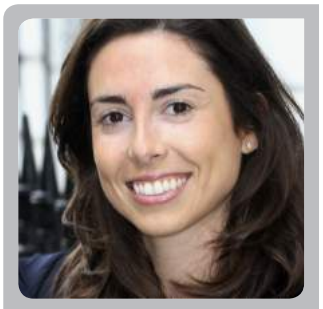
Gingival recession Managementin the 21st century

Leticia Casanova discusses current options for the surgical treatment of gingival recession



Dr Leticia Casanova BDS PhD qualified at the University of Oviedo in Spain. After a period of work in private practice, she completed a two-year full time program in periodontics at NYU. Since moving to London four years ago, she has been appointed as a specialist clinical teacher in periodontology at KCL Guy's Hospital and has also completed a PhD in medicine on links between periodontal disease and systemic diseases. Her practice is restricted to periodontics and implant dentistry at LPID (London Periodontics and Implant Dentistry) in London's west end.

More than 50% of the population exhibit gingival recession[1]. This has been associated with a thin biotype, as with the physiological aging of the periodontal fibre[2]. It is important to distinguish recession in people with poor and good oral hygiene[3]. Recession in people with poor oral hygiene tends to happen in older individuals, typically affecting all surfaces of the tooth and is associated with periodontal disease (figure 1)[4], whereas recession in people with good oral hygiene is usually seen in younger individuals and mainly affects the buccal surface (figure 2)[5]. I will focus on the causes and indication for mucogingival treatment of this last type throughout this article.

WHY DO WE GET RECESSION?

For gingival recession to take place there must be a bone dehiscence[6]. A bone dehiscence (figure 3) may be a consequence of bone anatomy, orthodontic movement (where part of the root is left out side of the alveolar housing), inflammatory processes or occlusal overload[7]. Once the bone dehiscence is present, the main contributing factors for gingival recession are poor oral hygiene and excessive tooth brushing[8]. Other factors include trauma[8], tension resulting from a high frenum or muscle attachment[9] and subgingival restorations[10].

Dehiscence defects can occur due to some of the causes mentioned in table 1 (see next page). A dehiscence defect in combination with one or more of the contributing factors shown on the right side of table 1 will lead to gingival recession. With root coverage of a gingival recession defect, one can expect a reparation of the periodontal apparatus, with a new connective tissue attachment in the most apical region of the root and a long junctional epithelium in the coronal part of the covered root surface[11].

WHEN SHOULD WE TREAT?

The consequences of a denuded root surface can be sensitivity, increased susceptibility to caries and an un-aesthetic appearance, but they are not a risk factor for periodontal disease and tooth loss[12]. Today, there are other less invasive treatment options to treat sensitivity and prevent root decay such as fluoride gels and the use of desensitivising agents[13]. Hence, the main indication for root coverage procedure is

a cosmetic one. However, when gingival recession becomes progressive or the sites become difficult to clean, in addition there is a medical indication for treatmentn areas where the recession has progressed significantly, the tooth will often loose the band of attached gingiva, resulting in a very friable mucosa surrounding the tooth which can lead to poor hygiene and tenderness when brushing (figure 4).

THICKENING THE GINGIVA

Subepithelial connective tissue graft (SCTG) or a variety of alloplastic, xenogeneic and allogeneic materials to substitute the SCTG are being used to thicken the biotype and gain new connective tissue attachment over the root surface. Since most of the recession defects tend to take place in patients with very thin gingiva, the process of transforming the thin gingiva into a thicker one should help to stabilise the marginal soft tissue and reduce the risk of that recession from recurring. In order to avoid aesthetically unpleasant results from over thickening, it is important not to exceed 1.0 to 1.5 mm of CTG thickness.

When using synthetic soft tissue graft material, such as Alloderm (an allogeneic acellular dermal matrix, derived from donated human skin tissues), one must ensure not to leave any of the borders exposed when performing root coverage, as the risk of necrosis is significantly higher. Some practitioners will also use Emdogain (Enamel Matrix Derivative) in combination with existing techniques. However, the research has shown inconclusive results[14,15].

Traditionally, one of the goals of doing soft tissue procedures was to gain keratinised tissue in areas where a narrow band of keratinised tissue could cause clinical problems. Today, we know that a narrow band of keratinised tissue does not put the long-term health of that tooth at risk. However, a wide band of keratinised tissue is essential for a good cosmetic outcome. SCTG has shown to gain a thicker band of keratinised tissue than Alloderm.

HOW TO DO IT? WHICH TECHNIQUE?

There are many different ways and techniques that can be used to cover a denuded root surface. However, most recession defects can be treated with the following three techniques. The recession depth and the amount of keratinised tissue apical to the recession will determine which.

1. Coronally advanced flap. This technique can be done in areas where there is a wide enough band of keratinised tissue of at least 2 mm, such in the case shown in figure 4. I normally use this technique in severe single recessions where an envelope technique would not allow me to cover the root surface completely. Combining this CAF with a connective tissue graft over the root surface to be covered will increase the percentage of root coverage. Occasionally, leaving the most coronal portions of the graft uncovered will not be a problem. In fact, some studies showed a greater increase in the amount of keratinised tissue[16].

