

## THE BUCCAL CORRIDOR



Do these two photos show a striking difference? If so, what is it?

The answer to these questions is the amount of buccal corridor showing during a smile. The individual on the left has little-to-no buccal corridor, while the individual on the right has a wide (and less attractive) buccal corridor during a smile.

What exactly is the buccal corridor?

As background, you will recall that the dental arches are surrounded on the outside by a **space, or “vestibule”** that is described by its location; that is, the anterior vestibule behind the lips is the *labial* vestibule, while the area from the lips posterior-ward is the *buccal* vestibule, or the buccal cavity because it is opposite the cheeks, the tissue covering of which is called the buccal mucosa. The term **“buccal” is derived from the primary muscle of the cheek, the buccinator**, located beneath the oral mucosa and running from the orbicularis oris muscles anteriorly (just beyond the corner of the lips), to attach into the superior constrictor muscles posteriorly at the pterygomandibular raphe. Thus, the buccinator ends at the pterygomandibular raphe, where the superior constrictor muscles continue on. The buccal corridor is the area of dark appearance space, both horizontally and vertically, that can be found between the inside of the lip commissure (the outer/lateral margin of the lips), and the outside (buccal area) of the posterior dental arches.

Some background: The pterygomandibular raphe can be identified by intraoral inspection as a distinct vertical band that projects from the lateral aspect of the oral mucosa at the posterior oral cavity. This vertical band of connective tissue is, for descriptive purposes, the end of the buccinator and the start of the superior constrictor muscles that continue around the lateral wall of the pharynx and meet at the midline of the posterior pharyngeal wall.

Of interest, dissections at the pterygomandibular raphe have revealed that most of the muscle bundles continue across and around the raphe rather than stopping there; thus, the buccinator and superior constrictor muscles are actually the same muscle masses. For descriptive purposes, however, they are labeled as, and will always be considered to be separate muscles.

A clinical side trip: Clinicians should appreciate the fact that the buccinator and superior constrictor muscles are actually a continuous muscle mass extending from the corners of the lips to the midline of the posterior pharyngeal wall in the nasopharynx.. This fact relates to velopharyngeal function. Although the soft palate (velum) cannot be easily modified in movement patterns, for those patients in whom the velum appears to be sluggish, one can work to maximize anterior oral valve activity, and this can result in increasing, or maximizing, velopharyngeal valve activity. In other words, as the anterior oral valve (the lips) moves, so goes the velopharyngeal valve. If an individual does not move the lips much during speaking, some hypernasality may also appear in their speech patterns. Working on the velum itself to improve its **functions has been shown to be ineffective. Don't bother to try.**

In evaluating hypernasal individuals to determine whether speech therapy can correct the problem, such individuals should be instructed to perform some speech task, such as counting, in their normal manner and then again in a second task in which the lips are moved maximally (that is, over-exaggerating lip movements) during counting. If the hypernasality is significantly diminished during exaggerated counting, the individual is an appropriate candidate for speech therapy to try to reduce the hypernasality. If there is no decrease in hypernasality with exaggerated movements during counting, then a referral for a definitive surgical or prosthetic evaluation is indicated.

The buccal corridor: The buccal vestibule and the buccal corridor are different entities. You already know that the buccal cavity, or vestibule, is the area between the outside of the posterior dental arches and the inside of the cheeks. By contrast, the *buccal corridor* represents the dark area of the vestibule observable during a smile, or sometimes in speaking. As you peruse the two facial photos of the smiling individuals above, you will note that the person on the left has little or no buccal corridor showing, and this contributes to a pleasant cosmetic appearance by current orthodontic standards. By contrast, the smiling woman on the right has a wide buccal corridor showing, characterized by a wide dark area, and the cosmetic result is less attractive. *Generally, the wider the dark area of the vestibule (the buccal corridor) showing during a smile, the less attractive is the smile.* Although the prevailing view in orthodontics is that minimizing the buccal corridor is a critical smile feature, some feel that the size of buccal corridors has little impact on smile esthetics. No matter the view, the analysis of smiles has appropriately become an essential part of orthodontic evaluation and treatment planning.

