Interproximal Reduction Guidelines

Tooth-size reduction, also termed enamel or interproximal reproximation, stripping, or enamel reduction, involves the removal of interproximal enamel that reduces mesial-distal widths.

The clinician should indicate the teeth to be repositioned on a prescription form.

In the laboratory, teeth to be moved are sectioned and reset to an ideal alignment.

The laboratory will indicate the specific interproximal reduction that was completed in the Lab.

In many cases, reproximation of interproximal contacts is necessary. Interproximal reduction is a procedure to create space for crowding and increase stability by flattening curved contact surfaces. This is accomplished with abrasive strips or discs. A space analysis of the anterior alignment must be completed during the diagnostic phase of treatment and this may be complemented with a partial or gnathologic diagnostic setup. Crowding up to 2.5 mm may be resolved, without flaring the anterior teeth labially, by removal of enamel between the five contact areas.
Many authors recognize reduction of one-half of the interproximal enamel per mesial or distal surface as a safe procedure. This represents .5 mm per contact for 2.5 mm of total space to be gained between the cuspids. In terms of safety, hand-held or motor-driven abrasive strips are preferred for reproximation, but care still must be taken to avoid trauma to the gingiva. Surfaces prepared with coarse abrasive products should always be finished with finer grades.

It is advantageous to complete reproximation during one appointment, as a thickness gauge can verify each interproximal space opened. For example, the flat end of a periodontal probe (Hu-Friedy; Chicago, IL) measures approximately .25 mm at the 1–3 mm portion and .5 mm at the 7–9 mm portion. Alternatively, a leaf gauge (Great Lakes Orthodontics, Ltd.; Tonawanda, NY) used in occlusal registration procedures has individual plastic strips that are .125 mm in thickness. The most precise amount of enamel removed is made by reducing one proximal surface at a time with a single-sided abrasive strip.

The clinician should be aware that as the degree of crowding and overlap increases, the contact is skewed to the labial or lingual enamel surfaces.

Therefore, a single or double-sided abrasive instrument is not initially indicated since enamel would not be removed at the most mesial or distal tooth surfaces. As teeth align (derotate) with aligner wear, reproximation is then appropriate.

Reproximation over multiple appointments also can be an option. First, the thickness of the strip must be accurately measured with a micrometer. Interproximal enamel is removed until the strip passes with minimal binding. This represents the approximate strip thickness and space opened. For example, Compo-Strip® (Great Lakes Orthodontics, Ltd.; Tonawanda, NY) single-sided coarse diamond strips (blue) measure 0.14 mm in thickness. Reduction of five anterior contacts distributed evenly between the mesial and distal contacts thus removes 0.7 mm of enamel per appointment. The amount of enamel removed should be recorded at every appointment in the treatment chart.

Abrasive discs in a low-speed handpiece permit faster removal but present an increased risk of soft tissue injury. Also, these enamel surfaces must be further contoured and finished by hand with flexible strips. An in-office topical fluoride rinse is recommended following any enamel reduction procedure.

A distinction should be noted between the preceding procedures to resolve minor anterior crowding and another space-gaining method known as air-rotor stripping. The latter technique removes up to 9 mm of enamel (6.4 mm from the posterior contacts) with a high-speed handpiece in comprehensive orthodontic treatment with fixed or removable appliances.

Contact Great Lakes for information on Compo-Strips® or the Vision Flex Abrasive Discs