

Dr. Dimitar Kosturkov

Predictable Finishing and Polishing Protocol for Anterior Composite Restorations: Step-by-Step Guide



Concept Overview

The aesthetic success of anterior composite restorations is strongly dependent on the quality of finishing and polishing procedures. Beyond simple smoothing, modern protocols must:

- **Reproduce natural tooth morphology**
- **Control light reflection through precise line-angle positioning**
- **Generate enamel-like surface luster**
- **Preserve biological safety**

A structured workflow improves predictability and reduces operator variability. The recommended sequence follows:

Contouring → Finishing → Polishing → Hi-Gloss Polishing

Dry finishing is generally preferred to enhance visualization of surface irregularities; however, excessive continuous pressure must be avoided because overheating may lead to pulpal irritation or pulpitis.

About Dr. Dimitar Kosturkov



Dr. Dimitar Kosturkov graduated with honors from the Faculty of Dental Medicine in Sofia, Bulgaria, in 2014. Since then, he has been an endodontist and restorative dentist at Uzunov Dental Clinic in Sofia. From 2016 to 2019, he was a full-time PhD student in the Department of Conservative Dentistry at FDM-Sofia. In 2017, he began teaching students at FDM-Sofia. In 2019 he obtained his PhD degree. In 2020, he obtained a specialty in operative dentistry and endodontics from FDM-Sofia. Since 2021, he has been a chief assistant professor in the Department of Conservative Dentistry at FDM-Sofia. He is author of numerous publications in Bulgarian and international journals and scientific projects.

Clinical Protocol

Step 1

Primary Contouring (Macro-Anatomy)

Instrument

- Flame diamond bur (medium grit)

Objective

Establish overall tooth morphology and remove excess composite. Initial contouring defines facial convexity, emergence profile, and tooth proportions. Preservation of the natural three-lobe anatomy of anterior teeth is critical for aesthetic integration.

Clinical Considerations

- Prefer dry finishing for improved visualization
- Evaluate from frontal and incisal perspectives
- Avoid flattening the facial surface
- Maintain symmetry with the contralateral tooth



Fig. 1 - Baseline composite restoration prior to finishing.

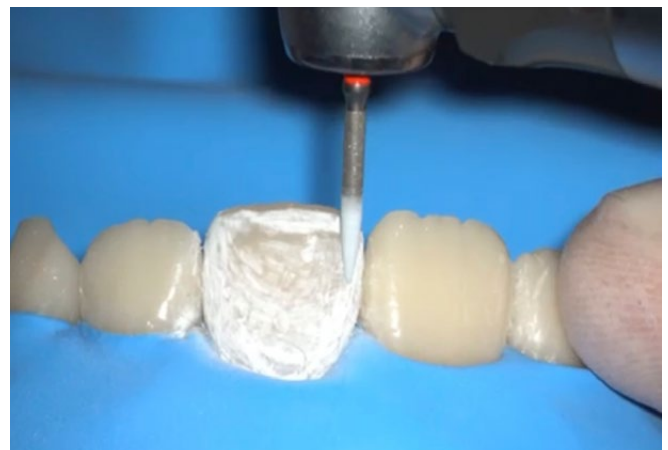


Fig. 2 - Primary contouring with medium-grit flame diamond bur.

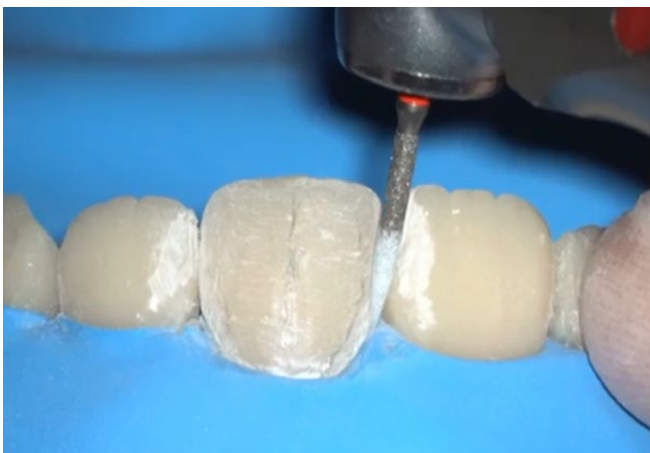
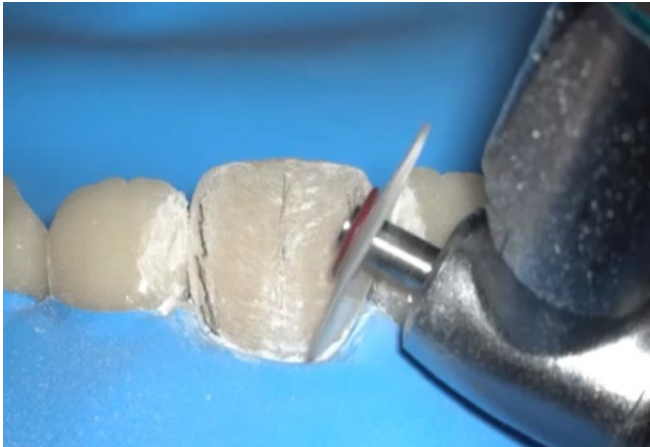


Fig. 3 - 4 - The line angle refinement using OptiDisc™ (coarse / medium) at ~8,000–10,000 rpm and a fine flame diamond bur.

