Increased gingival dimensions. A significant factor for successful outcome of root coverage procedures?
A 2-year prospective clinical study


Abstract. The aim of this study was to evaluate whether an increased thickness of the gingiva through the use of a free connective tissue graft, in conjunction with a coronally advanced flap procedure, may positively influence the treatment outcome with respect to (i) root coverage and (ii) long-term stability of the position of the soft tissue margin following treatment of recession type defects. 67 consecutive patients having a total of 103 buccally located recession type defects of at least 3 mm were included in the study. After an initial phase of prophylaxis including instructions in a tooth brushing technique giving minimal apically directed forces to the gingival margin, the recession sites were surgically covered with a coronally advanced flap alone (control sites), or coronally advanced flap combined with a free connective tissue graft taken from the palate (test sites). Clinical examinations, including assessments of oral hygiene, gingival conditions, recession depth, gingival height, probing pocket depth and probing attachment loss, were performed before and 6, 12 and 24 months after surgical treatment. The mean initial recession depth for both treatment groups was about 4.0 mm (SD 1.0) with a gingival height apical to the recession of 1.0 mm (0.5). At the re-examination performed 6 months after surgical treatment, the mean recession depth had decreased to 0.2 mm in both the test and control groups. Complete root coverage was observed at 72% of the test sites and 74% of the control teeth. At teeth treated with the combined surgical procedure, the mean gain in probing attachment amounted to 3.7 mm and the mean gingival height had increased to 3.5 mm (0.6). The corresponding figures for control teeth were 3.6 mm and 1.5 mm (0.5), respectively. At the 24-month follow-up examination, the mean root coverage amounted to 98.9% (test) and 97.1% (control). 88% of the teeth in the test group showed complete root coverage compared to 80% for teeth in the control group. It was concluded that the 2 surgical procedures resulted in similar degree of root coverage and that changes of tooth brushing habits may be of greater importance than increased gingival thickness for long-term maintenance of the surgically established position of the soft tissue margin.

Key words: gingival recession; longitudinal; mucogingival surgery; pedicle graft; free graft

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populations (Löe et al. 1978, 1992, Okamoto et al. 1988, Yoneyama et al. 1988). It has therefore been suggested that at least 2 different types of gingival recessions may exist; one related to mechanical factors and one associated with destructive periodontal disease (Baker & Seymour 1976, Löe et al. 1992, Serino et al. 1994).

Besides tooth brushing trauma and periodontal disease (O’Leary et al. 1968, Gorman 1967, Sagnes 1976, Vekalahti 1989, Khocht et al. 1993) factors such as (i) tooth malposition (Parfitt & Mjör 1964, Modeer & Odenrick 1980, Källestål & Uhlin 1992), (ii) alveolar bone dehiscences (Bernimoulin & Curi- livic 1977, Löst 1984), (iii) inadequate gingival dimensions (Maynard & Ochsenbein 1975), (iv) high muscle attachment and frenal pull (Trott & Love 1966), and (v) iatrogenic factors related to restorative and periodontal treatment procedures (Gorman 1967, Lindhe et al. 1987) have been associated with the development of gingival recessions.

Prospective longitudinal studies have revealed that the apico-coronal dimension of the gingival zone does not play a decisive role in the development of gingival recessions (for review see Wennström 1994). On the other hand, based on observations made in an experimental study in monkeys (Wennström et al. 1987), it was suggested that a gingiva with a thin buccolingual dimension at sites with alveolar bone dehiscences may serve as a locus minoris resistentiae to developing soft tissue recessions.

