ously exposed gums and can additionally reduce the amount of gum tissue that must be removed during the gingivectomy.

Case No. 1
A 27-year-old female presented with a 13 mm vertical index (VI) requesting that her “gummy smile” be corrected or reduced. The average VI is 17–21 mm. Therefore, her VI would be esthetically pleasing if increased by a minimum of 4 mm, reducing the gum-to-teeth ratio.

The patient's teeth were out of proportion, with the length to width ratio of the central incisors almost identical rather than the esthetically pleasing ratio of 75 to 80 percent width to length. Her gums were inflamed and in poor condition. Therefore, she was first referred to a hygienist for cleaning, root planing, deep scaling and debriding. (Fig. 1)

At physiological rest, the K7 Evaluation System showed that the patient's VI increased to 17 mm before any gum tissue was removed. The tooth-to-gum ratio had already been increased significantly. The Golden Proportion equations were also utilized. The patient's golden vertical index calculated at 16.7 mm, and the orthotic gave her a VI of 17 mm (Fig. 2).

It was determined that the patient would have an even greater esthetic result by further increasing the tooth-to-gum ratio. Sounding determined that 2 mm of gum tissue could be removed safely, an additional 2 mm was burned away utilizing a diode laser.

The diode laser immediately characterizes the tissue and causes less bleeding and less postoperative stress for the patient than other gingivectomy methods.

In the image (Fig. 5), gum tissue has been removed from three teeth, showing the additional vertical length compared to the remaining teeth. The healing process following the diode laser gingivectomy is approximately two weeks.

Sounding indicated that a gingivectomy alone would have allowed for the removal of no more than 2 mm of gum tissue. In this case, the patient's VI would have increased only to 15 mm, leaving her with a gummy smile even after the procedure was complete (Fig. 4).

After administering a local anesthetic, a frenectomy was performed on the patient to further release the upper lip and reduce the gum-to-tooth ratio (Fig. 5).

It was checked again and the temporaries were applied. The final VI increase for the patient following the bite correction, frenectomy and gingivectomy was 6 mm, increasing the VI from 15 to 19 mm. While the increase could have remained at 17, the additional 2 mm was an esthetic improvement (Fig. 6).

After the veneers were applied and the gums had healed, the patient showed an exceptional reduction in her gummy smile, as well as increased gum health with proper stippling (Figs. 7a, 7b).

Case No. 2
A 37-year-old female patient presented with a 12 mm vertical index and complaints of an overly gummy smile. Although her gums were healthy, she was referred to a hygienist for a thorough cleaning prior to her procedures.

The patient's central incisors were 9 mm wide, while the Golden Proportion is 11.6 mm. The patient’s golden vertical index, therefore, was 18.8 mm, which was an increase of 6.8 mm from her current VI (Fig. 8).

Measurements of the patient’s teeth showed that the width-to-length ratio was almost identical (Fig. 9).

The Myomonitor and K7 Bite Evaluation System determined that the patient’s bite could be opened to a VI of 17 mm, which was a significant increase of 5 mm from her original VI. The patient wore an orthotic for a period of one month, after which her bite was rechecked and temporary teeth applied (Fig. 10).

Sounding determined that 2 mm of gum tissue could safely be removed. After a frenectomy and gingivectomy utilizing the diode laser, 2 mm of tissue was removed, further increasing the patient’s VI to 19 mm, allowing for an exceptional correction to the gummy smile condition of 7 mm from the original 12 mm VI (Figs. 11a, 11b).

References
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