Flexible Gingival Epithesis: Treatment of Recession Defects

Authored by Adrian Kasaj, DDS, PhD, Brita Willershausen, DDS, PhD and Gregory-George Zafiropoulos, DDS, PhD

Upon successful completion of this CE activity 1 CE credit hour may be awarded

Opinions expressed by CE authors are their own and may not reflect those of Dentistry Today. Mention of specific product names does not infer endorsement by Dentistry Today. Information contained in CE articles and courses is not a substitute for sound clinical judgment and accepted standards of care. Participants are urged to contact their state dental boards for continuing education requirements.
Flexible Gingival Epithesis: Treatment of Recession Defects

LEARNING OBJECTIVES:

After reading this article, the individual will learn:

• Causes of gingival recession (GR).
• A clinical technique for the prosthetic treatment of severe GR defects.

ABOUT THE AUTHORS

Dr. Kasaj is a postdoctoral clinical Fellow in the Department of Operative Dentistry and Periodontology at the Johannes Gutenberg University of Mainz, Germany. He can be reached at kasaj@gmx.de.

Dr. Willershausen is a professor and head of the Department of Operative Dentistry and Periodontology at the Johannes Gutenberg University of Mainz, Germany. She can be reached at willersh@uni-mainz.de.

Dr. Zafiropoulos works in a private practice office in Duesseldorlf, Germany and teaches as a professor at the Johannes Gutenberg University of Mainz, Germany. He can be reached at zafiropoulos@blaues-haus-duesseldorf.de.

Disclosure: The authors report no conflicts of interest.

INTRODUCTION

Gingival recession or marginal tissue recession is defined as an apical displacement of the gingival margin apical to the cementoenamel junction (CEJ) with concomitant exposure of the root surface. In populations with good oral hygiene, gingival recession (GR) is found predominantly on buccal surfaces as a result of toothbrush trauma, whereas it may affect buccal, lingual, and interproximal tooth surfaces in populations with poor oral hygiene. It is also observed on labially positioned teeth with minimal bone support, especially canines and incisors. It has been reported that the prevalence of 1 mm or more recession in individuals aged 30 years and older was 58%, and this percentage increased with age.

A number of factors have been proposed to influence the development of GR, including abnormal tooth position in the arch, plaque-induced inflammation, traumatic tooth brushing, orthodontic treatment, and restorative procedures. The migration of the marginal tissue apically from the CEJ may represent a problem for the patient because of poor aesthetics, dentin hypersensitivity, increased susceptibility to root caries and abrasion, and fear of tooth loss. Therefore, several gingival grafting techniques have been proposed to treat GR, including rotational and advanced gingival flaps, free gingival or connective tissue grafts, and by applying principles of guided tissue regeneration.

Integrity of the proximal bone is essential to determine the predictability of outcomes in terms of root coverage, irrespective of the surgical technique applied. While complete root coverage can be anticipated in Miller Class I and II recession defects, only partial root coverage can be expected in Class III defects. Sites exhibiting Miller Class IV recession defects are not amenable to root coverage. In cases where surgical procedures are considered unpredictable or impossible, as in Class III and Class IV recession defects, the use of the flexible gingival epithesis may be helpful in managing severe soft- and hard-tissue defects. The flexible silicone gingival epithesis has been shown to support the lip and resist trapping food. Furthermore, these devices may also be effective in solving phonetic problems.

This article describes the use of the flexible silicone gingival epithesis as a temporary replacement device in the treatment of severe soft- and hard-tissue deformities remaining after periodontal treatments.
CASE REPORT NO. 1

A 50-year-old, systemically healthy, nonsmoking female presented with the chief complaint of mobile teeth and bleeding gums. The patient had not been receiving routine dental care for several years. There was no history of periodontal treatment. A periodontal examination and charting were performed including assessment of probing depth, clinical attachment level, full-mouth bleeding score (FMBS), and full-mouth plaque score (FMPS). Generalized pocket depths ranging from 5 to 7 mm and GR up to 4 mm were present throughout the dentition. The patient exhibited an inadequate oral hygiene level (full-mouth plaque score and FMBS greater than 80%).

Radiographic examination involving a panoramic view and full-mouth intraoral periapical radiographs showed generalized horizontal alveolar bone loss in both arches. Microbiological testing demonstrated the presence of Prevotella intermedia. Given the presented information, a diagnosis of moderate to advanced periodontitis was made. The treatment required to manage this condition included oral hygiene instructions, supragingival plaque removal, and subgingival scaling and root planing using conventional hand instruments (Gracey Curettes [Hu-Friedy]).