Treatment of recession type defects with pedicle graft procedures (e.g., coronally advanced flap, rotational flap) often results in a thin soft tissue over the root, a condition which hence may compromise the long-term maintenance of achieved soft tissue root coverage. However, the thickness of the root covering tissue may be increased by utilizing a free soft tissue graft, alone or in combination with a pedicle graft procedure. The latter can be performed either as a 2-step surgical technique, where a free full thickness graft is placed apical to the recession and following healing coronally positioned over the denuded root (Bernimoulin et al. 1975, Guinard & Caffesse 1978, Matter 1979, Tenenbaum et al. 1980, Pini Prato et al. 1992), or as a one step technique where a subepithelial connective tissue graft is placed directly over the denuded root and covered with a coronally or laterally moved mucosal flap (Langer & Langer 1985, Nelson 1987, Harris 1992, Bruno 1994).

The aim of this study was to evaluate whether an increased thickness of the gingiva through the use of a free connective tissue graft, in conjunction with a coronally advanced flap procedure, may positively influence the treatment outcome with respect to (i) root coverage and (ii) stability of the position of the soft tissue margin during a 2-year post-surgical period.

Material and Methods

67 subjects (age range 19-38 years) with aesthetic (62 subjects) or root hypersensitivity problems (5 subjects), due to localized recession type defects of at least 3 mm at one or several teeth, were recruited for the study. The participants were selected on a consecutive basis among patients consulting the department of periodontology at the Faculty of Odontology, Göteborg University and at the School of Dentistry, Bologna University, during the period October 1989 – November 1991. All subjects showed an unremarkable medical history. The recession defects all fall into class I according to the definitions given by Miller (1985), i.e., recessions not extending beyond the mucogingival line and no loss of supporting tissues at apical tooth surfaces.

Treatment procedures

Following the screening examination, all subjects received a session of prophylaxis including instruction in proper oral hygiene measures, scaling and professional tooth cleaning with the use of a rubber cup and a low abrasive polishing paste. At teeth with recession type defects a coronally directed roll technique was prescribed, in order to minimize the tooth brushing trauma to the gingival margin. Surgical treatment of the recession defects was not scheduled until the patient could demonstrate a proper standard of supragingival plaque control.

The surgical technique utilized to achieve soft tissue root coverage was a coronally advanced flap, with (test sites) or without (control sites) the placement of a free connective tissue graft under the advanced flap. Following local anaesthesia, the exposed portion of the root was debrided with the use of a cuttte. A horizontal intracrevicular incision was made with a scalpel at the tooth (teeth) with recession in order to mobilize an partial thickness mucosal flap. The incision was extended to include the approximal area on each side of the tooth to be treated. The split thickness incision was continued in apical direction until the mucogingival line had been passed. Vertical releasing incisions, extending from the soft tissue margin at the neighbouring teeth apically into the lining mucosa, were placed. A blunt dissection into the vestibular lining mucosa was then carried out to release muscle tension so that the mucosal flap easily could be coronally positioned at the level of the cemento-enameal junction. The facial portion of the interdental papilla was then de-epithelialized. The tissue flap was coronally advanced and secured at the level of the cemento-enameal junction by suturing the flap to the connective tissue bed in the papilla regions (Fig. 1). Sutures were also placed to carefully close the wound of the releasing incisions.

In patients assigned to the test group, a free connective tissue graft was taken from the palate in the region of the premolar-first molar by the use of a “trap door” approach (Harris 1992) and placed over the root(s) before suturing the coronally advanced flap (Fig. 2). After having ensured by transmucosal probing that an adequate thickness of connective tissue was available, a horizontal split thickness incision was made approximately 4 mm from the gingival margin and given an extension corresponding to the mesio-distal width of the prepared recipient site. Vertical incisions were then made at both ends of the first incision to facilitate the access to the underlying connective tissue. The exposed connective tissue was harvested by the use of a scalpel and a periosteal elevator giving a graft with a thickness of 1.5-2 mm. The flap was then repositioned to completely cover the donor site and sutured.

The free connective tissue graft was immediately placed over the exposed root(s) and adjacent connective tissue bed at the prepared recipient site, and covered with the coronally advanced flap. The tissue flap was secured at the level of the cemento-enameal junction by sutures placed in the interdental areas (Fig. 2c).

