Contouring vs. Orthodontics

Photo 1 Maxillary central incisors are overlapped. Patient chose rapid tooth movement instead of contouring.

Photo 2 Maxillary central incisors after six months of orthodontic treatment. This type of result is not possible with contouring.

Contouring to Eliminate Fractures and Enhance Proportions

Photos 3 & 4 Maxillary central incisors show uneven incisal edges and distal surfaces, which overlap lateral incisors.

Photos 5 & 6 Posttreatment views show incisal edges on maxillary central incisors have been smoothed while the distal overlaps have been reduced. Teeth now have much more pleasing shape and improved length-to-width ratio. Sharp cusp tip on maxillary right canine has also been reduced to soften the smile. Mesial surface of left central incisor was not contoured due to proximal contact occurring where tooth needs reduction. Composite augmentation could be used to refine midline, but patient declined additional treatment.
Contouring to Soften Smile

Photo 7 Patient with porcelain veneers wants smile “softened”.

Photo 8 Embrasures have been opened slightly and point angles rounded to “soften” the smile.

Contouring to Create Illusion of Straightness

Photo 9 Direct frontal view of mandibular anteriors suggests only the right lateral incisor is misaligned. Note that the left central incisor had been extracted.

Photo 10 Mandibular anteriors appear differently when approached from “The View.” It is now obvious that all five remaining anteriors are extremely crowded. This photo gives a more realistic view on how we see each other’s mandibular teeth.

Photo 11 Direct frontal view after contouring suggests teeth are now reasonably aligned.

Photo 12 Posttreatment photo from “The View” showing improvement, but dentin would have to be exposed if contouring was to create an even more aligned arrangement. Contouring was stopped when patient felt any sensitivity during the actual enamel reduction.
Contouring Composite at Midline

**Photo 13** Patient presents with Class IV MI composite that is over-contoured at the mesiofacial line angle, giving the tooth the appearance of leaning to the right.

**Photos 14 & 15** #15 scalpel is being used to carve away to excess composite. This hand instrument (scalpel) is being used as it gives more control than a rotary instrument.
Photos 16 & 17 Finishing disc is then used to smooth and refine the new angles produced with the scalpel and to remove bulk and flatten the facial surface.

Photo 18 After contouring and polishing, the overcontoured mesiofacial angle has been eliminated, producing a much straighter appearance. Note that, due to the contouring procedures, the tooth itself has become somewhat desiccated, creating a shade mismatch with the restoration (and the restoration on the adjacent right central incisor). Reassure the patient that, once the moisture returns to the tooth, the shade will match with precision.
Cosmetic contouring is one of the easiest, fastest, yet most underutilized procedures performed today. It requires no maintenance and the results can be quite dramatic and patient-pleasing. Almost any patient is a candidate and could benefit cosmetically with even minor contouring. Identifying the need and desire for cosmetic contouring should be done during the initial appointment, regardless of whether the patient has come to you for cosmetic purposes.

However, reducing enamel without anesthesia may cause anxiety in some patients and can cause sensitivity if done too aggressively. Contouring facial enamel can also change shade of tooth.

In addition, with contemporary orthodontic techniques featuring rapid tooth movement and Invisalign, patients need to be given the opportunity to align their teeth instead of merely creating the illusion of straightness (Photos 1 & 2).

**STEP 1: Assess the Problem**
Usually there are two separate misalignments: incisal and axial. It is necessary to plan the treatment from both an esthetic as well as functional perspective. Incisal changes have the potential to affect anterior guidance. Making the proposed changes on duplicate study models can help you and your patient visualize the end result. Measure lengths and widths of teeth to ensure planned changes will not cause an unattractive length-to-width ratio.

**STEP 2: Maxillary Anteriors — The Smile Line**
The most complimentary smile line for a woman is where the maxillary teeth parallel the lower lip in a full smile. This means that the central incisors appear to be the longest teeth, the lateral incisors slightly shorter, the canines still shorter, and so on. For men desiring a more aggressive look, the canines would appear longer than the laterals.

To ensure that the orientation of the smile line is consistent with the remainder of the face, use a small, flat-edged ruler or bite plane to check parallelism with the interpupillary line or the ala-tragus line.

Do not overlook the necessity to recontour the gingiva. A simple gingivoplasty or a more involved procedure including the need for osteoplasty may be necessary to establish gingival symmetry.

