Small changes, big smiles

Minimally invasive restorations for maximum aesthetic impact

Smile for the World

Since 1921

100 years of Quality in Dental

GC

Small changes, big smiles
Patient selection

More than
1 out of 3 adults

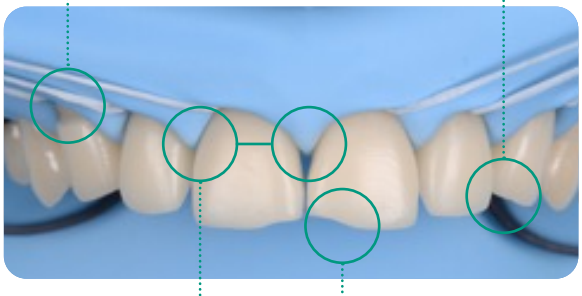
are unhappy with
their smile

1 in 3 adults
A significant number of adults are unhappy with their smile, which has a considerable psychosocial impact. Although many seek cosmetic dental treatment, costs, fear and duration of total treatment are often barriers to the patients. Nevertheless, many could benefit from small changes to their teeth that ultimately greatly improve the overall smile aesthetics.

Beyond aesthetics
The most common discrepancies in patients' smiles that can be restored with minimally invasive composite restorations are black triangles, diastemas, incisal and canine cusp wear and abfractions. Composite bonding preserves most of the natural tooth, is cost-effective, and provides immediate results with minimal discomfort. The aesthetic impact to the smile is immediately apparent. But beyond that, there is a functional component to composite bonding. The small issues that are often only seen as aesthetic, also bring along some functional considerations.

The restoration of **abfractions** in the anterior area is important for aesthetic appearance especially in patients with high smile lines. Moreover, restoring abfractions strengthens the cervical area of the tooth, prevents further loss of enamel and ameliorates unpleasant sensitivity.

Worn canine cusp restoration is of special functional importance. Creating functional canine guidance with a minimally invasive composite addition to the canine cusp will protect the posterior teeth during lateral movements of the jaw.



Black triangles and **diastemas** can cause entrapment of the food and accumulation of bacteria, which leads to gingivitis and ultimately periodontitis. By eliminating the black triangles and diastemas with composite bonding, the dentist not only improves the aesthetics, but also protects the long-term health of the periodontal tissues.

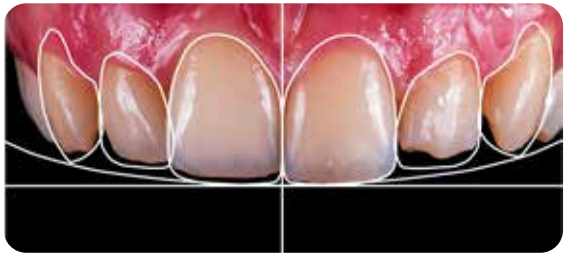
Incisal wear restorations return the youthful appearance to the smile and prevent further loss of enamel and exposure of the dentine.

Patient communication guidelines

1. Carefully listen to the patient's concerns
2. Assess the patient for parafunctional habits
3. Discuss the importance of long-term preservation of the teeth
4. Explain the functional aspect of restoring the small imperfections
5. Show the patient the potential of smile improvement with small restorations with a quick free-hand or a digital mockup

Mockup creation: free hand or digital

Free-hand mockup with **Revotek LC** or **G-ænial A'CHORD**



Virtual mockup created with the help of digital technologies

Tips & Tricks for a mockup with Revotek LC or G-ænial A'CHORD

- Do not apply any bonding agent onto the enamel
- Apply Revotek LC or G-ænial A'CHORD directly onto the dry enamel
- Use GC Modeling Kit for easier adaptation of the composite
- Light-cure after each application of composite
- Once the mockup is finished, do not offer the patient a mirror but take extraoral photographs.
- The extraoral photographs will give the patient a better representation of the overall change and prevent the patient from focusing on the small irregularities in the composite mockup.
- Remove the mockup by carefully scraping it off the tooth surface using a sharp instrument.