A periodontal dressing (Barricaid™) was applied to protect the surgical area from mechanical injury during the in-
Fig. 1. A control case treated with a coronally advanced flap procedure to obtain soft tissue root coverage. (a) Buccal recession type defect at tooth 13 surrounded by clinically healthy soft tissue. No loss of periodontal support at proximal sites. (b) A split flap was elevated and coronally advanced to the level of the cemento-enamel junction facial to tooth 13. A suture loop has been placed from the lateral incisor to the 1st premolar for retention of the surgical dressing. (c) A 2-year follow-up showing complete root coverage.

Clinical examination

Before (baseline) and at 6, 12 and 24 months after surgical treatment, the following variables were recorded (to the nearest 0.5 mm) at the the deepest point of the facial recession sites using a calibrated periodontal probe with a tip diameter 0.45 mm and 1 mm increments:

- probing pocket depth
- probing attachment loss: probing depth measured from the cemento-enamel junction (CEJ)
- recession depth: the distance between CEJ and the soft tissue margin
- gingival height: the distance between the soft tissue margin and the mucogingival junction at the facial aspect of the tooth

Each examination time point also included assessments of:

- oral hygiene status: presence/absence of plaque in the area of the soft tissue margin
- gingival conditions: presence/absence of bleeding following pocket probing

Before the start of the study, the 2 examiners were trained and calibrated with respect to the various assessments included in the study.

Data analysis

For data description frequencies, mean values and standard deviations were calculated for the various assessments. Differences in the outcome variables between test and control groups were

Table 1. Frequency distribution (%) of surgically treated buccal recession defects with respect to tooth type in the 67 patients participating in the study

<table>
<thead>
<tr>
<th>Tooth Type</th>
<th>Central incisors</th>
<th>Lateral incisors</th>
<th>Canines</th>
<th>1st premolars</th>
<th>2nd premolars</th>
<th>1st molars</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>maxilla</td>
<td>5 (8%)</td>
<td>8 (12%)</td>
<td>23 (36%)</td>
<td>20 (31%)</td>
<td>7 (11%)</td>
<td>1 (2%)</td>
<td>64 (62%)</td>
</tr>
<tr>
<td>mandible</td>
<td>2 (5%)</td>
<td>4 (10%)</td>
<td>15 (39%)</td>
<td>12 (31%)</td>
<td>6 (15%)</td>
<td>–</td>
<td>39 (38%)</td>
</tr>
<tr>
<td>Total</td>
<td>7 (7%)</td>
<td>12 (12%)</td>
<td>38 (37%)</td>
<td>32 (31%)</td>
<td>13 (12%)</td>
<td>1 (1%)</td>
<td>103 (100%)</td>
</tr>
</tbody>
</table>

itial phase of healing. The patients were instructed not to brush the teeth in the treated area but to use chlorhexidine solution (0.12%) for mouthrinsings twice daily for 1 min.

8 days following the surgical treatment, the dressing and the sutures were removed. Plaque control in the surgical treated area was maintained by chlorhexidine rinsings for further 2 weeks. After this period, the patients were again instructed in mechanical tooth cleaning of the treated tooth region using a soft toothbrush and a roll-technique (from the soft tissue to the crown). All patients were recalled for prophylaxis after 1 and 5 weeks and, subsequently, once every 6 months until the final examination (24 months).
Treatment of recessions type defects

Fig. 2. Illustrations showing the combination of a free connective tissue graft and coronally advanced flap. (a) Buccal recession type defects at teeth 22, 23 and 24 surrounded by clinically healthy soft tissue. (b) A split flap was elevated from tooth 21 to tooth 25. The free connective tissue graft was placed over the root exposure of teeth 23 and 24. No graft was placed over the exposed root of tooth 22. (c) The soft tissue flap coronally advanced and sutured over the connective tissue graft buccal to teeth 23 and 24. The flap was coronally advanced also at tooth 22 to cover the exposed root. (d) A 2-year follow-up showing complete root coverage at teeth 22 and 23 while tooth 24 shows a small remaining root exposure.

statistically analyzed by the use of the Student t-test.

