the beginning. The presence of ulceration of the mucosa, fixation of overlying mucosa, paraesthesia of lingual nerve and intermittent pain with increasing severity raised the suspicion of malignancy, prompting urgent referral to the head and neck clinic.

CONCLUSION

Important takeaway lessons from this clinical encounter include:

1) When faced with patients presenting with an oral cavity mass, it may be quite challenging for a family physician to produce the right diagnosis due to the lack of diagnostic tools. However, family physicians should be familiar with the major symptoms and signs that can aid in making the right diagnosis as they are frequently the first point of contact in the medical setting.
2) Being familiar with common causes of oral masses can help channel referrals to appropriate specialists who are better equipped in centres to accurately diagnose and treat these patients, which usually involves surgical excision.
3) Salivary gland pathology may be primary or secondary to systemic causes. These different diseases may present with very similar symptoms. When "red flag" symptoms and signs are encountered, prompt referral to a head and neck clinic to rule out malignancy is warranted.
4) When in doubt, refer to a specialist. Malignancy should be ruled out.

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