



## Letter to the editor

### Superficial oral mucoceles in cancer patient after radiation therapy: An overlooked yet imperative phenomenon



Dear Editor,

Several complications may appear in the cancer patients affecting the oral mucosae and salivary glands, either treated by radiation, cytotoxic chemotherapeutics, targeted therapies, or hematopoietic stem cell transplantation. Most of research studied these patients focused in oral mucositis and hyposalivation [1]. Other complications include necrosis of mucosae and jawbones, oral and peri-oral fibrosis, oral infections, dental caries, neuropathy and taste disturbances. However, in the past two years we had two patients with *superficial oral mucoceles* appeared following radiation therapy with concomitant cisplatin therapy (Figs. 1 and 2).

As opposed to the more common *oral mucocele* (mucus extravasation phenomenon), located mainly within the lower labial mucosa, oral *superficial mucoceles* are rare, and usually reported in association with lichenoid disorders such as chronic graft-versus-host disease and bullous lichen planus. This phenomenon may be clinically misdiagnosed for other conditions such as pemphigoid and recurrent herpes simplex. Nevertheless, idiopathic (persistent) superficial mucoceles have also been reported [2].

The development of the superficial mucoceles has mostly been attributed to accumulation of sialomucin in the epithelial-connective tissue interface. This material is secreted by the minor salivary glands (mSG), and separates the epithelium from the connective tissue. This process may be caused by trauma or be idiopathic [3]. However, some authors claimed that the lesion is intraepithelial rather than submucosal, and therefore may be caused by local mucosal irritation (such as smoking, using alcoholic mouth rinse or tartar control toothpaste) [4].

Because of their transient nature, superficial mucoceles are usually not biopsied, unless another condition is suspected (e.g. mucous membrane pemphigoid or bullous lichen planus) [1]. In most reported cases no (effective) treatment is provided [2].

To our knowledge this appearance of irradiation-related superficial mucocele was not yet reported. Concomitant radiotherapy and cisplatin tend to cause a higher probability of damage to the parotid gland tissue [5]. It is possible that the damage induced by radiation (with chemotherapy) to the ducts of the mSG causes mucin leakage into the surrounding soft tissue. Another possible underlying mechanism is functional damage to aquaporins (AQPs). AQPs are family of water transporting proteins expressed at the plasma membranes in epithelial, endothelial and other cell types as well as in salivary glands cells. Interestingly, the expression of AQPs in mSG is altered in chielitis glandularis manifested by

mucopurulent secretions from the mSG's ductal openings mainly in the lower lip [6]. Moreover, cisplatin significantly reduces the expression of membrane AQPs in rats' renal cells [7]. Together with the irradiation damage to mSG and their AQPs [8] may resulted in superficial mucoceles.

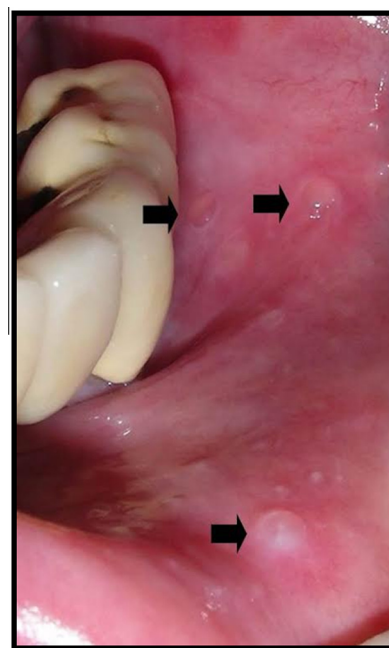
Since the superficial mucoceles tend to rupture and blend in with the extended damaged oral mucosal lining affected by painful mucositis, they are probably undetected and or undiagnosed by both the patient and physician. Acknowledging these self-limiting non-painful lesions may prevent performing unnecessary invasive biopsies especially in such compromised patients.

#### Funding sources

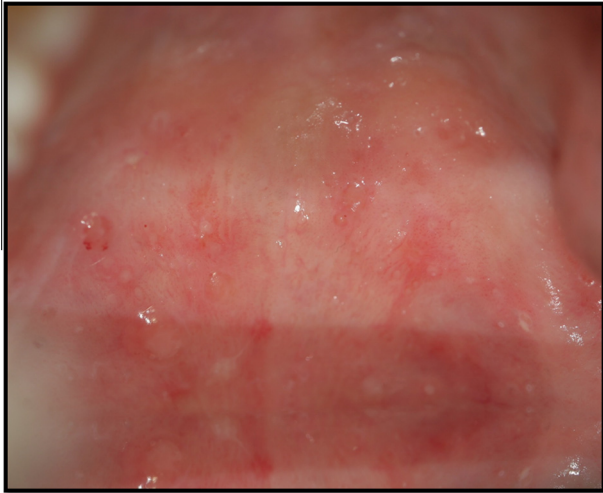
None.

#### Conflict of interest statement

None declared.



**Fig. 1.** (a) Three Superficial mucocele on the left buccal and lower labial mucosa of a 61-year-old female one month after the completion of radiation therapy (total dose of 6500 cGy) for stage-III (T3N0M0) tongue squamous cell carcinoma (SCC).



**Fig. 2.** Multiple superficial mucoceles on the soft palate of a 16-year-old female underwent left hemiglossectomy and modified radical neck dissection for stage IV-B (T2N2bM0) SCC of the left tongue. Subsequently, she underwent radiation therapy to a total dose of 6400 cGy over six weeks, and concurrent six courses of cisplatin adjuvant therapy to total dose of 390 mg/m<sup>2</sup>. Therapy was manifested by severe mucositis and the need for prolonged nutritional support. On examination three months post treatment, sensitivity to palpation of masticatory muscles was noted as well as dry mouth and multiple superficial mucoceles on soft palate. The lesions waxed and waned after therapy and were asymptomatic unless irritated by food. The appearance of mucoceles stopped 5 months post therapy.

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