Small changes, big smiles
Black triangle management

A black triangle is a common aesthetic and functional discrepancy that can be caused by the position of the teeth, periodontal disease, or improper brushing techniques.
A black triangle can present a functional issue, as the food can easily get trapped in the gap the accumulation of bacteria can lead to further periodontal inflammation or tooth decay. On the other hand, a black triangle can also hinder the aesthetics of the smile.
Using modern composite solutions, the black triangles can be closed easily with a single shade and one visit only procedure. This will improve both the function and the overall aesthetics of the patients' smiles.

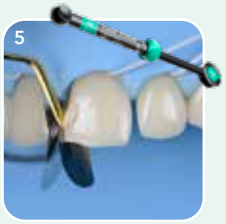
Step-by-step guide

Sandblast, clean and dry the tooth surface. Etching of the enamel is recommended.

Apply **G-Premio BOND** to the tooth surface. Dry with max. air pressure for 5 sec.

Light-cure.

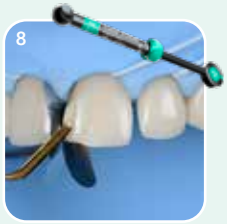
Apply an anterior proximal matrix to the 2 teeth forming the black triangle.



Apply **G-ænial A'CHORD** to the cervical part of the gap between the tooth and the matrix.

Adapt the composite to the matrix and tooth using **GC Modeling Kit.**

Light-cure **G-ænial A'CHORD** after each application.



Rebuild the proximal wall with **G-ænial A'CHORD**.

Repeat the process on the other tooth forming the black triangle. Contact point should be 5 mm incisally from the bone crest.

Once new contact point is established, remove the matrix and rebuild the buccal surfaces if needed.

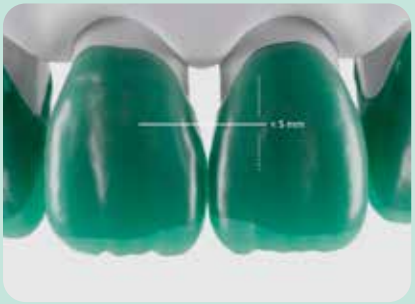
If mild incisal wear is present, it can be restored with free-hand application of **G-ænial A'CHORD.**

Proceed with polishing. Refer to polishing guide for the step-by-step instructions.

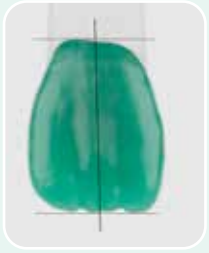
Small changes, big smiles
Black triangle management

Tips & tricks for black triangle management

- Use floss ligatures to additionally secure the rubber dam and retract the soft tissues.
- Make use of the round and flat brushes included in GC Modeling Kit for easy and precise adaptation of the composite.
- Use dedicated anterior approximal matrices (such as Polydentia's unica approximal) for the optimal shape of the emergence profile.
- To achieve the growth of the interdental papilla into the embrasure, the distance between the bone crest and the contact point should be 5mm. Measure this distance with help of preoperative radiographs and a periodontal probe.



Morphological guidelines of the upper central incisor*



Axis of the tooth is tilted towards central. Zenith point is located distal to the axis.

Mesial line-angle is less curved and straighter. Distal line-angle is more curved and less straight.

Creating closer line-angles gives a more narrow and longer appearance to the crown.

Creating separated line-angles gives a wider and shorter appearance to the crown.

Buccal surface from approximal view is convex and has 3 planes.

Contact points located in the middle part of the crown, give the crown round shape.

Contact points located in the incisal part of the crown, give the crown triangular shape.

Contact points located in the cervical part of the crown, give the crown square shape.

*The embrasure between the two upper central incisors is just one of the locations where black triangles commonly occur. When closing the black triangle between other teeth, follow their respective anatomical features.

Small changes, big smiles
Diastema closure

Diastemas are a normal occurrence in children, but are expected to close in adults. Due to the factors such as discrepancy between the jaw and teeth size and low attachment of the frenulum, the diastemas can persist into adulthood.
Diastemas are often perceived as aesthetically unappealing, so a small intervention of closure can represent a big improvement in the smile. Furthermore, the absence of the contact between the two neighboring teeth allows for the food to easily irritate the gum tissue, get entrapped in the gap and cause inflammation of periodontal tissues.
Simple one shade addition of composite can close the diastemas and improve the function and aesthetic of the dentition.