Results

Following the initially provided oral hygiene phase as well as at all post-treatment examinations, all subjects showed low frequencies of plaque harboring tooth surfaces (<20%) and bleeding gingival units (<15%), indicating an acceptable standard of supragingival plaque control during the study period.

The 67 patients included in the study presented with a total of 103 teeth with buccal recession type defects. The distribution of the recession defects with respect to tooth type is presented in Table 1. 68% of the recessions were located at canines and first premolars. Sixty-four of the defects (62%) were associated with maxillary teeth and 39 (38%) with mandibular teeth.

Table 2 gives the mean data for the various clinical variables assessed. At baseline, the average depth of the recession defects was 4.0 mm (test group 4.0 mm, S.D. 1.0; control group 4.1 mm, S.D. 0.9) with a mean probing attachment loss amounting to 5.0 mm (test group 4.9 mm, S.D. 0.9; control group 5.1 mm, S.D. 1.1). The depth of the recessions ranged from 3 to 6 mm with 75% of the recessions having a depth of 3-4 mm and 25% 5-6 mm. The height of the gingival tissue apical to the recession was on the average about 1 mm in both the test and the control groups. 88% of the recession sites had less than 2 mm of gingival height.

6 months following the root coverage procedure the mean recession depth had decreased to 0.2 mm in both the test and the control group. The average loss of probing attachment was reduced in the test group from 4.9 mm to 1.2 mm and in the control group from 5.1 mm to 1.5 mm, while the probing pocket depth remained shallow and essentially unchanged. Hence, the gain in probing attachment at 6 months amounted to 3.7 and 3.6 mm for test and control sites, respectively. Compared with the conditions before the surgical treatment, the gingival height showed an increase of 2.6 mm in the test group and amounted to, on average, 3.5 mm at 6 months post-treatment (Table 2). The corresponding figures for the control sites were 0.4 mm and 1.5 mm, respectively.

The re-examinations performed 12 and 24 months after the surgical treatment did not reveal any major differences in the mean values for recession depth, gingival height or probing assessments from those at 6 months in any of the treatment groups, except for some further increase in gingival height in control sites. Gingival height was the only variable that showed statistically significant difference between the test
and control groups at the follow-up examinations \(p<0.01\).

Table 3 provides additional information regarding soft tissue root coverage. On the average 96% of the root surface initially exposed due to recession was covered with soft tissue at the 6 months examination. 42 of the 58 recession defects treated with a free connective tissue graft (72%) showed complete coverage. The corresponding figure for sites treated with coronally advanced flap alone was 74%. None of the treated sites showed greater remaining recession depth than 1.5 mm. During the following 18 months, some additional improvement was observed in the patient sample evaluated and, at the 24 months examination 88% of the grafted sites demonstrated complete root coverage, compared to 80% for the control sites. The mean % root coverage did not statistically differ between the test and the control group at any examination time point.

**Table 2. Clinical conditions for test (connective tissue graft/coronally advanced flap) and control (coronally advanced flap) sites at baseline and at the 6 months, 1- and 2-year follow-up examinations; \(x\) (SD) (mm)**

