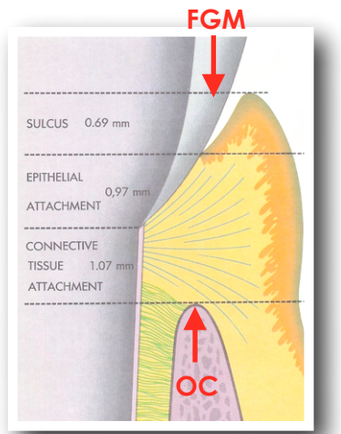
## Understanding Biologic Width

Biologic width is the genetically predetermined distance that the gingiva maintains over the bone, from free gingival margin (FGM) to osseous crest (OC). It includes the depth of the sulcus, and the portion of the gingiva attached to the root. Although this dimension varies per patient, it is generally 3mm in thickness, as illustrated in the diagram below. About 1-2mm for the sulcus depth, and 1-2mm for the attached gingiva.




Biologic width is important. If the buffer of the sulcus and attached gingiva is violated by a restoration or caries, inflammation of the gingiva will occur and one of two things likely will happen:

1. Either the bone will retreat to make room for the gingiva to have freedom from the subgingival irritant and create a pocket or uneven gingival margin, OR

2. The bone will stay fixed and the gingiva will stay irritated indefinitely leaving the gingiva unaesthetically red, puffy and easily bleeding.

## Clinical Crown Lengthening

Clinical crown lengthening is the removal of bone and soft tissue from around a tooth in order to expose more of that tooth. This can be done for two primary reasons: aesthetics, or prosthetics. Although these two types of surgery have been categorized separately, primarily because prosthetic reasons for lengthening the teeth can result in non-esthetic results with uneven gingival margins, there are situations where prosthetically lengthening the teeth also provides a more esthetic outcome.

***Aesthetically***, or anatomically, lengthening teeth does not generally require the fabrication of a restoration post crown lengthening surgery.

***Prosthetic***, or functional, crown lengthening surgery is performed with the understanding that a new restoration, a full coverage crown or a veneer, will be used to restore the function of the tooth or teeth in question due to exposed roots or lost incisal tooth structure.

This issue of ProbeTips will **focus primarily on prosthetic crown lengthening and hopefully guide the clinician in referring patients when necessary**. In the prior newsletter, aesthetically driven cases were presented.



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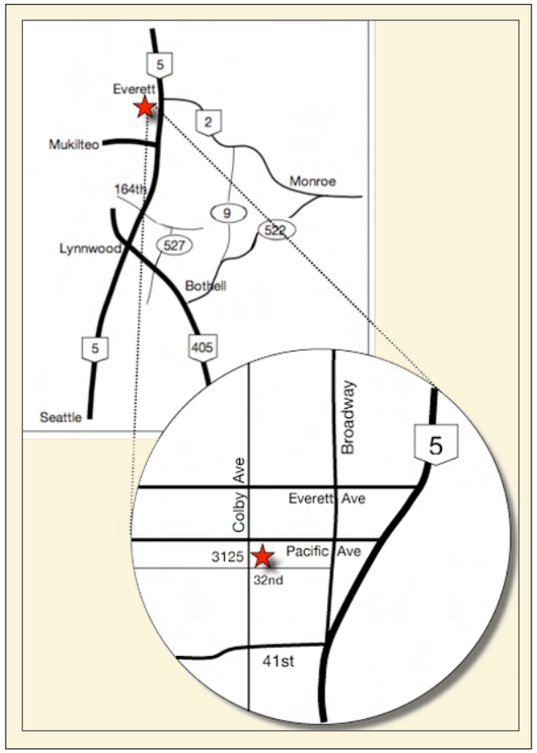
PERIODONTOLOGY IMPLANTOLOGY ORAL MEDICINE

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# Probe Tips

A Quarterly Periodontal Newsletter

By Pamela Nicoara DDS MSD

## Prosthetic Crown Lengthening

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# Prosthetic Crown Lengthening

## General Considerations

There are several factors which limit the use of clinical crown lengthening surgery in the face of potentially more stable and predictable restorations like a fixed partial dentures, or dental implants.

1. Crown : Root ratio
2. Root shape and surface area
3. Root trunk length to furcation entrances (lingual/palatal entrances are more apical)
4. Pristine healthy adjacent teeth
5. Aesthetic compromise

If any of the above parameters are impinged upon (i.e. the new crown length will be greater than the root length, the root is small or conical in shape, the entrances to furcations are very near the osseous crest, or support will be lost from adjacent healthy teeth which may also pose an aesthetic compromise), then it is appropriate to consider other restorative options listed above.

## Aesthetic Crown Lengthening

***Problem:*** Gummy Smile.

***General Causes:*** Altered eruption, Super-eruption, Short clinical crowns, Tooth wear, Vertical maxillary excess, Short upper lip, Hypermobile upper lip.

***Treatment:*** Crown lengthening, orthognathic or plastic surgery, and/or quarterly injections of Botox.

## Prosthetic Crown Lengthening

***Problem:*** Subgingival Restorative Margin/Lack of Ferrule.

***General Causes:*** Caries or Crown Fracture, Super-eruption of the teeth, Short clinical crowns or tooth wear.

***Treatment:*** Subgingival restorative margins can be corrected with crown lengthening alone, or in combination with orthodontic treatment to either intrude worn teeth with compensatory super-eruption, or extrude fracture margins to a more coronal position to reduce the amount of bone and soft tissue removal provided roots are long enough and furcas are apical enough.

***Case No. 1:*** Occlusal wear and acid erosion has caused significant loss of incisal tooth structure anteriorly and loss of tooth structure lingually. Restorations are necessary to restore the lost tooth structure. Compensatory super-eruption has limited restorative space. Orthodontic treatment could have been used to intrude teeth, but roots were long and the patient did not want orthodontics. A minimum of 6 weeks of healing is necessary prior to placement of final restorations to prevent unexpected recession defects from packing cord or from subgingival cement accumulation before the gingiva is mature.

***Case No. 2:*** The patient finds the incisal edges too long and does not want orthodontic intrusion. Crown lengthening brings gingival margins to level positions, finished with esthetic restorations.

*Case No 1.*


*Case No 2.*

Before

After

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## References

***Clinical Periodontology and Implant Dentistry.*** Lindhe et al. 4th Ed. 2003.

***Gargiulo, et al.*** Oral Surg Oral Med Oral Path. 1961.

Complete References Available on Request.