Restorative Crown Lengthening Surgery

Restorative (Functional) crown lengthening, a periodontal surgical procedure, involves the reshaping of the hard and soft tissues surrounding one tooth or several teeth.

The goals of restorative crown lengthening include:

1. **Facilitating an ideal restorative result:***
   - To gain access to subgingival caries, root resorption, and/or post/pin perforations.
   - To increase clinical crown height lost from gross caries, cusp fracture, or excessive wear.
   - To provide additional tooth structure for a “ferrule effect” beyond post and core, etc.
   - To improve axial retention and resistance form for better long-term predictability.
   - To use preoperative radiographs, probing depths, crown temporization, and/or a diagnostic wax-up to help determine the need for, and the amount of, crown lengthening.

2. **Preserving the health of the periodontium:**
   - To adjust bone and soft tissues away from the proposed crown margins to prevent **biologic width*** impingement after crown cementation.
   - To eliminate chronic irritation / inflammation; tissue discomfort and pain; and bone loss around an existing crown causing biologic width impingement.
   - To avoid worsening tooth prognosis (opening up the furcation) while maintaining a crown-to-root ratio of at least 1:1 and while minimizing the reduction of bone and soft tissues of the adjacent teeth.

*Biologic width*, described by Gargiulo et al in a histologic cadaver study, represents the mean sulcus depth (~1mm; for placement of the restorative margins) and the mean soft tissue (~2mm; epithelial and connective tissue) attachment always present around teeth.

Since these dimensions can vary from patient to patient, a **minimum distance of 3mm** is needed from the crown margins to bone to allow for correct soft tissue attachments.

![Fig. 50-9. Biologic width. Biologic width is dimension from crest of alveolar bone to base of sulcus (2.04 mm) and includes connective tissue (1.07 mm) and epithelial (0.97 mm) attachments. (From Morris AL, Bohannan HM, and Casullo DP, editors: The dental specialties in general practice, Philadelphia, 1983, WB Saunders Co.)](image)
Marginal inflammation around temporary crown #19 due to biologic width impingement of restorative margin.

Ostectomy during crown lengthening surgery to reestablish proper biologic width.

Resolution of inflammation six weeks following crown lengthening surgery #19.

High smile line. Patient is not happy with short teeth.

“Short” teeth: due to incisal and occlusal wear and from thick bone and soft tissues.

Optimal esthetics: Achieved through crown lengthening and restoring damage from wear.

Improved axial retention.

References


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