<table>
<thead>
<tr>
<th>Test sites ((n=58))</th>
<th>Control sites ((n=45))</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Recession depth</strong></td>
<td></td>
</tr>
<tr>
<td>baseline</td>
<td>4.0 (1.0)</td>
</tr>
<tr>
<td>6 months follow-up</td>
<td>0.2 (0.3)</td>
</tr>
<tr>
<td>12 months follow-up</td>
<td>0.1 (0.2)</td>
</tr>
<tr>
<td>24 months follow-up</td>
<td>0.1 (0.2)</td>
</tr>
<tr>
<td><strong>Probing pocket depth</strong></td>
<td></td>
</tr>
<tr>
<td>baseline</td>
<td>0.9 (0.3)</td>
</tr>
<tr>
<td>6 months follow-up</td>
<td>1.0 (0.4)</td>
</tr>
<tr>
<td>12 months follow-up</td>
<td>1.1 (0.5)</td>
</tr>
<tr>
<td>24 months follow-up</td>
<td>1.1 (0.4)</td>
</tr>
<tr>
<td><strong>Probing attachment loss</strong></td>
<td></td>
</tr>
<tr>
<td>baseline</td>
<td>4.9 (0.9)</td>
</tr>
<tr>
<td>6 months follow-up</td>
<td>1.2 (0.4)</td>
</tr>
<tr>
<td>12 months follow-up</td>
<td>1.1 (0.5)</td>
</tr>
<tr>
<td>24 months follow-up</td>
<td>1.2 (0.4)</td>
</tr>
<tr>
<td><strong>Gingival height</strong></td>
<td></td>
</tr>
<tr>
<td>baseline</td>
<td>0.9 (0.5)</td>
</tr>
<tr>
<td>6 months follow-up</td>
<td>3.5 (0.6)(^a)</td>
</tr>
<tr>
<td>12 months follow-up</td>
<td>3.7 (0.7)(^a)</td>
</tr>
<tr>
<td>24 months follow-up</td>
<td>3.7 (0.6)(^a)</td>
</tr>
</tbody>
</table>

\(^a\) Statistically significant difference from the control group \((p<0.01)\).

**Table 3. Mean % root coverage (SD) 6, 12 and 24 months following treatment as well as percentage of sites within various recession categories for test (coronally advanced flap+connective tissue graft) and control sites (coronally advanced flap)**

<table>
<thead>
<tr>
<th>Test sites ((n=58))</th>
<th>Control sites ((n=45))</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>6-months follow-up</strong></td>
<td></td>
</tr>
<tr>
<td>% root coverage</td>
<td>96.1% (6.7)</td>
</tr>
<tr>
<td>complete coverage</td>
<td>72%</td>
</tr>
<tr>
<td>&lt;1 mm of recession</td>
<td>18%</td>
</tr>
<tr>
<td>1.0-1.5 mm of recession</td>
<td>10%</td>
</tr>
<tr>
<td><strong>12-months follow-up</strong></td>
<td></td>
</tr>
<tr>
<td>% root coverage</td>
<td>98.7% (3.3)</td>
</tr>
<tr>
<td>complete coverage</td>
<td>86%</td>
</tr>
<tr>
<td>&lt;1 mm of recession</td>
<td>14%</td>
</tr>
<tr>
<td>1.0-1.5 mm of recession</td>
<td>4%</td>
</tr>
<tr>
<td><strong>24-months follow-up</strong></td>
<td></td>
</tr>
<tr>
<td>% root coverage</td>
<td>98.9% (3.1)</td>
</tr>
<tr>
<td>complete coverage</td>
<td>88%</td>
</tr>
<tr>
<td>&lt;1 mm of recession</td>
<td>12%</td>
</tr>
<tr>
<td>1.0-1.5 mm of recession</td>
<td>4%</td>
</tr>
</tbody>
</table>

Serino et al. (1994). However, Serino et al. (1994) also reported that in subjects aged 18-29 years incisors and maxillary canines demonstrated the most pronounced increase in frequency of recession during 12 years of longitudinal evaluation. In the present patient material, which was selected on a consecutive basis, canines and first premolars were the most frequently affected teeth. Gorman (1967) reported from a study of 164 subjects that malposition of the tooth and vigorous oral hygiene were the most frequent factors associated with recession. A study from Finland by Vekalahti (1989) similarly showed a correlation between tooth brushing and gingival recession. In addition, a recent study by Khocht et al. (1993) revealed that gingival recessions are related to the use of hard toothbrushes. Hence, the literature indicates that a dominating causative factor for the development of recessions in young individuals is traumatizing tooth brushing. Accordingly, in order to reduce the risk for recurrence of recession following coronally repositioning of the soft tissue margin, it is of utmost importance to correct the patient's tooth brushing habits to minimize the trauma to the soft tissue. The evaluation of the brushing technique used by the patients at time of involvement in the present study revealed that all used some type of modification of the Bass or scrub techniques, which both create apically directed pressure on the soft tissue margin. All patients were therefore initially given instructions to change their brushing habits and to use a less...
traumatizing technique in the areas where recessions were present. In fact, the stability observed of the coronally repositioned soft tissue margin during the 2 years of follow-up, even in sites without an increased tissue thickness, indicates that an altered tooth brushing technique is of greater significance for a successful long-term outcome of root coverage procedures than the gingival dimensions.

