Cosmetic periodontal surgery: Multiple gingival graft techniques (Part II)

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_In today's new information age, patients want a better quality of life. They want to keep their youthful, bright smile more than ever; keep their natural teeth; have their teeth feel and look better; and have a glowing smile. In recent years, dentistry appears to have concentrated almost exclusively on accomplishing this smile by focusing on the crown portion of the tooth. Restorative materials are being made available to help dentists create the crown's natural colouring, whitening, and hues. The crown has been lengthened, squared, made ovoid, rounded and shortened. Reproduction of the crown's original shape and colour has also been attempted.

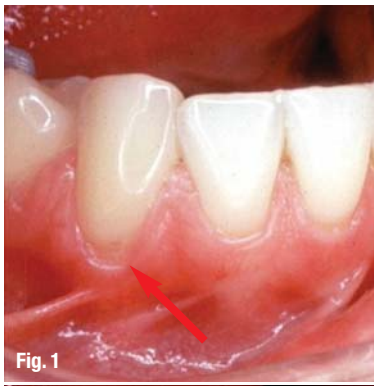
Fig. 1

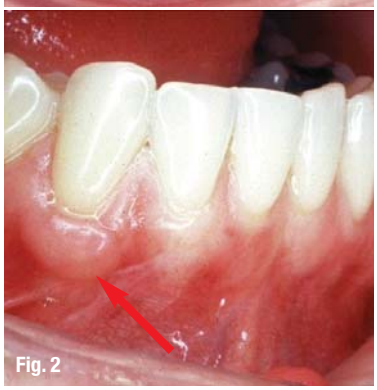
Fig. 2

Aesthetic dentistry must now turn its focus towards achieving an aesthetic totality, not just the perfect crown or restoration. Many materials have been developed to help achieve an artistic tooth colour, but the desired aesthetic result still depends on the background accentuating the desired image—something great painters have long known and created in fine oil paintings. This background must both drape around and emphasise the object. It can make or break the object that clinicians wish people to see. If the background is distracting, the object loses its importance.

For example, cosmetically, if a crown is restored correctly against a healthy, pinkish-white gingiva, the patient's illusionary smooth smile line can be successfully achieved and viewed. However, if that same crown is placed against an unhealthy, inflamed, reddish gingiva, the eye's focus will be towards the unaesthetic area. A porcelain laminate placed against a natural pink gingiva is simply more pleasing and compatible with its background.

As mentioned in Part I of this series, achieving consistently successful dental aesthetics is mostly a function of creating desired illusions. The first step is ensuring that certain fundamental principles of health are preserved, respected and maintained.

Achieving healthy periodontia is the prerequisite and basis for sustaining this illustration of oral health. It is essential for restorative aesthetics, as well as natural dentition, enabling clinicians to better their chances of achieving successful restorative results and maintaining the results. By incorporating the use of tissue colours, hues, forms and symmetrical appearances one can achieve and maintain the desired aesthetic goal.

As in other forms of art, a symmetrical appearance tends to focus the observing eye on the overall illusion. Assuming there is no pathology, symmetry of colour zones and hue is vital to gain the desired illusion and distract attention from a defective area.

The gingival layer of keratinised tissue is at the margin of natural teeth and around the crowns. The muco-gingival junction separates the outstanding colour demarcation of the pinkish keratinised attached gingival from the mobile alveolar mucosa, which is a reddish-blue zone. Nature's colourations of these zones in symmetrical form are what clinicians must strive for to achieve and maintain health and aesthetics.

If, for example, an adequate zone of attached gingival were unevenly distributed in the same quadrant, the reddish-blue alveolar mucosa would be out of place and draw negative attention. In contrast, if the attached gingiva locally were to encroach on the alveolar mucosa, a colour reversal would occur, resulting in a large, uneven pink zone against an uneven reddish-blue background.

