

Biologic width and its importance in periodontal and restorative dentistry

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The relationship between periodontal health and the restoration of teeth is intimate and inseparable. Maintenance of gingival health constitutes one of the keys for tooth and dental restoration longevity.

Biologic Width Anatomy: In the human body, ectodermal tissue serves to protect against invasion from bacteria and other foreign materials.

The natural seal that develops around both, protecting the alveolar bone from infection and disease, is known as the biologic width.

The biological width is defined as the dimension of the soft tissue, which is attached to the portion of the tooth coronal to the crest of the alveolar bone.

This term was based on the work of Gargiulo et al., who described the dimensions and relationship of the dentogingival junction in humans.

Measurements made from the dentogingival components of 287 individual teeth from 30 autopsy specimens established that there is a definite proportional relationship between the alveolar crest, the connective tissue attachment, the epithelial attachment, and the sulcus depth.

They reported the following mean dimensions: A sulcus depth of 0.69 mm, an epithelial attachment of 0.97 mm, and a connective tissue attachment of 1.07 mm.

Based on this work, the biologic width is commonly stated to be 2.04 mm, which represents the sum of the epithelial and connective tissue measurements.

Margin Placement and Biologic Width: A clinician is presented with three options for margin placement: 1. Supragingival, 2. Equigingival, and 3. Subgingival locations.

Supragingival margin: It has the least impact on the periodontium.

This margin location has been applied in non-esthetic areas due to the marked contrast in color and opacity of traditional restorative materials against the tooth.

Equigingival margin: The use of equigingival margins traditionally was not desirable because they were thought to favour more plaque accumulation than supragingival or subgingival margins, and therefore result in greater gingival inflammation.

Subgingival margin: Restorative considerations will frequently dictate the placement of restoration margins beneath the gingival tissue crest because of caries or tooth deficiencies, and/ or to mask the tooth/restoration interface.

Invasion of biologic periodontal space for additional retention will cause iatrogenic periodontal disease with a premature loss of restoration.

Evaluation of Biologic Width Violation

Clinical method: The signs of biologic width violation are: Chronic progressive gingival inflammation around the restoration, bleeding on probing, localized gingival hyperplasia with minimal bone loss, gingival recession, pocket formation, clinical attachment loss and alveolar bone loss.

Bone sounding: The biologic width can be identified by probing under local anesthesia to the bone level (referred to as "sounding to bone") and subtracting the sulcus depth from the resulting measurement.

If this distance is less than 2 mm at one or more locations, a diagnosis of biologic width violation can be confirmed.

Conclusion: The health of the periodontal tissues is dependent on properly designed restorations.

If the margin must be placed subgingivally, the factors to be taken into account are:
Correct crown contour in the gingival third;

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Correct polishing and rounding of the margin;
Sufficient zone of the attached gingiva; and,
No biologic width violation by the margin
Repeated maintenance visits, patient co-operation
and motivation are important for improved success of
restorative procedures with pristine periodontal health.

Biography

Reem Alshaibani has been graduated from Riyadh alelm university dental college on 2011, work as general practitioner for 7years, she completes her advanced education in general dentistry in 2019, she is registrar at prince sultan military medical city.

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