The finding that the coronally advanced flap procedure resulted in an increased apicocoronal height of gingiva is interesting and might be explained by several events taking place during the healing and maturation of the marginal tissue. The fact that the increase was more pronounced following the placement of a free connective tissue graft under the coronally advanced flap indicates that the transplanted connective tissue of the palatal masticatory mucosa possesses the ability to alter the differentiation of the epithelial cells of the thin covering coronally advanced flap to become keratinizing cells (Karring et al. 1975). Furthermore, granulation tissue formation derived from the periodontal ligament tissue may have contributed to the increased dimension of the gingiva (Karring et al. 1971, Lundberg & Wennström 1988), since the control sites, which were treated only by a coronally advanced flap, also showed an increased gingival height. A 3rd factor to consider is the tendency of the mucogingival line to regain its "genetically" defined position following its coronal "dislocation" with the coronally advanced flap procedure used to achieve root coverage. Support for the concept that the mucogingival line over time will regain its original position is generated from a study by Ainamo et al. (1992). The authors performed an apically repositioned flap procedure in the lower anterior tooth region, which resulted in a 3 mm apical displacement of the mucogingival line. The reexamination after 18 years showed no differences in position of the mucogingival line between sites treated with the apically repositioned flap and contralateral control sites treated with a procedure not interfering with the mucogingival line, indicating that the mucogingival line had regained its original position.

It is interesting to note that a mean gain of about 3.7 mm in probing attachment level was recorded following the root coverage procedures in the present study. The quality of healing obtained between the soft tissue and the previously denuded root surface, however, can only be speculated on, since no histological evaluations are available. The gain in probing attachment most likely represents a combination of the formation of new connective tissue attachment and epithelium attachment. Animal studies including histological evaluations have demonstrated that new connective tissue attachment is making up 44-50% of successfully covered recession type defects following the use of rotational flap procedures (Wilderman & Wentz 1965, Caffesse et al. 1984) or a coronally advanced flap procedure (Gottlow et al. 1986). Furthermore, the possibility to achieve a new connective tissue attachment may be considerably better in narrow recession defects than in wider ones, most likely because the periodontal ligament at the lateral parts of the defect serves as a source of granulation tissue from which a new attachment can develop (Gottlow et al. 1986). Although a new connective tissue attachment most likely fails to form in the entire depth of the defect, the treatment procedures used in the present study, however, evidently rarely resulted in the formation of a deep periodontal pocket; mean probing pocket depth 1.2 mm at 24 months (Table 2).