Step-by-step guide

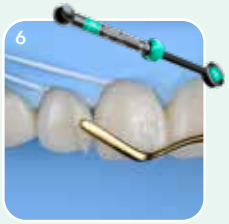
Sandblast, clean and dry the tooth surface. Etching of the enamel is recommended. Apply **G-Premio BOND** to the tooth surface. Dry with max. air pressure for 5 sec. and light-cure

Apply an anterior proximal matrix. Position the matrix towards the approximal surface of the neighboring tooth to assure good contact point.

Apply **G-ænial A'CHORD** to the cervical part of the gap between and the matrix and push the composite until you see it on the lingual side to create new emergence profile and contact point.

Continue then on the cervical to create a new emergence profile using **GC Modeling Kit**. Light-cure after each application of the composite.

Remove the matrix after establishing the new emergence profile and contact point.



Apply **G-ænial A'CHORD** to the buccal part of the restorative surface.

Adapt the composite to the buccal surface of the tooth using **GC Modeling Kit**. Light-cure after each application of the composite.

Check the palatal transition of the restoration to the tooth surface.

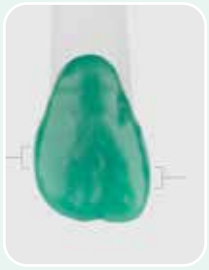
Proceed with polishing. Refer to polishing guide for the step-by-step instructions.

Tips & tricks for diastema closure

- Make the shade selection of the restorative composite before the isolation, when the teeth are not yet dried out. Dehydration of the teeth causes a color shift and may impact the shade selection.
- After placing matrix only insert a wedge after the new emergence profile has been established. This will prevent the distortion of the matrix in the cervical part and at the same time ensure a tighter contact with subsequent composite placement.
- Use magnification to ensure perfect adaptation of the composite and avoid microporosities.
- Use G-ænial Universal Injectable to seal the gap between the tooth and the matrix in area with difficult access.
- Make use of the round and flat brushes included in GC Modeling Kit for easy and precise adaptation of the composite.
- Do not over-wet the modeling brushes with the Modeling Liquid. If needed, slightly dry the brushes using a paper towel.
- Use dedicated anterior approximal matrices for the optimal shape of the emergence profile.

Morphological guidelines of the upper lateral incisor*

The axis of the tooth tilts distally.



Contact point is located more cervically on the distal part of the crown and more incisally on the mesial part of the crown.

Incisal edge is tilted mesio-distally with a downward slope towards mesial.

The line angles are rounder than in central incisor.

Buccal surface displays one developmental groove.

Buccal surface from approximal view is convex and has 3 planes.

*The approximal area between lateral and central incisors is just one of the locations where diastema can commonly occur.
When the diastemas between other teeth, follow their respective anatomical features.

Small changes, big smiles

Canine cusp wear and abfraction restoration

The maxillary canine is a tooth of paramount importance. Found at the junction of the aesthetic anterior area and functional posterior area, it is a tooth that bears high loads and has an important role in the chewing function, while also adding to the beauty of the smile.

The high load bearing of the canine can cause the wear of the canine cusp and abfractions, especially in patients that have parafunctional habits, such as bruxism. These defects negatively impact the strength, the function and the appearance of the canine.

Minimally invasive composite restorations can restore the function and aesthetics of this tooth and re-establish its protective role in the lateral excursions of the lower jaw.

Step-by-step guide

Bevel the coronal edge of the abfraction with a diamond bur. Clean the adhesive surface with sandblasting.

Etch according to your preferred protocol. Apply **G-Premio Bond** to the tooth surface. Dry with max. air pressure for 5 sec.

Light-cure.

Place either **G-ænial A'CHORD** or **G-ænial Universal Injectable** to restore the abfraction in an efficient way.

Rebuild the canine cusp and re-establish canine guidance if needed, using **G-ænial A'CHORD**.

Proceed with polishing. Refer to polishing guide for the step-by-step instructions.

