# Burning Mouth Syndrome

Gary D. Klasser, DMD[a,*], Miriam Grushka, MSc, DDS, PhD[b], Nan Su, BSc, MBBS[c]

**KEYWORDS**

• Burning mouth syndrome • Glossodynia • Oral burning • Neuropathic

**KEY POINTS**

- Despite the current knowledge gained from the scientific literature, burning mouth syndrome (BMS) remains an enigmatic, misunderstood, and under-recognized painful condition.
- Symptoms associated with BMS can be varied, which provides a challenge for practitioners and has a negative impact on oral health–related quality of life for patients.
- Management of BMS is a challenge for practitioners, because it is currently only targeted for symptom relief without a definitive cure.
- There is a desperate need for further investigations into management, with larger patient samples and longer duration of intervention and follow-up using multicenter trials.

## INTRODUCTION

Burning mouth syndrome (BMS) is an enigmatic, idiopathic, chronic, often painful clinical entity for which there are yet to be well established standardized and validated definitions, diagnostic criteria, or classifications. First described by Fox[1] in 1935, BMS has several different definitions that depend on interpretations from several organizations that review this ambiguous condition. The American Academy of Orofacial Pain[2] defines BMS as a burning sensation in the oral mucosa despite the absence of clinical findings and abnormalities in laboratory testing or imaging. The International Association for the Study of Pain (IASP)[3] defines BMS as a burning pain in the tongue or other oral mucous membrane associated with normal signs and laboratory findings lasting at least 4 to 6 months.[4,5] The current (tenth) version of the International Classification of Diseases of the World Health Organization (the preeminent tool for coding diagnoses within the health care systems of many countries) uses the term glossodynia (K14.6), which includes additional terms such as glossopyrosis and painful tongue and describes the condition as painful sensations in the tongue, including a sensation of burning.[6] The International Headache Society (IHS) in The International Classification of Headache Disorders III-beta (ICHD-III-beta)[7] classifies BMS in Part 3: painful cranial neuropathies, other facial pains and other headaches within the section concerning painful cranial neuropathies and other facial pains. BMS (ICHD-III-beta: 13.10), previously labeled as stomatodynia, or glossodynia when confined to the tongue, is currently defined as an intraoral burning or dysesthetic sensation, recurring daily for more than 2 hours per day over more than 3 months, without clinically evident causative lesions. It is further commented that pain is usually bilateral and its intensity fluctuates, with the most common site of presentation being the tip of the tongue. Subjective dryness of the mouth, dysesthesia, and altered taste often are accompanying symptoms. There is a high menopausal female prevalence, and some studies show comorbid psychosocial and psychiatric disorders, whereas recent laboratory and brain imaging investigations have indicated changes in the central and peripheral nervous systems.

Nomenclature related to BMS has created much confusion because this condition has been given many different names, often based on the quality

[a] Department of Diagnostic Sciences, Louisiana State University Health Sciences Center, School of Dentistry, 1100 Florida Avenue, Box 140, New Orleans, LA 70119, USA; [b] William Osler Health Centre, 974 Eglinton Avenue West, Toronto, Ontario M6C 2C5, Canada; [c] 974 Eginton Ave W, Toronto, Ontario M6C 2C5, Canada
* Corresponding author.
*E-mail address:* gklass@lsuhsc.edu

Oral Maxillofacial Surg Clin N Am 28 (2016) 381–396
http://dx.doi.org/10.1016/j.coms.2016.03.005

and/or location of pain in the oral cavity. Some of the nomenclature applied is as follows: glossodynia, glossopyrosis, glossalgia, stomatodynia, stomatopyrosis, sore tongue, burning tongue, scalded mouth syndrome, oral dysesthesia, burning mouth condition, and BMS.[8,9] From the usage of these terms it is unclear whether or not the oral mucosa appeared normal and therefore whether these terms were describing BMS or just an oral burning sensation. Clearly, the use of these multiple and heterogeneous terms attests to the confusion and uncertainty that exists in the scientific literature and in clinical practice regarding this condition.

Furthermore, there is debate among researchers and clinicians as to whether burning mouth is a syndrome or a disorder.[8,10–13] By definition, a syndrome (a disease unto itself) is a collection of several simultaneous signs and symptoms of varying intensity, which, in the case of BMS, is a normal-appearing oral mucosa with a burning sensation, a feeling of oral dryness, and taste disturbances.[8,14–16] A disorder is defined as a condition manifesting symptoms of other diseases, such as the complaint of dry mouth being the cause of the burning sensation often reported by patients with BMS.[11] Overall, BMS is likely more than 1 disease process with a multifactorial cause, thereby making it a diagnosis of exclusion.

From these various definitions and multiple names applied to BMS it is easy to comprehend the frustration experienced by the patients and the difficulties encountered by practitioners in evaluating these individuals, because the patients are usually experiencing continuous burning pain in the mouth and the practitioners are struggling to identify any obvious clinical signs even with the accompaniment of additional diagnostic testing or imaging. This situation often produces a dilemma when developing and presenting a definitive diagnose. This article helps oral and maxillofacial surgeons in recognizing, understanding, and managing BMS.

## EPIDEMIOLOGY

The prevalence of BMS is thought to range from 0.7% up to 15% of the population depending on the diagnostic criteria used.[17–19] The condition is most commonly reported in postmenopausal women, generally in the fifth to sixth decade of life. Men may also develop BMS, with a reported ratio of approximately 1:5 to 1:7 compared with women, depending on the study population.[17,20] Prevalence seems to increase with age in both men and women.[21]

## DIAGNOSTIC CRITERIA

Over the years there have been several formal diagnostic criteria applied to BMS. Scala and colleagues[9] provided diagnostic criteria as the first step in an initial diagnosis of BMS by assessing the symptom pattern experienced by each patient. They reported the identification of full-blown forms of BMS to not be problematic, whereas the detection of either oligosymptomatic or monosymptomatic variants to be much more complex and the investigators thought their criteria would alleviate difficulties in the diagnostic process. Fortuna and colleagues[12] suggested renaming BMS as complex oral sensitivity disorder, which they described as an oropharyngeal discomfort caused by 1 or more symptoms for which no specific cause of any type can be identified. The IHS in the ICHD-III-beta and the IASP also present criteria to be used for the diagnosis of BMS.[3,7] **Table 1** provides the proposed diagnostic criteria used to identify BMS. Even though there are similarities among some components of these criteria there is no absolute consensus, nor has there been validation of any specific criteria.

## CLASSIFICATION

Several classification systems have been proposed with the goal of improving the characterization for BMS. Lamey[8] and Lamey and Lewis[22] proposed a classification system that comprises 3 subtypes based on variations in pain intensity over 24 hours. Type 1 is characterized by patients having burning every day. However, the burning is absent on waking, but presents as the day goes on, being maximal in the evening. This type may be linked to systemic disorders such as nutritional deficiencies and endocrine disorders.[23] Approximately 35% of patients with BMS give such a history. Type 2 is characterized by burning that occurs every day, is present on awakening, and often makes falling asleep at night difficult. This subgroup of patients often reports mood changes, alterations in eating habits, and decreased desire to socialize, which seems to be caused by an altered sleep pattern.[4,24] Approximately 55% of patients with BMS describe this type of history. Type 3 is characterized by intermittent burning, present only on some days, with burning affecting unusual sites such as the floor of the mouth, buccal mucosa, and throat. Frequently, these patients display anxiety and allergic reactions, particularly to food additives.[25] About 10% of patients with BMS report this pattern of symptoms. In a demographic study by Killough and colleagues[26] comparing BMS populations in the United