Step 2

Line Angle Positioning and Adjustment

Instruments

- OptiDisc™ (coarse / medium)
- Flame diamond bur (fine)

Objective

Precisely position and refine mesial and distal line angles to control perceived tooth width and light dynamics. The clinician first identifies the zones of maximum convexity. The coarse OptiDisc™ performs controlled reduction, followed by the medium disc for refinement. A fine flame bur may be used to sharpen transitions and remove residual disc marks.

Clinical Considerations

- Slight distalization of line angles often enhances natural appearance
- Keep the disc parallel to the facial surface
- Use light, controlled pressure with continuous motion
- Work from cervical toward incisal
- Continuously compare with adjacent teeth
- Avoid excessive opening of the interproximal area.

Step 3

Secondary Anatomy Refinement and Initial Surface Smoothing

Instruments

- Flame diamond bur (medium)
- Opti1Step™ (disc and flame)

Objective

Refine macro-anatomy and eliminate surface irregularities prior to micro-texturing. Light brushing strokes with the flame bur refine developmental lobes and sharpen line angles. Opti1Step is then applied to produce uniform surface smoothing and remove micro-scratches.

Clinical Considerations

- Position the bur between the line angle and mid-line to preserve convexity
- Maintain the 3 buccal lobes
- Use intermittent contact with Opti1Step™
- Begin with moderate pressure and progressively reduce
- Maintain continuous movement
- Dry polishing enhances luster but requires thermal control.

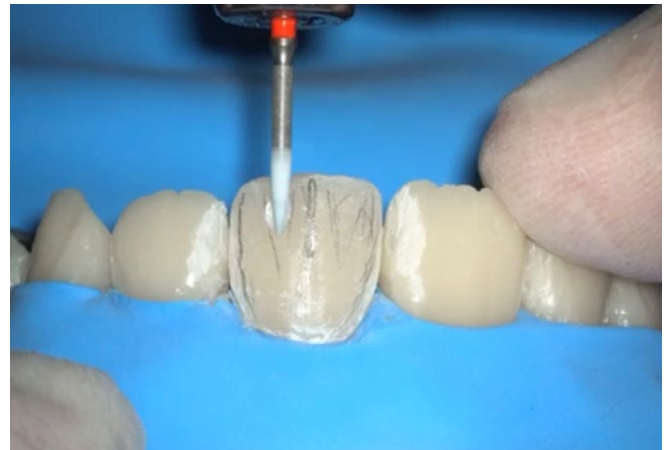


Fig. 5 - 7 - Illustrate secondary anatomy refinement with a fine flame diamond bur, followed by initial surface smoothing using the Opti1Step™ disc and flame at ~5,000–8,000 rpm.



Fig. 8 - Creation of subtle enamel micro-texture with fine diamond under light pressure.

Step 4

Creation of Micro-Anatomy (Tertiary Texture)

Instrument

- Flame diamond bur (fine)

Objective

Reproduce natural enamel micro-texture. Very superficial strokes are applied following natural enamel orientation and cervical curvature. This step must remain conservative to avoid an artificial appearance.

Clinical Considerations

- Texture should be barely perceptible when dry
- Follow natural enamel direction
- Use minimal pressure and shallow strokes
- Avoid over-texturing
- Magnification is strongly recommended.

Step 5

Final Polishing

Instrument

- Opti1Step™ (flame)

Objective

Blend surface texture and enhance gloss while preserving anatomy. Light, intermittent passes soften transitions and refine surface reflectivity.

Clinical Considerations

- Texture should be barely perceptible when dry
- Follow natural enamel direction
- Use minimal pressure and shallow strokes
- Avoid over-texturing
- Magnification is strongly recommended.



Fig. 9 - Final polishing with Opti1Step™ flame using intermittent, feather-light contact.



Fig. 10 - Hi-gloss polishing with Occlubrush™ (dry, ~5,000–8,000 rpm).



Fig. 11 - Final aesthetic outcome after complete finishing and polishing protocol.

Step 6

Hi-Gloss Polishing

Instrument

- Occlubrush™

Objective

Achieve enamel-like high luster. Final gloss is developed using very light pressure under dry conditions. The goal is a natural, controlled shine rather than a mirror-flat surface.

Clinical Considerations

- Dry polishing improves gloss efficiency
- Use brief, intermittent strokes
- Avoid excessive pressure and heat buildup
- Do not over-polish; natural enamel is not mirror-flat

Conclusion

A systematic approach to anterior composite finishing and polishing is essential to achieve predictable, highly aesthetic outcomes. Proper contouring establishes the anatomical foundation, while precise line-angle positioning governs light dynamics and perceived tooth width. Progressive finishing with Opti1Step creates a smooth, uniform surface that is suitable for subtle micro-texturing. Final polishing and hi-gloss enhancement should be performed conservatively to reproduce the natural enamel appearance.

Clinicians should prioritize controlled pressure, appropriate rotational speeds, and intermittent contact throughout the procedure. Dry finishing improves visual control and gloss potential but requires careful thermal management due to the risk of pulpal irritation if overheating occurs. When executed correctly, this protocol produces restorations that demonstrate natural morphology, balanced reflectivity, and durable surface quality consistent with contemporary aesthetic standards.



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Disclosure: Dr. Dimitar Kosturkov is a consultants for Kerr. The opinions and technique expressed in this article are based on the experience of Dr. Dimitar Kosturkov. Kerr is a medical device manufacturer and does not dispense medical advice. Clinicians should use their own professional judgment in treating their patients