The orthodontic significance of the buccal corridor: By now, you should be able to figure out the importance of the buccal corridor in evaluation and treatment planning for orthodontic treatment. An individual with a wide buccal corridor, **showing a great deal of “dark area” during speaking and smiling, will most likely benefit** cosmetically from lateral expansion of the posterior dental arches during orthodontic treatment. Arch expansion can reduce the size of the buccal corridor and should enhance the overall cosmetic result. By like token, individuals with no **buccal corridor and a “toothy”**, protruded anterior dental appearance may benefit from extraction of some selected teeth with concomitant orthodontic narrowing of the dental arches, especially at the canines area to achieve an optimal orthodontic result as some dental arches are changed orthodontically from U-shaped to V-shaped maxillary arches.

Some who provide orthodontic services continue to claim that extractions are never indicated in orthodontic treatment. This naive, poorly supported, and rigidly flawed view of orthodontic treatment fails in a number of individual circumstances; among them, the individual with no buccal corridor who may undergo additional arch expansion. As with all aspects of orthodontic treatment planning, the size of the buccal corridor should be evaluated, along with the host of other observations, x-ray measurements, and cosmetic considerations, and will combine to yield an individual and optimal orthodontic treatment plan.

Applications for you: After reading this short tutorial on the buccal corridor, you may find yourself evaluating faces more closely that you see on television. You should expect to find many individuals who would benefit from orthodontic treatment to expand the dental arches and reduce the size of the buccal corridor. With high-definition TV, you can now also check out the crowding of lower incisors that is commonly seen. You might also like to watch for labial lisps that are observable in the public in large numbers.

For those readers who are not speech clinicians, a normal /s/ is produced by forcing air past a small vertical opening between the upper and lower incisors. A labial lisp, however, involves the speaker using the upper anterior teeth and the lower lip to create the small opening between which air is forced. Many with a labial lisp had a Class II malocclusion in childhood, with upper anterior teeth protruding farther forward than lower anterior teeth that could have been due to maxillary excess or mandibular retrusion. With such jaw relationships, it is economical to use the lower lip instead of lower incisors to form the channel with upper incisors for production of /s/ and other sibilant sounds. Even after orthodontic correction, a labial lisp is often retained as the habit pattern for producing sibilant sounds such as /s/.

**I'd like to add one more observation of people seen on TV that has become a bit annoying to me. It is the use of “glottal fry” in speaking.** The phenomenon of glottal fry in speech pathology describes a voice in which words, especially at the end of sentences, turn into a low-pitched rustle-type, repeated vibration sound. If you say **“ah” and go as low as you can**, you may go into glottal fry (it is difficult to explain what glottal fry is – except that it sounds like bacon frying). You can **hear it in “Valley girls”, and in many teenagers and young women**. If you do note this as you watch TV, you will likely cuss me out for teaching you about that, and if so, please accept my apology ahead of time.

Summary: **An explanation of the “buccal corridor” has involved side trips into the underlying anatomy of the** cheeks and posterior nasopharynx, and the discussion has expanded out into evaluating hypernasality without cephalometric x-ray instrumentation, to a discussion of labial lisping and glottal fry. You have also been informed of how and why the buccal corridor is an observation to be made in orthodontic evaluations and how the amount of the corridor showing may impact orthodontic treatment decisions.

If you desire additional information or related references, go to: American Journal of Orthodontics and Dentofacial Orthopedics (AJODO), Volume 142, Number 4, October, 2012, pages 459-465; **article titled “Effects of buccal corridors on smile esthetics in Japanese and Korean orthodontists and orthodontic patients”, by Ioi, Kang, Shimomura, Kim, Park, Son, and Takahashi**. I hope you have enjoyed this short tutorial.