In the past, oversized free gingival grafts have frequently been used to replace absent or inadequate zones of attached gingival. Those large donor grafts were protective but had an unaesthetic appearance; an encroachment of colours into the alveolar mucosa

would usually occur. Even though this pink invasion was subtler compared with the reddish-blue of the alveolar mucosa invading the gingival, it nevertheless broke the illusion of a symmetrical background.

As a further example, overgrowth of tissue, i.e. fibrous hyperplasia, changes the shape of the tissue, thereby partially covering the tooth and changing the appearance of its size. If covered by hyperplastic keratinised gingiva, the tooth appears smaller, especially when compared with the adjacent tooth. This overgrowth may be of developmental, iatrogenic or systemic origins. The result is unaesthetic. These can and should be corrected, which will be discussed in future parts of this series.

In referring to cosmetic illusion using gingival colours, it is important to reflect on examples of non-symmetrical colour breaks of the gingiva. They represent an unhealthy situation and are an eyesore because they disrupt aesthetics.

In a case of inflammation, permanent pathology may occur, resulting in irreversible unaesthetic root exposure (recession). A vertical reddish colour at the gingival margin may warn that pathology is starting.

Several techniques are reported to correct recession, but in reality, the result is not predictable for restored health. Therefore, it is predictably easier and aesthetically more achievable to treat the inflammation earlier. Without a healthy zone of attached gingiva, a crown's margin will become exposed, thus exhibiting an unattractive contrasting colour. It might be the underlying metal margin of the crown or the yellow colour of the recessed tooth's root.

Without a healthy zone, a laminate's margin will probably collect plaque and lead to inflammation and bleeding gingiva. As mentioned previously, this can draw negative attention and most likely lead to recession and irregular gingival pattern variations.

Part II of this series discusses and illustrates cosmetic periodontal surgery, utilising various gingival graft techniques to correct defects, obtain health, and produce colour, hues and forms that appear to be symmetric.

This type of surgery makes for happy patients who smile with brilliant confidence.

_Case I

A young woman was referred to my office with exposed, unsightly longer-looking teeth. They appeared longer owing to her receding gums. Although the patient had a low caries rate and a good oral hygiene technique, she had been told by a previous dentist that she had weak and ugly gums. She noted that her gums bled periodically when brushing, and complained about their unattractive appearance, which made her stiffen her lower lip when smiling. She was intelligent and self-conscious of her problem. She desired to have the recession stopped and the aesthetics to smile with confidence.

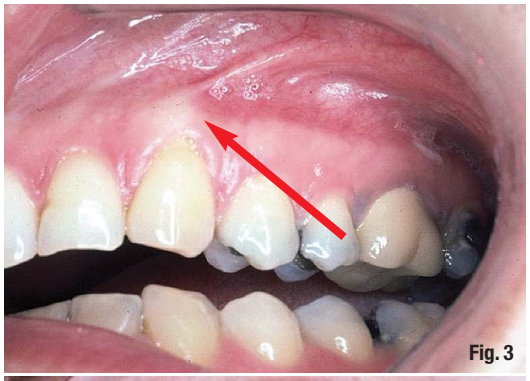
Fig. 3

Fig. 4a

Fig. 4b

Examination revealed that the lower right cuspid had recession (Fig. 1), showing an exposed buccal root. There was an absence of attached gingival, leaving the area surrounded by alveolar mucosa. Therefore, the tooth was surrounded by reddish tissue, which made the root more visibly unattractive. The contrast of deep red colour surrounding an exposed root was accentuated when the lip was retracted, showing a frenum pull. This made it difficult for her to keep the area free of plaque. In contrast, adjacent teeth had pink attached gingiva.

The surgical technique chosen to correct this defect, restore her health and enhance her aesthetics was a variation of the lateral oblique pedicle graft technique.

Treatment

The #28, 27 and 26 area was anesthetised using 0.001 % lidocaine. The local anaesthetic was infiltrated locally both buccally and lingually. A #15 blade was used to incise an outline, which included all the interproximal keratinised tissue of teeth #28 and 27, as well as the buccal aspect of #28. The poor, small buccal zone of tissue was removed from the #27 buccal area.