**STEP 3: Sensitivity**
Ascertain the relative sensitivity of your patient’s teeth before starting. The last thing you want is to create a problem with sensitivity where none existed before contouring. To prevent sensitivity, no anesthesia of any kind should be used. Your patient can then tell you if you are being too aggressive. Be sure your patient understands the limitations of contouring.

**STEP 4: Contouring**
The actual contouring is completed with a medium-grit, tapered diamond, cutting and finishing discs, and diamond strips. Be sure to stop if the patient acknowledges any sensitivity. It is helpful to use a larger mirror to allow you to see all the anterior teeth in one view from the incisal aspect. For major changes, it is helpful to draw areas to be reduced on the teeth in pencil or felt tip pen.

A. Incisal Contouring (Photos 7 & 8)
This can be done with either a diamond for gross reduction or with a disc for more subtle changes. The disc is definitely more predictable and you are less likely to remove too much tooth structure.

You may choose to do this entire incisal contouring with the patient sitting up so you and the patient can be viewing the changes as they occur in a more natural position or you will need to sit the patient up frequently to check on your progress. Make sure to step back two to three feet from the patient when checking contours.

B. Axial Contouring (Photos 3–6, 13–18)
This concept includes the actual elimination of overlapped tooth structure through contouring followed by resin augmentation of any nonconforming surfaces.

1. Eliminate the Overlaps
Under no local anesthetic, use a medium-grit diamond for the gross tooth reduction to eliminate the overlapped surfaces. Usually one tooth needs to be contoured on the lingual while the adjacent tooth is reshaped on the facial. Restrict your contouring to the proximal surfaces at this time.

**Note:** Eliminating the overlaps also changes the length-to-width ratio of the teeth being contoured. You may give the patient teeth that appear more aligned, but not more attractive due to an unbalanced length-to-width ratio. Therefore, take measurements as you proceed with the contouring. Keep the length-to-width ratio between 10:8 and 10:9.

2. Finish with Strips and Discs
Continue the elimination of the overlap by using metal finishing strips and discs. You should be able to visualize a line running through the contact with neither proximal surface crossing the line.
3. Contour the Facial and Lingual
After the proximal overlaps have been reduced or eliminated, reduce the facial and lingual misalignments of the adjacent teeth. The more contouring you do, the less resin augmentation is necessary. This is especially indicated on the lingual since color changes due to thinner enamel are of no consequence.

4. Resin Augmentation
Any remaining misaligned lingual surfaces are now “straightened” by adding composite. This resin augmentation is not only esthetically pleasing, but makes it easier for your patients to keep their teeth plaque-free.

Begin the augmentation on the lingual. Add just enough resin to fill in the usual V-shaped space that is commonly found when two misaligned teeth are adjacent to each other. The end result should be a consistent lingual contour.

After the lingual is brought into line, the facial surface of the more lingually-oriented teeth can be veneered to bring them into facial alignment. In addition, any refinement of the contact by using composite is completed at this time.

The fact that this procedure is functionally needed is a great help when filing for insurance coverage. Remember: For insurance purposes, never refer to contouring as cosmetic. Always send a narrative describing why the procedure needs to be done. Study models and/or photographs are also helpful at times.

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**STEP 5: Mandibular Anteriors (Photos 9–12)**
When recontouring mandibular incisors, you need to consider the concept of “The View,” which means we actually see the linguoincisal line angles of these teeth in a conversational view more prominently than the height of their incisal edges. Consequently, it is not enough to merely shorten all the teeth to the same level. Indeed, this approach may alter the occlusion. By concentrating on contouring the linguoincisal, you can create the illusion of straightening a lingually inclined mandibular incisor.

In addition, you can give a mandibular incisor a youthful appearance by creating a concavity in the linguoincisal line angle. This also allows you to make believable mandibular anterior porcelain crowns and bridges. “The View” concept can be easily seen by looking at your patients from a “straight-on” position lying down and then sitting them up and viewing them in a more natural position.

After contouring the linguoincisal, any unattractive axial inclinations or overlapping can be corrected. The same instruments can be used to recontour lower teeth with the addition of a short rounded cylinder finishing bur to help with linguoincisal contouring.

**STEP 6: Smooth and Polish**
Smooth any resin augmentation and adjusted enamel with finishing burs, discs, and strips. Polish with rubber cups, points, and wheels followed by polishing paste and/or prophy paste. Apply topical fluoride.

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**Note:** Overly aggressive contouring of the facial surface can cause changes in the color of the adjusted area due to the thinner enamel. Therefore, proceed slowly and continually monitor the tooth during the contouring for possible color changes.
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