In order to more predictably re-establish a new connective tissue attachment over a denuded root surface, the coronally advanced flap procedure may have to be combined with the use of a barrier according to the principles of the guided tissue regeneration (GTR). However, the successful outcome of this treatment procedure in terms of soft tissue root coverage and pocket closure does not seem to be superior to that achievable by other root coverage procedures (Pini Prato et al. 1992, 1995, Tinti et al. 1993, Trombelli et al. 1994). In the study by Pini Prato et al. (1992), in which 50 teeth with a mean recession depth of 5.5 mm were treated with a coronally advanced flap procedure, either with or without the use of a barrier (Gore Periodontal Material™), the mean percentage root coverage at a 18 months follow-up examination was 73% with and 71% without the use of a barrier. The data reported by Pini Prato et al. (1992), however, indicated that a more favorable result with respect to root coverage may be obtained with the GTR-procedure in sites with deep (>5 mm) recession defects as compared to the coronally advanced flap. In the patient material of the present study, 26 sites showed an initial recession depth of ≥5 mm. A separate analysis of these sites revealed that 13 (50%) of the sites demonstrated complete soft tissue coverage at the 2-year examination. The mean % root coverage achieved for the 26 sites was 93%. Hence, in the present study on the use of coronally advanced flap procedure for root coverage, either alone or combined with a free connective tissue graft, also sites with deep recession defects showed a root coverage which was better than the overall root coverage of 72% reported by Pini Prato et al. (1992). One explanation for this improved results in terms of root coverage is most likely the emphasis placed on the control of the toothbrushing trauma in the treated tooth areas.

In the evaluation of the successful outcome of the root coverage procedures used in the present study, one has to keep in mind that only recession type defects of Class I (Miller 1985) were included. The mean root coverage of 96% following the coronally advanced flap is comparable to the results of the study by Allen & Miller (1989), in which a mean coverage of 97% was reported 6 months following treatment of 38 class I recession type defects. Furthermore the average of 98% in root coverage achieved following the combination of connective tissue graft and coronally positioned flap is within the range of the results reported from previous studies on similar surgical techniques (Langer & Langer 1985, Nelson 1987, Harris 1992, Allen 1994). However, when loss of connective tissue attachment also involves proximal tooth sites (Miller Class III-IV recession defects), the achievement of soft tissue coverage of the buccal root surface is not similarly successful (Miller 1985). In such situations, a GTR procedure may offer a means by which complete soft tissue coverage can be obtained. Since the connective tissue attachment level at proximal sites obviously determines the magnitude of facial root coverage achievable, the goal with such a surgical procedure must then of course be to regenerate the lost connective tissue attachment in the proximal area, rather than at the buccal surface of the root; a goal which unfortunately not yet has been demonstrated to be a predictable result of GTR procedures in sites affected by horizontal loss of the supporting apparatus.
Zusammenfassung

Erhöhte Gingivadimensionen: Ein signifikant erster Faktor für den Erfolg von Maßnahmen zur Rezessionsdeckung? Eine zweijährige prospektive klinische Studie

Ziel dieser Studie war es zu beurteilen, ob die durch ein freies Schleimhauttransplantat erhöhte Dicke der Gingiva in Verbindung mit einem koronalen Verschiebelappen das Behandlungsergebnis positiv beeinflussen kann. Die Untersuchungsparameter waren: Ausmaß der Rezessionsdeckung und Langzeitstabilität der Lage des Weichgewebes nach Rezessionsdeckung. 76 Patienten mit insgesamt 103 bukkalen Rezessionen von wenigstens 3 mm Höhe wurden in die Studie aufgenommen. Nach der Initialtherapie mit Mundhygieneinstruktion, deren Ziel minimal apikal auf den Gingivavand gerichtete Kräfte waren, erfolgte die chirurgische Rezessionsdeckung entweder allein mit einem koronalen Verschiebelappen (Kontrolle) oder mit einem koronalen Verschiebelappen in Kombination mit einem freien Schleimhauttransplantat vom Gaumen (Testdefekte). 6, 12 und 24 Monate nach der Chirurgie wurde eine klinische Untersuchung mit Beurteilung der Mundhygiene, der Gingivaverhältnisse, der Zahnputzgewohnheiten sowie der Gingivaverschiebung durchgeführt. Die initiale Rezessionshöhe betrug in beiden Therapiegruppen fast 4,0 mm (SD 1,0) bei einer Gingivahöhe apikal der Rezession von 1,0 mm (0,5). Bei der Untersuchung 6 Monate nach chirurgischer Therapie hatte die mittlere Rezessionshöhe in beiden Gruppen auf 0,2 mm abgenommen. Vollständige Rezessionsdeckung wurde bei 72% der Testdefekte und bei 74% der Kontrollen beobachtet. Bei den Zähnen mit der Kombinationstherapie betrug die mittlere klinische Attachementverlust in beiden Gruppen 3,7 mm und die mittlere Gingivahöhe 3,5 mm (0,6). Die entsprechenden Werte betrugen in der Kontrollgruppe 3,6 mm und 1,5 mm (0,5). Bei der Untersuchung 24 Monate nach Therapie betrug die mittlere Rezessionshöhe 98,9% (Test) und 97,1% (Kontrolle). Eine vollständige Rezessionsdeckung zeigte 88% der Zähne der Testgruppe im Vergleich zu 80% in der Kontrollgruppe. Die Schlussfolgerung ist, daß die zwei chirurgischen Maßnahmen ein ähnliches Ausmaß an Rezessionsdeckung zum Ergebnis hatten. Veränderungen der Zahnpflegegewohnheiten scheinen von größerer Wichtigkeit für den langfristigen Erhalt der chirurgisch veränderten Lage des Weichgewebes zu sein als eine erhöhte Dicke der Gingiva.