After periodontal treatment, the patient maintained good plaque control to a level compatible with gingival health (FMPS ≤ 30%). At 3 months following nonsurgical periodontal treatment, probing depths were less than 4 mm with no signs of bleeding upon probing throughout the dentition. However, despite an improved periodontal condition, the patient exhibited generalized moderate-to-severe GR with an unsatisfactory aesthetic result and increased tooth sensitivity (Figure 1a). Since the gingival condition was not suitable for treatment with surgical root coverage techniques, the decision was made to fabricate a flexible gingival epithesis in the upper arch. A special tray made from cold-curing acrylic resin was formed with the aid of an intraoral cast (Figure 1b). Then a palatal block-out impression was made of the maxillary dental arch with a silicone-based impression material (Figure 1c). With the palatal silicone impression in place, a polyether impression (Impregum [3M ESPE]) was taken from the buccal aspect, which captured the interproximal details without tearing the impression upon removal from the mouth (Figure 1d). Thus, the interdental open gingival embrasures were accurately reproduced.

A cast was made using type IV die stone and the gingival epithesis was waxed-up. The flexible gingival epithesis was fabricated from elastic, heat curing silicone (Gingivamoll [DETA G mbH]). Finally, the gingival epithesis was individualized with color shades and a lacquer was applied for protection, according to the manufacturer's
directions (Figure 1e). The finished epithesis was adapted to the patient's maxillary teeth during an insertion visit (Figure 1f). Adequate retention was accomplished due to the flexibility of the material and engagement of the epithesis into the interdental open gingival embrasures. The epithesis was well tolerated by the patient, and satisfactory aesthetics were also attained.

**CASE REPORT NO. 2**

A 37-year-old man with an unremarkable medical history presented with the chief complaint of bleeding gums and increased mobility of the mandibular right central incisor. Periodontal assessment revealed increased probing depths ranging from 4 to 7 mm and GR ≤ 2 mm throughout the dentition. The right mandibular central incisor had degree II mobility, and a 9 mm periodontal pocket could be probed at the mesial aspect of this tooth. Radiographic examination demonstrated generalized horizontal bone loss in both arches, with vertical bone loss associated with the mandibular right central incisor. The diagnosis of severe periodontitis was made after reviewing the clinical and radiographic findings.

Complete periodontal treatment was performed based on a comprehensive sequenced treatment plan that included oral hygiene instructions, full-mouth professional tooth cleaning, plaque control monitoring, splinting of the mandibular right central incisor to adjacent teeth using a light-cured resin material, and scaling and root planing. At 3 months after completion of the basic treatment for establishment of infection control, a full-mouth re-examination was performed. While all the other lesions had been successfully treated with subgingival scaling and root planing, open flap debridement with enamel matrix derivative (Emdogain [Straumann]) was employed for regenerative treatment of the intrabony defect at the mandibular right central incisor. The surgery improved the periodontal condition; however, the patient exhibited a significant loss of the papillae (Figure 2). The aesthetic result was unsatisfactory and the patient exhibited phonetic problems. Hence, in accordance with the patient’s wishes, the decision was made to fabricate a flexible gingival epithesis (Figure 3).

A polyether impression with a special tray was made for accurate reproduction of the interdental region. The interdental region was blocked out with a silicone elastomeric impression material to support the polyether impression material. A flexible gingival epithesis was fabricated from silicone based epithetic material (Gingivamoll) according to the manufacturer’s directions. The patient readily adapted to the epithesis and considered the aesthetic and phonetic result excellent (Figure 4). The removable gingival epithesis was stable and could be used during mastication and other daily activities without restricting the patient’s oral comfort.
CASE REPORT NO. 3

A 48-year-old woman was referred to a periodontist with the chief complaint of bleeding gums and increased mobility of the anterior teeth. No significant intra- or extraoral findings were noted. Periodontal examination revealed probing depths ranging from 4 to 8 mm and gingival inflammation throughout the dentition. A radiographic examination showed moderate to severe generalized horizontal bone loss and a localized vertical defect on the maxillary right lateral incisor. Based upon the presented information, a diagnosis of generalized moderate to severe chronic periodontitis was made.

