

by Dr. Brian S. Gurinsky

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After graduation, Gurinsky began a three-year residency in periodontics and dental implants, and earned his certificate in periodontics from the University of Texas Health Science Center in San Antonio. He has private practices in Denver and Centennial, Colorado.

*Does My
Patient
Need a*

Gum Graft?

As a practicing periodontist, I've found that recognizing, diagnosing and understanding treatment options for gingival recession remains a confusing mystery to many dentists.

I hope to shed some light on how a periodontist sees this.

We'll explore what a mucogingival (receded gums) defect is and how to identify one, what and where to measure, and when, why and how we can treat them.

The term *mucogingival* refers to the area of the mucosa and gingival tissues, so a mucogingival defect is one that involves either the mucosa, gingiva or both. This short article will center strictly around gingival recession or areas that lack attached gingiva and possibly keratinized gingiva.

Before diving into this too far, we must start with the most commonly recognized classification system: the Miller Defect Classification.

Miller's Class 1 Defect: Recession that does not extend to or beyond the mucogingival junction, with no loss of interdental bone or soft tissue. Full root coverage is possible, especially when recession hasn't advanced past 3 millimeters.

In Fig. 1, notice that the recession doesn't extend past the mucogingival junction, where pink gingival tissue turns

into red mucosal tissue. There also is no loss of the interdental papilla; we don't see black triangles. Here, 100 percent root coverage is possible.

Miller's Class 2 Defect: Recession does extend to or beyond the mucogingival junction, with no loss of interdental bone or soft tissue. Full root coverage is possible, especially when recession has not advanced past 3mm.

In Fig. 2, notice that the recession extends past the mucogingival junction, but there is no loss of the interdental papilla. Full root coverage is possible here.

Miller's Class 3 Defect: Recession that *may* extend to or beyond the mucogingival junction, with loss of interdental bone and soft tissue. Teeth that are severely malposed or outside the bony envelope also fall in this category. Full root coverage is unlikely.

In Fig. 3, notice that the recession extends past the mucogingival junction, and there is loss of the interdental papilla on the picture on the left. 100% root coverage is impossible. In Fig. 4, notice that the canine is buccal malposed, so root coverage is not 100 percent likely.

Miller's Class 4 Defect: Recession which *may* extend to or beyond the mucogingival junction, with loss of interdental bone and soft tissue. Teeth that are severely malposed or outside the bony envelope also fall in this



Fig. 1



Fig. 2



Fig. 3



Fig. 4



Fig. 5



Fig. 6



Fig. 7



Fig. 8



Fig. 9

category (Fig. 5). This classification generally is seen in patients with advanced periodontal disease. Full root coverage is not possible.

Identifying mucogingival defects

A mucogingival defect, in which a tooth would need a tissue graft, is when a tooth has no attached gingiva. Some practitioners will graft sites that have minimal (less than 2mm) attached gingiva but, put simply, if a tooth has no attached gingiva, it's indicated for a tissue graft. You're probably wondering, "Well, how do I measure that?"

Often you can see it visually, but sometimes that's not so easy. If in doubt, the first step is to identify the mucogingival junction, the demarcation of mucosa from keratinized gingiva. In some cases—Miller's Class 2, and possibly Class 3 or 4—there will be no keratinized gingiva.

For the sake of example, let's assume a Class 1 defect. Step 1 is to measure the amount of the keratinized gingiva—that is, the pink stuff (Fig. 6). Step 2 is to measure the pocket depth. If the pocket depth is equal to or larger than the amount of keratinized gingiva, then you have no attached gingiva and thus need a graft. (Disclaimer: There are some exceptions to this example, such as a patient who may have had a tissue graft and thus has attached tissue but no keratinized gingiva.) Let's look at this clinically.

First, measure the amount of keratinized tissue (Fig. 6). Can you visualize the mucogingival junction line? I've outlined it in Fig. 7. And in Fig. 8, you can see probing past the mucogingival junction, so there's no attached tissue—the probing depth is larger than the amount of keratinized gingiva.

Therefore, there is no attached gingiva.

Another trick to identify the mucogingival junction is to take the side of the probe and roll up the mucosal tissue (Fig. 9). The tissue will roll only if it's unattached tissue, making it fairly easy to visualize the junction.

The cause for concern

Why do we need to treat teeth with recession, especially if there is no root sensitivity or aesthetic concerns? It's not about the tissue—it's about the bone. As tissue recedes, so does bone, so inhibiting tissue loss by augmenting the attached tissue should also prevent the bone breaking down (assuming no periodontal disease).

