



(RESEARCH ARTICLE)

Relationship of the gingival margin of restorations in respect to the biologic width

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Abstract

Placement of gingival margins of different type of restorations has to be varied as per the extent of the defect and the restorative demands. Various factors tends to govern the margin placement. Over the years, as per the level of the free gingiva, restorative margins has been described as supra gingival, equigingival and subgingival. The concept of biologic width becomes important regarding the margin placement. This short communication discusses the concept of biologic width and the gingival margins of different restorations in respect to this concept.

Keywords: Biologic width; Restorative margin placement; Violation of biologic width

1. Introduction

Maintenance of gingival health is essential for periodontal integrity.[1] Many a times, restorative treatment is carried out without giving adequate importance to the surrounding gingival location. Such restorations both direct as well as indirect, could have far reaching adverse consequences. In order to maintain their optimal health, knowledge of gingival attachments and their interrelationship with the restorative margins becomes essential.[2]

2. Biologic width

Biologic width has been a debatable topic for the last 4-5 decades. Earlier it was considered a band of soft tissue encircling and attaching the gingiva with the cervical margin of the tooth [3]. The ideal average gingival sulcus depth is 0.69 mm. Established dimension of junctional epithelium is 0.97 mm, while that of connective tissue is 1.07 mm, thus biologic width is 2.04 mm [2].

The biologic width varies from tooth to tooth, and also from one surface of the tooth to another [4].

2.1. Importance of biologic width

Maintaining the biologic width is important because of the following reasons-

- 1) Maintenance of gingival sulcular health
- 2) Maintenance of healthy periodontium

2.2. Violation of biologic width

Biologic width is not to be encroached upon but generally it is violated in 2 situations-

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- 1) Where the tooth defect/lesion is at the gingival margin or sub gingival.[5]
- 2) In anterior teeth, where due to aesthetic reasons, the margin has to be placed sub gingival.[5].

2.3. Consequences of biologic width violation

Once the biologic width is violated following could follow –Gingival Inflammation [4], Gingival Recession [4] , Bleeding on probing [4], Bone loss [4], Leads to clinical attachment loss [4], Increased mobility of involved teeth [3].

3. Restorative margin placement

Three type of margins can be placed while carrying out the restorations. They are –

3.1. Supragingival margin

It is placed above the level of marginal gingiva. This margin has been used for non-esthetic areas or when visibility of cervical third is not present, when the defect is above the marginal gingiva.

3.1.1. Advantages

Easy to prepare, Easy Duplication of margin, Exact replication of margin of restoration, Exact finishing and polishing of margins, Non/ least irritating

3.1.2. Disadvantages

Unaesthetic, Differentiation between the tooth and restoration is obvious.

3.1.3. Materials

Supragingival margins can be placed when the following materials are used – Layered and pressed feldspathic porcelain, All ceramic (Zirconia-in non-aesthetic areas), Composite, Gold for posterior teeth restoration, Amalgam restoration(Posterior teeth), GIC, Compomer.

3.2. Subgingival margin

It is placed below the level of marginal gingiva.

3.2.1. Advantages

More esthetic.

3.2.2. Disadvantages

Most irritating to the periodontium, Highest occurrence of periodontitis, Most difficult to maintain.

3.2.3. Materials

Porcelain fused to metal, Gold for posterior tooth restoration.

3.3. Equigingival margin

It is placed at the level of marginal gingiva.

3.3.1. Advantages

Less impact on periodontium, Conservation of tooth structure, Esthetic goals can be achieved

3.3.2. Disadvantages

Higher plaque accumulation, higher possibility of gingivitis

3.3.3. Materials

Zirconia (in aesthetic areas)

4. Guidelines regarding restorative margin placement

For placement of the gingival margins of the restorations following guidelines have to be followed – Supragingival margin placement, When defect is at the gingival margin, For enhanced esthetics

When defect extends below the gingival margin- If probing depth is 1.5 mm or less, the restorative margin could be placed 0.5 mm below the marginal gingiva.[4] If probing depth is >1.5 mm but less than 2 mm, the restorative margin can be placed at half the depth of sulcus.[4] If probing depth is > 2 mm, gingivectomy can be done to create 1.5 mm sulcus depth. Then the restorative margin can be placed 0.5 mm below the marginal gingiva.[4]

5. Discussion

As a consequence of numerous restorations, research has pointed towards the best gingival margin, as the one which is distant from the gingival margin. This finding has been widely accepted because of the fact that the maintenance of such margins is easy and quite durable.[2] Supragingival margins do not lead to enhanced plaque/calculus accumulations.[6] Moreover the possibility of secondary caries is negligible due to direct hygiene procedures, possible with these margins. These margins, being distant from the gingival fluid do not lend themselves to a higher rate of dissolution.[7] Jakob and Leif in their study found that when supra gingival margins are placed, gingival health is improved.[2] Their finishing is superior since the used restorative material can be accessed without any hindrance.[8] DHANRAJ et al on the basis of systemic review and meta-analysis found that supragingival margins are better than subgingival margins.[9]

Placement of subgingival margins is complicated because of presence of the free marginal gingiva.[10] This situation can be overcome by employing a retraction cord.[11] Jakob and Leif found that margins tend to accumulate plaque and calculus to a higher extent, degree and deteriorate rapidly.[12]

To overcome the challenges associated with finishing, as well as maintaining the subgingival margins, equigingival margin was proposed. These can be prepared relatively easily than the subgingival margin.[6] Esthetics is easily achieved, and they are easier to maintain.[6,13] In separate studies Aboelsaad and Babitha, found equigingival margin to perform better than subgingival over a prolonged period of time.[6,13]

6. Conclusion

Well designed and properly adapted restorative margin placed in consonance with the aesthetic and functional need depends upon patient motivation and cooperation. Depending upon the clinical situation one of the three i.e supra, sub and equigingival margins should be selected and placed so as to maintain and preserve the biologic width.

Compliance with ethical standards

Disclosure of conflict of interest

None.

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