

# Mucocele of the glands of Blandin–Nuhn—clinical, pathological, and therapeutical aspects

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## Abstract

**Purpose** This study aims to review anatomical, clinical, and pathological concepts as well as to discuss the most adequate therapeutic approach to the mucoceles of the glands of Blandin–Nuhn.

**Discussion** The glands of Blandin–Nuhn are localized in the ventral part of the tongue, next to the apex in the lingual median plane. Development of a mucocele in this site is rarely seen; besides, as the glands of Blandin–Nuhn are not encapsulated and are directly overlapped to the muscle tissues, their manipulation tends to be different from the other oral mucoceles.

**Conclusion** As Blandin–Nuhn mucoceles are uncommon and their clinical appearance could be similar to other lesions, it is important that health professionals know their clinical and histopathological features to avoid having them misdiagnosed.

**Keywords** Blandin–Nuhn glands · Mucocele

## Introduction

Mucocele is a common lesion of the oral mucosa, which is originated from the rupture of a salivary duct and extravazation of the mucin into the surrounding soft tissues [1].

Generally, mucoceles are nodular and/or vesicobullous lesions, fast growing at the beginning and which can afterwards vary in size. Most commonly, they present a bluish color with a translucent aspect and a flabby consistency [2]. They are often found in young people, frequently associated with areas that are subject to traumas. The site with the higher incidence is the lower lip [3, 4]; however, it can be found in any region where there are small salivary glands such as the tongue, buccal mucosa, superior lip, and palate.

Mucoceles of the glands of Blandin–Nuhn have been considered to be uncommon [3, 5, 6]. Out of the 400 cases of mucocele reviewed by Harrison [3], only nine cases were in the tongue.

Even though it is described as a rare lesion, some authors have several cases reported. According to Jinbu et al. [4], Blandin–Nuhn mucoceles comprise 9.9% of all oral mucoceles studied by them. In a Brazilian study with pediatric patients up to 15 years old, mucoceles in the ventral aspect of the tip of the tongue counted for 8.3% of the cases [7]. More recently, Moraes et al. [8] showed that, in their 6-year-period study, out of 312 cases of mucoceles 48 cases (15.4%) were diagnosed as mucocele of the glands of Blandin–Nuhn, the tongue being the second most frequent site of mucocele occurrence.

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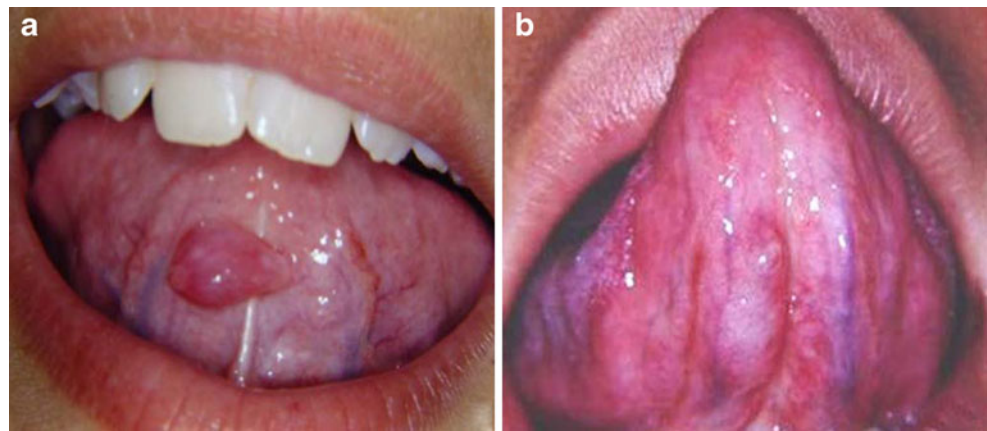
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**Fig. 1** Clinical presentation of mucoceles of the glands of Blandin–Nuhn. **a** An exophytic nodule is localized near to the midline in the ventral surface of the tongue. **b** Submucosal aspect of the lesion



### Anatomic and clinical characteristics

The Blandin–Nuhn glands are a compact group of small mixed mucous and serous salivary glands, situated on both sides of the midline of ventral tongue surface, embedded in the muscles of the ventral aspect, and re-covered by a thin layer of mucosa [5, 9]. Five to seven small ducts open in the oral cavity medial to the plica fimbriate on the undersurface of the tongue, laterally to the lingual frenum [5, 9]. Each gland was about 8 mm in width and 12 to 25 mm in depth [5].

Sugerman et al. [5] stated that the mucoceles of the Blandin–Nuhn glands are clinically similar to vascular lesions, pyogenic granulomas, polyp, and squamous papilloma, depending on the vascularization degree and the atrophy of the acinus.