Although mucogingival defects can occur anywhere, the most likely areas to see them are premolars, canines, mandibular anteriors and the mesial roots of molars. Reasons to graft are a lack of attached tissue (must it be keratinized?), recession, thin gingival biotype, root sensitivity, cosmetic concerns and possibly for planned orthodontic tooth movement.

What causes recession?

- Thin tissue biotype (possibly genetics at play)
- Toothbrushing technique
- Tooth position
- Tooth movement (sorry, orthodontists)
- Periodontal disease
- Trauma/factitial injury
- Occlusion?
- Frenum attachments



Fig. 10



Fig. 11



Fig. 12

Options for treatment

There are myriad techniques and options for treatment of gingival recession. For the sake of brevity, let's pare it down to using either the patient's own tissue or donor tissue. When using the patient's own tissue, we're able to harvest it intraorally, usually from the palate's autogenous gingival tissue (free gingival tissue) or autogenous connective tissue (subepithelial connective tissue). On occasion, a coronally positioned flap or lateral pedicle flap can be employed to cover a root as a sole treatment technique. These techniques are also used in combination with subepithelial connective tissue grafts.

The original procedure to treat mucogingival defects was the free-gingival graft. This technique, still used today, provides a predictable way to create a thick band of keratinized gingiva. The gingival tissue is typically harvested from the hard palate and is sutured over the area where the void in keratinized gingiva exists. The advantage of this technique is that it predictably establishes a zone of keratinized tissue and has long-term stability. The main disadvantage is that it's a quite painful recovery for the patient and often does not

create an aesthetic, blended appearance. Also, root coverage is not an intended outcome, so if aesthetics and root coverage are desired goals, this isn't the best technique to accomplish that.

Several years after the free-gingival graft was first described by Bjorn, the subepithelial connective tissue graft was created. Instead of harvesting the outer epithelial of tissue like the free-gingival graft, the subepithelial connective tissue is harvested from the layer of tissue just under the epithelial. (See why it is called a *subepithelial* connective tissue graft?) The outcome of this technique for the patient is a much less painful recovery. Clinically, this technique yields a better color match and root coverage. The main disadvantage is that a broad zone of keratinized gingiva isn't created; however, it's debatable as to whether it's necessary to have keratinized gingiva around teeth to prevent further breakdown.

Let's look at the differences as to where and how we harvest the tissue, and how these typically look postsurgically. Fig. 10 shows a free-gingival graft incision, while Fig. 11 shows a subepithelial connective tissue graft incision.

Before-and-after: Free-gingival grafts

Notice the predictable band of keratinized gingiva that was created in Figs. 12 and 13.

Fig. 14, meanwhile, shows another example of a case that healed after a free gingival graft. Notice the poor color match and how the areas of recession weren't improved or addressed. (This case was not treated by the author).

Before-and-after: Subepithelial connective tissue grafts

Notice the nice color match and improvement in root coverage (Figs. 15 and 16).

Using donor tissue

The second broad category to treat mucogingival defects is using donor tissue. Many practitioners use these products with great success. Generally, the products available are sourced from a human cadaver, with cells removed from the dermal layer of tissue and processed so the practitioner can use the tissue in much the same way they would for a subepithelial connective tissue graft, without the need for incisions on the palate to harvest any grafts.

The main advantages of using donor tissue

is the lack of a palatal incision, which means less pain for the patient during recovery, and the ability to treat larger areas because there's not a limited amount of available autogenous tissue, like there would be for a free gingival graft or subepithelial connective tissue graft. The main disadvantages are the additional cost to purchase the tissue, and greater amount of unpredictability in the long-term success of the graft.

There are also options for using biologics (Emdogain and Gem21, for example) to add to the graft materials or as stand-alone substitutes. The intent of this article is not to go into too much detail on this.

Conclusion

It's essential to understand how to identify mucogingival defects and either treat or make the appropriate referral to halt future tissue and bone loss. The many different options for treatment are based on the outcome goals, the patient's desires, and the stage of Miller Defect the tooth is currently in.

It's less important in understanding the technique du jour that is so heavily marketed in today's climate, and more important to understand how to identify it, diagnosing the defect so it's not left untreated. ■



Fig. 13



Fig. 14



Fig. 15



Fig. 16



Discover when to refer cases to a perio specialist

In which situations should clinicians refer cases to a periodontist? Dr. Brian S. Gurinsky's article on Dentaltown.com discusses some of the factors and flags where it makes sense to refer out. To read the piece, go to dentaltown.com/gurinsky-on-perio.