2. Single or double lateral pedicle flap. This would be the chosen technique for those recessions where there are less than 2 mm of keratinised tissue apical to the recession defect. The single lateral pedicle flap can only be used when we have enough keratinised tissue towards one side of the recession to cover the denuded root surface and 2-3 more mm to account for adequate suturing and blood supply. The double pedicle flap is used when there is not enough keratinised tissue in one side, hence we rely on the keratinised tissue from both sides of the recession.

3. Tunnel technique. When we come across multiple recessions in

Figure 1: Recession affecting all surfaces of the tooth, associated with older patients with poor oral hygiene

Figure 2: Recession affecting the buccal surface, associated with younger patients with good oral hygiene

Figure 3: A bone dehiscence

the same area (figures 6-7), a tunnel procedure is a great option. This is a microsurgical technique were scaring is minimised throughout the utilisation of microsurgical blades, very thin sutures (6-0 monofilament sutures) and most importantly, there are no vertical incisions, reducing scaring[17].

Irrespective of the chosen technique, or the use of EMD or a synthetic soft tissue graft material, there are two key clinical aspects of fundamental importance. First, it is essential to thoroughly remove the biofilm from the exposed root surface before the root coverage procedure is commenced[18] in order to provide a clean surface to which the new tissue can adhere. Secondly, the use of tension-free suturing and adequate flap designs are vital for wound and blood clot stability over the newly covered root surface, to ensure complication-free healing[19].

RECESSION AROUND IMPLANTS

Peri-implant recession defects are subject to the same principles that apply to root coverage around natural teeth. However, the peri-implant tissues differ from those around natural teeth in that peri-implant tissues have poorer blood supply due to the absence of the periodontal ligament. On the other hand, the interproximal soft tissue around an implant will often be reduced, which also worsens the prognosis. When planning the coverage of peri-implant dehiscence defects, one must decontaminate the abutment or implant platform which has been exposed, and decide whether the coverage procedure will be done in one stage; doing a coronally advanced flap with connective tissue, similar to other procedures around teeth, or in two stages; removing the implant crown first and allowing the soft tissue to grow over the implant before attempting to augment the soft tissue in that site. Once the area is fully healed (three months later) one can do the second-stage surgery and connect the implant crown to the implant again (Figures 8-9). ■

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Table 1

Dehiscence defects:	Gingival recession:
Anatomical abnormalities	Trauma from brushing
Orthodontic movement	Plaque accumulation
Malpositioned teeth	Muscle pull
Violation of biologic width	Yatrogenia
Periodontal disease	Oral habits
Trauma from occlusion	Subgingival restorations
	Age

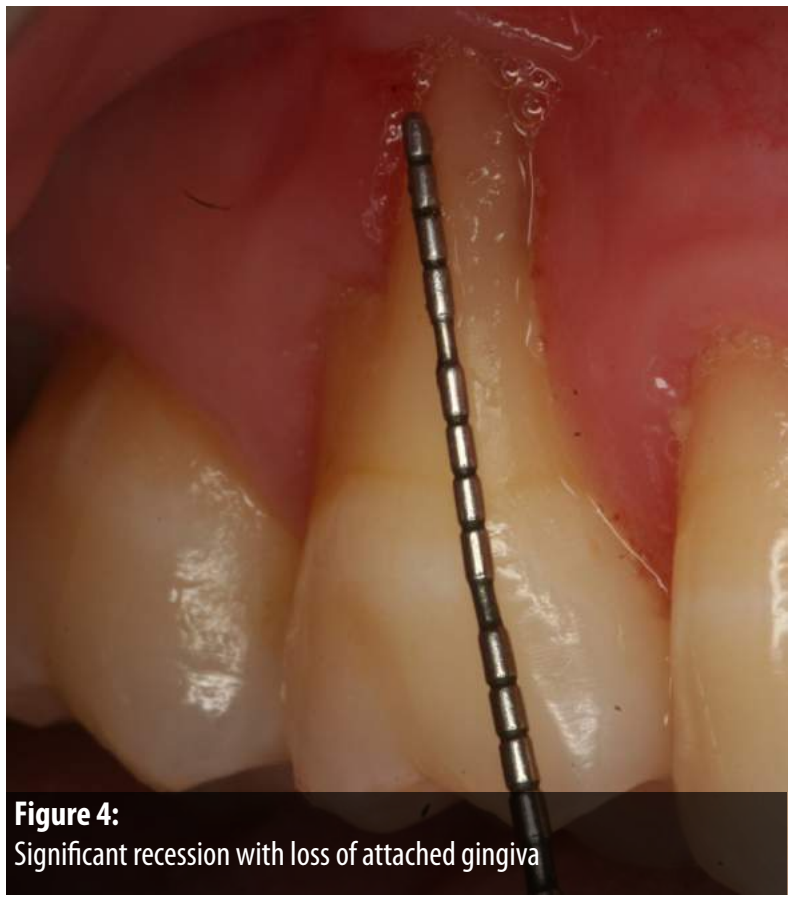

Figure 4:
Significant recession with loss of attached gingiva

Figure 5:
Post-operative

Figure 6:
Pre-operative - multiple recessions in the same area

Figure 7: Post-operative - after tunnel procedure

Figure 8:
Recession around an implant-retained restoration

Figure 9:
implant crown reconnected after soft tissue augmentation