Résumé

L'augmentation des dimensions gingivales: un facteur important pour le succes des procedu res de recouvrement des racines? Etude prospective clinique sur 2 ans

Le but de la présente étude était d'évaluer si l'augmentation de l'épaisseur de la gencive obtenue en utilisant une greffe libre de tissu conjonctif au cours d'une opération à l'amour avec répositionnement décalé en direction coronaire peut avoir une influence positive sur l'issue du traitement en ce qui concerne (i) le recouvrement des racines et (ii) la stabilité à longue échéance de la position du rebord de tissu mou après le traitement de lésions de récession. L'étude portait sur 67 patients successifs ayant au total 103 lésions de récession d'au moins 3 mm sur les faces vestibulaires. Après une phase initiale avec nettoyage-dégarniture des dents et enseignement de techniques de brossage des dents appliquant sur le rebord gingival un minimum de forces en direction apicale, les sites avec récession ont subi un recouvrement chirurgical à l'aide d'un lambeau à répositionnement décalé en direction coronaire, soit seul (sites témoins=control), soit combiné avec une greffe libre de tissu conjonctif prélevé sur le palais (sites tests). Les examens cliniques, comprenant l'enregistrement de l'hygiène bucco-dentaire, de l'état gingival, de la profondeur des poches et de la perte d'attache mesurées par sondage, ont été pratiqués avant le traitement chirurgical et 6, 12 et 24 mois après. La profondeur initiale moyenne de récession était environ 4,0 mm (écart-type 1,0), avec une hauteur gingivale de 1,0 mm (0,5) du côté apical de la récession. Lors de l'examen renouvelé, 6 mois après le traitement chirurgical, la profondeur moyenne de récession avait diminué de 0,2 mm dans le groupe test comme dans le groupe témoin. Un recouvrement gingival complet était constaté dans 72% des sites tests et 74% des dents témoins. Sur les dents traitées par la méthode chirurgicale combinée, le gain moyen d'attache au sondage était 3,7 mm et la hauteur gingivale moyenne avait augmenté jusqu'à 3,5 mm (0,6). Les valeurs correspondantes pour les dents témoins étaient respectivement 3,6 mm et 1,5 mm (0,5). A l'examen de rappel de 24 mois, le recouvrement de la racine atteignait en moyenne 98,9% (tests) et 97,1% (témoins). Sur 88% des dents du groupe test on constatait un recouvrement complet de la racine, à comparer avec 80% des dents du groupe témoin. En conclusion, les 2 procédures chirurgicales avaient pour résultats des degrés semblables de recouvrement de la racine; les modifications des habitudes de brossage des dents peuvent avoir plus d'importance pour maintenir à long terme la position du rebord de tissu mou établie par l'intervention que l'augmentation de l'épaisseur de la gencive.

References


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