In our experience, we have found two types of Blandin–Nuhn mucoceles: one is characterized by a submucosal lesion covered with integral mucosa, at 2 to 4 cm in size and of a long-term development with no symptoms; the other one is more protuberant, frequently presents a pedunculated base, and is characterized by painful sensibility and local traumas history (Fig. 1).

The incidence of mucoceles in these glands is higher in youth and females [10]. Traumatic injury to a duct or ducts with partition of this structure is the most likely etiologic factor leading to the development of these lesions [5], most probably by the frequent oscillation of the tongue.

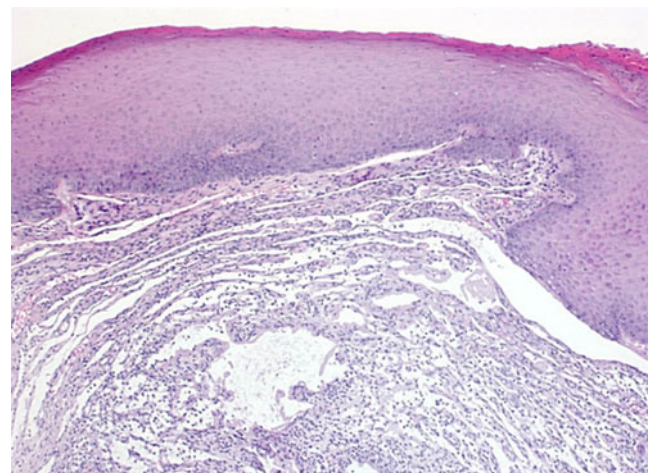
### Histopathological characteristics

There are two types of benign salivary gland lesions involving either extravazation or retention of mucus. The extravazation type or mucocele consists in a circumscribed cavity in the conjunctive tissue and in the submucosa, causing an elevation of the mucosa with thinning of the surface epithelium, as if it had been stretched. The walls are formed by fibrous conjunctive tissue and it is not rare to find the presence of

granulation tissue, which contains a variable number of cells, most of them being leukocytes and phagocytes. Even though there is no epithelium lining the cavity, sometimes the line of fibroblasts limiting the cavity can be confused with flattened epithelium cells [1, 5] (Fig. 2).

The retention-type lesion is a true cyst and presents a cavity lined by squamous epithelium varying from cubical to columnar or atrophic. The acinus and the ducts of the salivary glands often present alterations, which can consist in interstitial inflammation or sialadenitis, dilatation of the intralobular and interlobular ducts with mucus accumulation, and decomposition of the cells of the individual acinus, resulting in mucus formation in the area [1, 3].

The histopathological examination of the mucoceles of the glands of Blandin–Nuhn reported in the literature, as well as in our cases, revealed that they consist in mucus extravazation phenomenon with no epithelium lining the mucin collection. This feature is strongly related to the fact that the extravazation-type lesion is more common in young patients,



**Fig. 2** Histological section of a Blandin–Nuhn mucocele. Pooling of mucus with macrophage and polymorphonuclear cells is partially surrounded by granulation tissue (H & E; original magnification  $\times 100$ )

and most patients diagnosed for mucocele of the glands of Blandin–Nuhn in the literature were under 40 years old.

The composition of the secretory products of these glands is not precisely known, but the glands have been histologically described as consisting of seromucous acini in their anterior portion and of mucous acini capped by seromucous demilunes in their posterior portion [11].

## Treatment

When mucoceles are present in the buccal cavity, they can be easily traumatized and become a strong source of irritation and annoyance to the patient. Therefore, they should be surgically removed, as always as possible. Usually, the surgical excision includes the servicing mucous glands with evacuation of its contents [2].

On the other hand, larger lesions may also be managed by marsupialization [2], cryosurgery [12], laser ablation [13], and micro-marsupialization. Alternatives to surgery include steroid injections [14] and a method where the cystic cavity is filled with rubber impression material presurgically, improving the visual access for surgical excision [15].

According to Baumash [2], the technique for managing moderate to large Blandin–Nuhn mucoceles is to completely unroof the lesion along its entire periphery to visualize and remove all of the glands present. Healing without complication or recurrence should follow. Small mucoceles are completely excised and primarily closed. In these cases, healing is rapid and uneventful.

Based on our experience, we recommend that mucoceles affecting the glands of Blandin and Nuhn should be removed up to the muscle plan, including the small glands found in the surgical field, to avoid recurrence. When only marsupialization is performed, the lesion can re-occur as soon as the draining site is repaired.

## Conclusion

Blandin–Nuhn mucoceles are uncommon, and the present paper reviewed the main features of these lesions. As their

clinical appearance could be similar to other lesions as vascular lesions, pyogenic granulomas, polyp, and squamous papiloma, it is important that excision followed by anatomic-pathological examination be performed, to avoid having them misdiagnosed.

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