A short term evaluation of periodontal surgery

C. R. AESCHLIMANN, P. J. ROBINSON and E. J. KAMINSKI
Northwestern University Dental School, Chicago, Illinois, U.S.A.

(Accepted for publication November 22, 1978)

The principal objective of this study was to evaluate by means of multiple parameters the short term effect of periodontal surgery with and without bone recontouring. The parameters used in this study include the Gingival Index (Löe & Silness 1963) the Oral Hygiene Index (Greene & Vermillion 1960), measurements of vertical bone height using study models of the alveolar bone and probe depth measurements with a force controlled probe (Vitek, Robinson & Lautenschlager 1979).

Ten patients suffering from chronic periodontitis with no known systemic diseases were selected for this study. These subjects ranged from twenty to fifty-eight years old, consisting of 8 women and 2 men. The principal criteria used in the selection of subjects were that they had at least two lesions in their maxillary right and left posterior sextants measuring greater than five millimeters and that the degree of periodontal destruction was similar between the right and left sextants.

The initial documentation for each patient included study models, clinical photographs, Oral Hygiene Index (OHI), Gingival Index (GI), radiographs and pocket depth measurements using a force controlled probe.

Four weeks after the initial therapy and just prior to surgery a new series of measurements were taken including the OHI, GI and clinical probing. On the facial of the maxillary left sextant impressions of the alveolar bone were made using a polyether material (Impregum) prior to osseous recontouring, after recontouring and during the surgical re-entry procedure four months later. On the right side impressions were taken during the first surgical procedure and during the re-entry procedure. Measurements of the level of bone were taken from the casts and were established from the most coronal portion of the tooth to the coronal margin of the bone using a Deitzen compass.

The initial therapy for all subjects consisted of a thorough scaling, root planing and gingival curettage. Additionally, the patients were instructed in the Bass technique of tooth brushing (Bass 1954) and interdental cleaning with floss, toothpicks and/or interdental tooth brushes.

The surgical phase of the therapy included the use of full thickness mucoperiosteal buccal and palatal flaps. Once access had been gained all the visible granulation tissue was removed. On the maxillary left sextant the alveolar bone margins were thinned and inter-radicular septa grooved and tapered as necessary. Efforts were
short communication

Kaminski

Illinois, U.S.A.

1978

Surgery a new series of measure taken including the OHI, 1 probing. On the facial of left sextant impressions of the were made using a polyethylene (egum) prior to oseous recontouring and during entry procedure four months right side impressions were the first surgical procedure re-entry procedure. Measurements of bone were taken early were established from evaluation of the tooth to margin by the bone using a 0.1 scale.

therapy for all subjects coronal and root planning treatment. Additionally, the procedure included the Baxx technique (Baxx 1954) and interdental floss, toothpicks and/or brushes.

phase of the therapy involved full thickness mucoperiosteal and palatal flaps. Once accessed all the visible granulation moved. On the maxillary left alveolar bone margins were inter-radicular septa grooved as necessary. Efforts were made to correct reverse bony architecture or inconsistent margins without jeopardizing radicular bony support. The same approach was used on right maxillary sextant except no attempt was made to treat the bony defects other than thorough and complete removal of the granulation tissues. For both the right and left sides the flaps were sutured with silk at the level of the alveolar crest and covered with a periodontal dressing. Following the surgical treatment all patients were recalled for an oral prophylaxis (instruction in oral hygiene and cleaning of all exposed tooth surfaces) once every three weeks for four months.

There was a reduction in both the OHI and GI for the right and left segments after both the postsurgical and surgical treatment (figures 1 and 2). At four months after the surgical treatment the GI for the left segment (0.43) was found to be significantly lower (p < .001) than the right segment (0.63).

For all tooth surfaces the mean pocket depth for all subjects at the initial examination was 3.83 ± .12 mm on the right side and 3.69 ± .14 mm on the left side. There were slight reductions in pocket depth for
both the right and left sides after initial therapy (figure 3). Four months after periodontal surgery, there was a reduction to 2.4 ± .12 mm for the right side and 2.05 ± .11 mm for the left side (p < .007).

Measurements of vertical bone alterations were established for eight patients by means of surgical re-entry procedures. On the right side where no recontouring of bone had been performed there was a mean vertical loss of 0.16 mm. On the left side the average amount of bone loss as a direct result of the recontouring procedure itself was 0.22 mm. An additional mean vertical bone loss of 0.28 mm was observed on the left side during the four month postsurgical period. Thus the total mean vertical bone loss due to the recontouring procedure combined with the postsurgical remodeling process was 0.5 mm on the left side.

These results are as well as those of others (Pennel et al. 1967, Donnenfeld, Hoag & Weissman 1970) confirm the observation by Glickman et al. (1963) that elevating any type of flap results in bone resorption with risk of thinning bone and loss in bone height. The results of this study demonstrate that there is loss in bone height following an apically positioned flap with or without bone recontouring. However, the degree of bone remodeling is less predictable when bone recontouring has not been performed.

The results demonstrate that the apically positioned flap reduces periodontal pockets effectively with or without bone recontouring. Statistically, the apically positioned flap with elimination of bony defects resulted in greater pocket reduction. It is interesting to note that the changes in pocket depth observed in this study are similar to those of Barletta et al. (1972) and Zamel (1975). Barletta et al. (1972) reported a mean pocket depth reduction of from 4.02 mm to 2.26 mm following apically positioned flaps with osseous recontouring. Zamel (1975) observed a mean preoperative pocket depth of 3.5 mm reduced to 1.9 mm following the use of apically positioned flaps with osseous recontouring at four months postoperatively.

References

Address:
Dr. Peter J. Robinson
Department of Periodontics
240 E. Huron
Chicago, Illinois 60611, U.S.A.