Eliminating the need for graft harvest and integrating well with surrounding soft tissue, the volume stable collagen matrix Geistlich Fibro-Gide® is an effective biomaterial for treating recession defects.

For many patients, anterior tooth aesthetics means not only beautiful teeth but also well-formed gingiva. Often, only the most coronal recession is visible when smiling, and it is this “millimeter” to which the patient’s attention is drawn. If root coverage is not complete, patients may see the result as a failure. Therefore, root coverage up to the cement-enamel-junction is the goal when patients complain about the aesthetic appearance of their teeth and gums. It is also important that the result be stable long-term, reducing the risk of recession recurrence.

Coronally advanced flap plus graft or matrix
Creating a coronally advanced flap (CAF) is a very predictable technique for obtaining complete root coverage along with a pleasant aesthetic result. However, if there is insufficient keratinized tissue apical to the recession defect or if there is a need to increase soft tissue thickness, the adjunctive use of a connective tissue graft under the flap is necessary. Nonetheless, harvesting a connective tissue graft from the palate is not well accepted by patients. It increases chair time and is associated with patient discomfort, swelling and sometimes pain at the palatal donor site. For the surgeon, graft harvest is demanding, time-consuming and supply may be limited.

That’s why alternatives are desirable. The newly developed xenogeneic collagen matrix Geistlich Fibro-Gide® has been tested for over ten-years in numerous in vitro, preclinical and clinical models and has demonstrated favorable mechanical and biological properties.

Geistlich Fibro-Gide® stabilizes the blood clot so that, over time, it becomes new connective tissue that will increase soft tissue thickness in the treated area. The safety and preliminary efficacy of the volume-stable matrix in the treatment of isolated gingival recessions has been evaluated in a pilot clinical study, which has led to a proposed draft for a step-by-step clinical protocol.

Flap design: split-full-split thickness
The flap design of choice for treating single gingival recessions is trapezoidal. It is defined by two, 3 mm horizontal incisions and two slightly divergent vertical releasing incisions, as short as possible and not extending into the alveolar mucosa. Flap elevation should be done with a “split-full-split” approach in the coronal-apical direction. The papillae between the horizontal incisions and the probeable sulcular area apical to the root exposure are elevated split thickness, keeping the blade almost parallel to the bone. Then a periosteal elevator should be inserted into the probeable sulcus to extend the flap into a full thickness flap in the apical direction, exposing up to 3–4 mm of bone apical to the bone dehiscence. The rationale for the elevation of the full thickness flap is to include the periosteum in the central portion of the flap that, once the flap is advanced, will cover the avascular root surface, so that the blood supply is guaranteed in this sensitive area. (Fig. 1)

Apical to the bone exposure flap, elevation continues to split thickness and finishes as soon as it is possible to move the flap passively in the coronal direction. To permit the coronal advancement of the flap, muscle insertions should be detached first from the periosteum and then from the alveolar mucosa of the flap. This is done first by keeping the blade parallel to the bone and then parallel to the external mucosal surface. Coronal mobilization of the flap is considered “adequate” when the marginal portion of the flap can passively reach a level coronal to the cemento-enamel junction (CEJ). The passivity of the flap is one of the key aspects of the procedure. The root surface is mechanically treated with curettes, and EDTA 24% gel is recommended for removing the smear layer from dentinal tubules. The facial soft
tissue of the anatomic papillae coronal to the horizontal incisions should be de-epithelized to create connective tissue beds, to which the surgical papillae of the coronally advanced flap can be sutured.

**Cutting and positioning the matrix**
The matrix should be trimmed and shaped using a new blade in the dry state. The dimension of the matrix should be 6 mm wider than the recession width measured at the CEJ level, and the height should go beyond the buccal bone dehiscence, with about 2–3 mm of the matrix lying above the bone. Since the matrix can be used in different indications requiring different thickness, the manufacturer provides it with a standard thickness of 6 mm. For treating gingival recessions around teeth, the thickness should be reduced by cutting the matrix to a thickness of about 3–4 mm in the central portion. The matrix can be further thinned at the margins to facilitate suturing.

The matrix should be applied in a dry state and placed apically 2 mm above the bone crest and coronally at the level of the CEJ. It should then be fixed with resorbable single interrupted sutures at the base of the anatomic de-epithelialized papillae.

**Flap closure**
The suturing of the flap starts with two interrupted periosteal sutures at the most apical extension of the vertical releasing incisions. It then proceeds coronally with other interrupted sutures, each of them directed from the flap to the adjacent buccal soft tissue. This is done to facilitate the coronal displacement of the flap and to reduce the tension on the last coronal sling suture. The sling suture permits stabilization of the surgical papillae over the interdental connective tissue bed (the anatomic papillae) and allows for a precise adaptation of the flap margin to the underlying convexity of the crown. At the end of the surgery, the collagen matrix should be completely covered by the flap.
Clinical suggestions

The use of a coronally advanced flap in combination with the new volume-stable collagen matrix Geistlich Fibro-Gide® can be a valuable option for the treatment of single Miller Class I gingival recessions. (Fig. 2)

The presence of at least 1 mm of keratinized tissue apical to the recession defect is a prerequisite for this surgical strategy to guarantee the stability of the flap in its final coronal position. The adjunctive use of the collagen matrix, capable of incorporating and stabilizing the blood clot above the exposed root surface, provides an increase in soft tissue thickness. This is of paramount importance for the long-term maintenance of the final clinical result.

Literature


FIG. 2: TREATMENT OF A GINGIVAL RECESSION IN THE ANTERIOR AREA

| A | Baseline situation: 3 mm gingival recession affecting the first upper premolar with 1 mm of keratinized tissue remaining apical to the defect. | B | Matrix preparation: the matrix is trimmed to the ideal dimensions (length, height and thickness). The typical “speed bump” shape is created to give the maximum thickness above the root exposure while facilitating the fixation in the lateral sides. | C | Flap design and elevation: trapezoidal flap design with 2 horizontal incisions and 2 vertical releasing incisions. The flap is raised with a split-full-split approach in the coronal-apical direction. | D | Matrix fixation at the level of the cement-enamel-junction, with single interrupted sutures anchored at the base of the de-epithelialized anatomic papillae. Flap closure: note the tight adaptation of the gingival margin above the clinical crown and the closure of the vertical incisions to avoid any possible leakage of blood from the wound. | E-G | Baseline and 6 months profile pictures showing the increase in soft tissue thickness. |