Importance of canine guidance

Canine guidance means disocclusion of all teeth except for canines in lateral movements of the lower jaw. This type of function protects the posterior teeth from harmful horizontal forces, reduces frictions and prevents wear and abfractions.

In mild wear cases the canine guidance is established with a minimally invasive technique, called "canine rise"*. Using strong adhesives and composites, the incline of the canine cusps can be adjusted with free hand application without increasing the vertical dimension of occlusion. The adjusted inclination of the cusp will restore the canine guidance and protect the posterior teeth from further wear.

* Kermanshah H, Alzwghaibi A, Al-Tufaili M, Ghabraei S. Canine Rise Method: A Conservative Approach for Worn Teeth Rehabilitation with Different Adhesive Restorative Materials. Case Rep Dent. 2022 Feb 27;2022:9949879. doi: 10.1155/2022/9949879. PMID: 35265380; PMCID: PMC8898810.

Small changes, big smiles

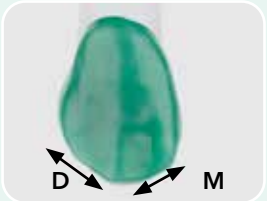
Canine cusp wear and abfraction restoration

Tips & tricks for canine cusp wear and abfraction restoration

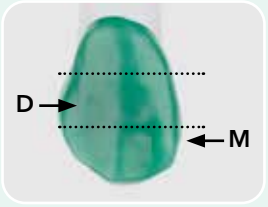
- Bevel the enamel edge of the abfraction for optimized enamel bonding and seamless blending of the restorative composite.
- Rebuild the worn canine cusp by sliding the modeling brush from the existing tooth structure to the composite, following the existing anatomy of the canine.
- Verify that the correct amount of composite was added to the canine cusp by using the articulating paper and asking the patient to do lateral movements with the lower jaw. During these movements only canines should be in contact. During maximum intercuspation all posterior teeth should be in contact.

Morphology of the upper canine

Length of the crown is greater than the width. The crown is narrower mesiodistally compared to the central incisor.

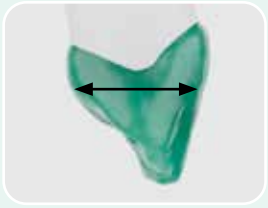


Mesial cusp slope is shorter than the distal cusp slope.

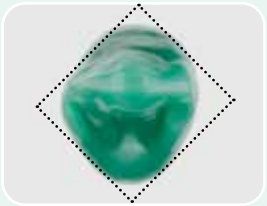


Mesial contact is approximately at the junction of middle and incisal thirds of the crown, distal contact area is usually at the center of the middle third of the crown.

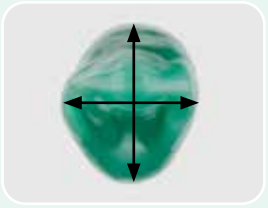
Labial surface is convex in all directions.



Widest anterior tooth labiolingually.



Geometrical shape of the crown from the incisal view is a diamond.



The mesiodistal width is smaller than the labiolingual dimension.

Small changes, big smiles

Polishing protocol for anterior composite restorations

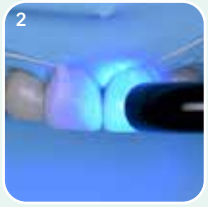
Polishing is an important step in the workflow of anterior direct restorations. Although it is a seemingly easy and straightforward procedure, it can be detrimental to the final aesthetics of an otherwise nicely sculpted restoration if wrong techniques and tools are used.

Surface roughness due to improper finishing and polishing can result in excessive plaque accumulation, gingival irritation, increased surface staining and poor aesthetics of restored teeth. Furthermore, the rough surfaces of the restorations present a very irritating factor to the oral soft tissues.

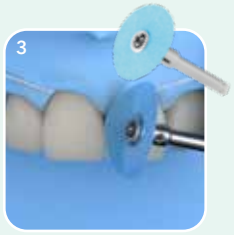
Implementing the correct sequence of the steps and using the optimal tools during the polishing protocol will ensure the longevity and aesthetics of the restorations and high satisfaction of the patients and dentists.