The recipient site was then prepared. The tooth was lightly scaled. A periodontal elevator (Hoexter elevator, Hu-Friedy) was utilised to reflect the tissue. The incision also included the alveolar mucosal area, allowing ease of mobility. The graft flap was rotated so the largest portion of the keratinised area could

Fig. 5

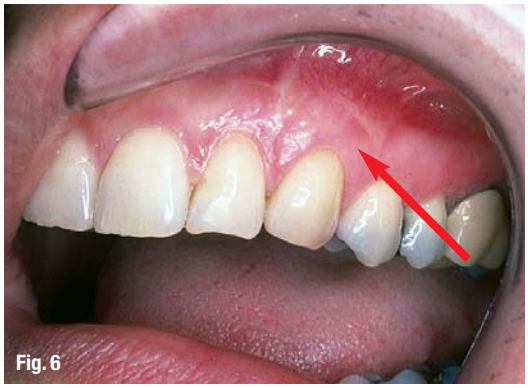
Fig. 6

be employed to cover the recessed area and the newly exposed recipient buccal blood supply of tooth #27. To stabilise the graft in our desired position, a sling suturing technique was utilised. The area was covered with a periodontal dressing (COE-PAK, GC). Tetracycline 250 mg was prescribed q.i.d. for seven days. An analgesic was also prescribed.

The results present an obviously healthy and restored symmetrical, pink zone of attached gingiva and continuity with the adjacent area. The recession was gone, the length and width of the attached gingival was symmetrically blended with the adjacent area, and the frenum pull had been corrected. Figure 2, taken 15 years post-operatively, attests to the durability of the results using this technique.

The results enabled the patient to smile with confidence, without hesitation. She no longer had the reflexive action of holding her lip back. The procedures also permitted her to maintain good oral hygiene, reassured her that her teeth would be retained (recession indicates age to some), and achieved a maintainable, normal colour balance, which collectively created an aesthetically pleasing appearance.

_Case II

The predictability of the results of root recession coverage has been improved in recent years with the utilisation of guided tissue regeneration (GTR). This case demonstrates another gingival graft technique: the coronal repositioned gingival graft. It uses GTR using an acellular collagen membrane, which adds to the predictability of acquiring a blood supply. The resultant zone of attached gingival and root coverage blend aesthetically into the background with a symmetrical width and lateral flow of healthy, pink keratinised tissue.

From the initial appearance of tooth #11 (Fig. 3), the longer-appearing cuspid with recession is evident, which made it stand out and caused the area to be unattractive and noticeable. Figures 4a and b show the acellular membrane placed over the exposed buccal root of #11, after the buccal flap had been reflected. The tissue was sutured with a continuous suture covering the exposed root in the desired final position and the acellular membrane (Fig. 5; the acellular collagen preferred in this technique in my office is supplied by CK Dental). Figure 6 shows the healed area four months later. The recession had been reclaimed by a healthy attached gingival zone. The results allowed a symmetrical appearing zone of pink, keratinised tissue to blend into the area. The cuspid no longer appeared to be greater in length than the surrounding dentition. The linear, even shape of the teeth was aesthetically pleasing. The overall result is easily maintained by the background of correct colour, texture, and symmetrical zone of appearance and health.

_Summary

Fortunately, in these particular cases, the patients' dental awareness made it possible for them to request correction of their oral health and aesthetics. These illustrations demonstrate the aesthetic awareness and desires of today's society. Practitioners must be able to recognise and work towards these goals. By creatively using variations of techniques to achieve such results, the art of dentistry is mastered. Achieving health is primary, but providing a maintainable, healthy and pleasing appearance is also significantly desirable and important._

Editorial note: Part I of this series—Cosmetic periodontal surgery: Pre-prosthetic soft-tissue ridge augmentation—*was published in* cosmetic **dentistry** *Vol. 3, Issue 4/09. A PDF is available from the publisher.*

_about the author

cosmetic dentistry

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