The initial treatment included oral hygiene instructions, scaling and root planing, polishing, and occlusal adjustment throughout the mouth as necessary. At reevaluation, the patient demonstrated considerable improvement of the periodontal condition. However, access flap surgery was indicated to treat residual pockets and calculus deposits in the maxillary anterior teeth. Several months after the surgery was performed, the patient presented with good plaque control, reduced bleeding scores, and shallow probing pocket depths ranging from 1 to 3 mm. However, recession of the gingival margin around the treated maxillary anterior teeth had led to an unsatisfactory aesthetic result, and the patient found the resulting tooth sensitivity extremely uncomfortable (Figures 5 and 6). The decision was made to fabricate a flexible gingival epithesis to close the interdental spaces between the maxillary anterior teeth.

A block-out impression was made as discussed previously, and the silicone-based gingival epithesis was fabricated according to the manufacturer’s instructions (Gingivamoll). The patient found the gingival epithesis very comfortable, and the shade of the epithesis matched the neighbouring tissues (Figure 7). The patient was satisfied with the result and no complications were observed.

DISCUSSION

Gingival recession may be treated by periodontal plastic surgery or nonsurgical approaches. Although many surgical procedures have been proposed for augmentation of soft-tissue structures and reconstruction of the interdental papillae,9,10 predictable results may not be routinely achievable. In cases in which all methods of hard and soft-tissue augmentation have failed, a nonsurgical approach by means of a flexible gingival epithesis can be utilized for replacement of large soft- and hard-tissue deficits. These devices may be used to correct deformities remaining after periodontal disease, various surgical procedures, and trauma or ridge resorption. Other options for replacement of missing gingival tissues include flexible partial dentures with labial flanges acting as gingival veneers, gingival flanges retained by precision attachments, and fixed prostheses with gingival-colored ceramics.11,12

This article has presented 3 clinical cases using the
Flexible gingival epithesis to create an aesthetic replacement for missing soft-tissues associated with nonsurgical and/or surgical treatment of periodontal disease. The silicone-based epithesis proved to be a beneficial treatment modality for severe gingival defects remaining after periodontal treatment. Aside from improved aesthetics, this device was effective in solving phonetic problems. The flexible gingival epithesis is easy to fabricate, comfortable to wear, and resistant to mechanical pressure. However, apparent disadvantages of these flexible devices are difficulty in obtaining retention, potential for fracture during cleaning procedures, and staining and plaque accumulation. The color stability of the epithesis varies greatly among individuals and can be noticed by patients within 10 months on average. The discoloration of the gingival epithesis will be accelerated through heavy smoking and the frequent consumption of tea, coffee, and wine. Therefore, it is essential that the patient is instructed regarding proper care of the gingival epithesis and oral hygiene maintenance.

Kapari, et al14 examined the changes in physical properties of the flexible gingival epithesis over time and concluded that the device can be used without serious problems for a period of 12 months. Furthermore, testing for Candida albicans was performed and remained negative throughout the study period. In contrast, Müller and Flores-de-Jacoby15 reported infections of C albicans in patients wearing gingival epithesis. However, since C albicans was also observed on the dorsum of the tongue, the possibility exists that a candida infection was already present prior to insertion of the gingival epithesis. In the present cases, patients were inspected for potential infections with C albicans over time and all such tests remained negative.

It should be emphasized that it is essential to eliminate plaque accumulation and periodontal inflammation prior to treatment with a silicone gingival epithesis. Another factor to consider is the physical ability of the patient to remove and replace the epithesis. The gingival epithesis is contraindicated in patients with known allergy to silicone and high caries activity.

CONCLUSION

The flexible gingival epithesis is an alternative treatment modality for severe GR remaining after nonsurgical and/or surgical periodontal treatment. In the cases presented, the gingival epithesis demonstrated a beneficial effect on aesthetics and phonetics without any complications.
REFERENCES


POST EXAMINATION INFORMATION

To receive continuing education credit for participation in this educational activity you must complete the program post examination and receive a score of 70% or better.

Traditional Completion Option:
You may fax or mail your answers with payment to Dentistry Today (see Traditional Completion Information on following page). All information requested must be provided in order to process the program for credit. Be sure to complete your “Payment,” “Personal Certification Information,” “Answers,” and “Evaluation” forms. Your exam will be graded within 72 hours of receipt. Upon successful completion of the post-exam (70% or higher), a letter of completion will be mailed to the address provided.

Online Completion Option:
Use this page to review the questions and mark your answers. Return to dentalcetoday.com and sign in. If you have not previously purchased the program select it from the “Online Courses” listing and complete the online purchase process. Once purchased the program will be added to your User History page where a Take Exam link will be provided directly across from the program title. Select the Take Exam link, complete all the program questions and Submit your answers. An immediate grade report will be provided. Upon receiving a passing grade complete the online evaluation form. Upon submitting the form your Letter Of Completion will be provided immediately for printing.

