Restorative Options for the Periodontal Patient

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• All-ceramic restorations • Periodontal prosthesis

Periodontal and restorative dentistry are mutually important facets of clinical dentistry. Spear and Cooney[1] well describe the intimate relationship of these facets by stating that, ''…for restorations to survive long term, the periodontium must remain healthy… for the periodontium to remain healthy, restorations must be critically managed …so that they are in harmony with their surrounding periodontal tissues.'' This article discusses new techniques and trends that mostly involve this second aspect, which is the critical management of the restorations, particularly at the gingival margins. The role of implant dentistry as an option for the restorative plan of the periodontal patient is explored (**Figs. 1** and **2**).

For proper understanding of the complex relationship that exists between restorative dentistry and periodontal health, two important interrelationships are addressed: (1) the placement of the margins of a restoration and their relationship to biologic width and (2) the type of dental materials used to make the restoration.

Before describing the different possibilities available to the restorative dentist, it is essential to review important features of the anatomic structures that are naturally present where the tooth enters the alveolus, the so-called biologic width. Historically, Gargiulo and colleagues[2] described this zone as the tissues that constitute the structures above the bone crest, terminating with the free gingival margin. They promulgated a rule of thumb for the clinician to follow: the tissues above the alveolar crest fill a space composed of gingival fibers, connective tissue, and junctional epithelium that measure approximately 2 mm. Whereas this value is applicable to most clinical cases, the observations that suggested this rule were derived from the study of cadaver specimens. More recently, Vacek and colleagues[3] published a histomorphometric study that examined 171 tooth surfaces from 10 human adult cadaver jaws. This study supported the data from Gargiulo and colleagues; however, it brought attention to the fact that several variations in dimension between subjects are

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Fig. 1. Metal-ceramic crown on tooth #3. Note the fluted and flat margins at the level of the buccal furcation.

possible.[4] These investigators presented data showing large variations between subjects and, even, within the same person, with some individuals having an average biologic width of 0.75 mm and others of 4.3 mm. These variations were seen mostly within the epithelial attachment, with the connective tissue attachment having the least variability. These findings were also suggested by Gargiulo and colleagues.[2] Thus, it should be concluded that changes within the biologic width depend on the location of the tooth in the dental arch and on the individual subject. Ultimately, the 2.00 mm rule of thumb should be used with caution and interpreted on a case-by-case, tooth-by-tooth basis.

The 2.00 mm of biologic width rule has particularly influenced surgical crown lengthening procedures. The study by Landing and colleagues[5] examined the dimensions of the biologic width before and 3 and 6 months following surgical crown lengthening. Prosthetic treatment started 6 weeks after surgery. The presurgical values of biologic width were found to be reestablished 6 months after completion of the surgical procedures.

To maintain periodontal health, placing the margin of a restoration in the gingival area of the tooth is of critical importance, and violating the biologic width may lead to problems. When correlating biologic width to periodontal health and restorative margins, de Waal and Castellucci[6] suggested that the margin of the final prosthesis

Fig. 2. Subgingival margins of all-ceramic restorations on teeth #7, #8, #9, and #10. Note gingival health.