

AN EXPLANATION OF THE DENTAL TERMS “DIFFERENTIAL ERUPTION” AND “VERTICAL DRIFT”

Question for Dr. Mason: When an adult individual has an interdental tongue rest posture with the mandible hinged open beyond the normal vertical dimension (freeway space), why isn't the root structure of erupting teeth exposed?

Response by Dr. Mason: Good question! In adults with a full complement of erupted teeth, if the tongue is resting interdentally with the freeway space open beyond the normal range of 2-3 mm posteriorly or 3-5 mm anteriorly for many hours per day, some additional posterior dental eruption will occur while no further eruption is possible anteriorly due to the presence of the tongue resting between the incisors that serves to inhibit additional anterior eruption. The additional posterior eruption, along with no anterior eruption, is termed **differential eruption** in dentistry, meaning that the eruption is occurring posteriorly but not anteriorly. The usual result of differential dental eruption is an anterior open bite malocclusion.

You are correct to observe that when posterior teeth continue to erupt, you do not see root structures being exposed along with the unwanted eruption. The reason is that the supporting alveolar bone and soft tissues "follow along" with the eruption. This process is termed **vertical drift**.

Vertical drift explains why, when additional eruption in the otherwise fully-erupted adult dentition occurs, the eruption does not result in the teeth erupting out of their bony sockets (alveolar bone) because the additional dental eruption also involves the deposition and resorption of alveolar bone occurring concurrent with the dental eruption.

It is important to remember that when the normal vertical rest position of the jaws (the freeway space) remains open beyond the normal range for hours per day, the feedback from the muscles of mastication that control the rest position of the mandible, and also feedback from the gingiva surrounding the teeth, signal the brain stem (Pons) to initiate the process of eruption in the posterior teeth where the tongue is not blocking their pathway of eruption. The feedback to the brainstem from the muscles of mastication (primarily the masseter) and gingiva covering the posterior teeth is via the mandibular branch of the trigeminal nerve. The phenomenon of the supporting bone and gingiva "following along" by **vertical drift** is yet another example of the amazing adaptive capability of the oral mechanism.

This discussion further highlights the importance of establishing or recapturing a normal freeway space as an important goal of orofacial myofunctional therapy.

Dr. Bob