General Program Information:
Online users may login to dentalcetoday.com any time in the future to access previously purchased programs and view or print letters of completion and results.

POST EXAMINATION QUESTIONS

1. Gingival recession (GR) is an apical displacement of the gingival margin apical to the cementoenamel junction with exposure of the root surface. It occurs mainly in people with poor oral hygiene.
   a. The first statement is true, the second is false.
   b. The first statement is false, the second is true.
   c. Both statements are true.
   d. Both statements are false.

2. The prevalence of 1 mm or more of recession in individuals aged 30 years and older is:
   a. 15%
   b. 36%
   c. 58%
   d. 75%

3. The following factor(s) have been proposed to influence the development of GR:
   a. Abnormal tooth position in the arch.
   b. Plaque-induced inflammation.
   c. Traumatic tooth brushing.
   d. All of the above.

4. In populations with good oral hygiene, GR is found predominantly on:
   a. Buccal tooth surfaces.
   b. Lingual tooth surfaces.
   c. Interproximal tooth surfaces.
   d. All of the above.

5. On labially positioned teeth with minimal bone support, GR is most often found on which teeth?
   a. Bicuspids.
   b. First molars.
   c. Canines and incisors.
   d. Second molars.

6. Complete root coverage can be anticipated in Miller Class I and Class II recession defects. Only partial root coverage can be expected in Miller Class III defects.
   a. The first statement is true, the second is false.
   b. The first statement is false, the second is true.
   c. Both statements are true.
   d. Both statements are false.

7. Kapari, et al concluded that the flexible gingival epithesis can be used without serious problems for a period of:
   a. 3 to 4 months.
   b. 6 months.
   c. 12 months.
   d. 24 months.

8. The gingival epithesis is contraindicated in patients with:
   a. Known allergy to silicone.
   b. High caries activity.
   c. Diabetes mellitus.
   d. Both a and b.
PROGRAM COMPLETION INFORMATION

If you wish to purchase and complete this activity traditionally (mail or fax) rather than online, you must provide the information requested below. Please be sure to select your answers carefully and complete the evaluation information. To receive credit you must answer at least six of the eight questions correctly.

Complete online at: www.dentalctoday.com

TRADITIONAL COMPLETION INFORMATION:

Mail or Fax this completed form with payment to:

Dentistry Today
Department of Continuing Education
100 Passaic Avenue
Fairfield, NJ 07004
Fax: 973-882-3622

PAYMENT & CREDIT INFORMATION:

Examination Fee: $20.00  Credit Hours: 1.0

Note: There is a $10 surcharge to process a check drawn on any bank other than a US bank. Should you have additional questions, please contact us at (973) 882-4700.

☐ I have enclosed a check or money order.
☐ I am using a credit card.

My Credit Card information is provided below.

☐ American Express  ☐ Visa  ☐ MC  ☐ Discover

Please provide the following (please print clearly):

Exact Name on Credit Card ___________________________ / ___________________________

Credit Card # ___________________________ Expiration Date ___________________________

Signature ___________________________

PERSONAL CERTIFICATION INFORMATION:

Last Name (PLEASE PRINT CLEARLY OR TYPE) ___________________________

First Name ___________________________

Profession / Credentials ___________________________ License Number ___________________________

Street Address ___________________________

Suite or Apartment Number ___________________________

City ___________________________ State ___________________________ Zip Code ___________________________

Daytime Telephone Number With Area Code ___________________________

Fax Number With Area Code ___________________________

E-mail Address ___________________________

ANSWER FORM: COURSE #: 121.2

Please check the correct box for each question below.

1. ☐ a  ☐ b  ☐ c  ☐ d  5. ☐ a  ☐ b  ☐ c  ☐ d
2. ☐ a  ☐ b  ☐ c  ☐ d  6. ☐ a  ☐ b  ☐ c  ☐ d
3. ☐ a  ☐ b  ☐ c  ☐ d  7. ☐ a  ☐ b  ☐ c  ☐ d
4. ☐ a  ☐ b  ☐ c  ☐ d  8. ☐ a  ☐ b  ☐ c  ☐ d

PROGRAM EVALUATION FORM

Please complete the following activity evaluation questions.

Rating Scale: Excellent = 5 and Poor = 0

Course objectives were achieved. ____________

Content was useful and benefited your clinical practice. ____________

Review questions were clear and relevant to the editorial. ____________

Illustrations and photographs were clear and relevant. ____________

Written presentation was informative and concise. ____________

How much time did you spend reading the activity & completing the test? ____________