Step-by-step guide

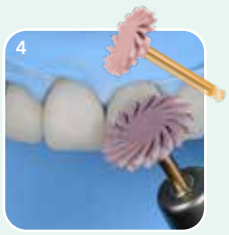
After applying the last layer of composite material, apply glycerin gel to the restorations.



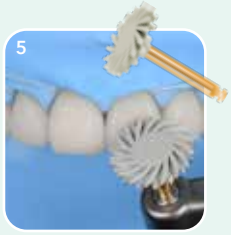
Light-cure over a layer of glycerin gel to remove the oxygen inhibition layer.



Use a medium polishing disk to remove any sharp edges.

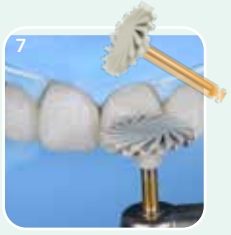


Polish with a medium composite polisher.

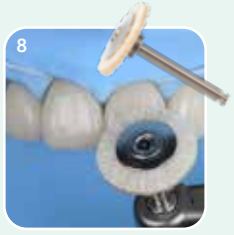


Polish with a fine composite polisher.

Create secondary anatomy with a diamond bur.



Re-polish with a fine composite polisher.



Polish with goat hair wheel and **DIAPOLISHER PASTE**.

Use **EPITEX** polishing strips for the fine polishing of the approximal surfaces.

Final result.

Small changes, big smiles

Material selection for anterior composite restorations

G-ænial A'CHORD
The advanced universal composite with unishade simplicity

- Excellent aesthetics with only 5 core shades
- Exceptional polishing and high gloss retention
- Naturally fluorescent end results under any lighting conditions

G-Premio BOND
One-component light-cured universal adhesive

- High bond strengths for long-lasting restorations
- Very thin adhesive layer (3µm) that prevents any discoloration of the restoration
- No postoperative sensitivity

G-ænial Universal Injectable
High-strength restorative composite

- Exceptional strength and wear resistance
- Unique thixotropic viscosity, optimal for free-hand build-up
- High polishability and gloss retention

GC MI Paste Plus
Bio-available calcium and phosphate with fluoride

- Contains RECALDENT
- It can be used overnight to enhance tooth repair and reduce hypersensitivity
- It is available in 5 delicious flavours that increase patient acceptance

GC Composite Modeling Kit
Liquid to model composite materials for direct restorations

- Quick and easy application and shaping of paste composites

EPITEX
Finishing and polishing strips

- Thin, flexible and wear resistant

DIAPOLISHER PASTE
Diamond polishing paste

- Superfine diamond particles (1µm) FOR ideal surface smoothness

GC EUROPE N.V. • Head Office • Researchpark Haasrode-Leuven 1240 • Interleuvenlaan 33 • B-3001 Leuven
Tel.+32 16 74 10 00 • Fax.+32 16 40 48 32 • info.gce@gc.dental • https://www.gc.dental/europe

GC Europe N.V.
Benelux Sales Department
Researchpark
Haasrode-Leuven 1240
Interleuvenlaan 33
B-3001 Leuven
Tel. +32 16 74 18 60
info.benelux@gc.dental

GC Germany GmbH
Seifgrundstrasse 2
D- 61348 Bad Homburg
Tel. +49 61 72 99 59 60
info.germany@gc.dental

GC FRANCE s.a.s.
8 rue Benjamin Franklin
F-94370 Sucy-en-Brie
Tel. +33 1 49 80 37 91
Fax. +33 1 45 76 32 68
info.france@gc.dental

GC Sverige AB
c/o Lundin Revisionbyrå
Erik Dahlbergsgatan 11B
SE-411 26 Göteborg
Tel. +46 8 410 344 90
Fax. +46 8 555 788 05
info.nordic@gc.dental

GC UNITED KINGDOM Ltd.
16-23 Coopers Court
Newport Pagnell
UK-Buckinghamshire MK16 8JS
Tel. +44 1908 218 999
Fax. +44 1908 218 900
info.uk@gc.dental

GC AUSTRIA GmbH
Swiss Office
Zürichstrasse 31
CH-6004 Luzern
Tel. +41 41 520 01 78
info.switzerland@gc.dental

GC ITALIA S.r.l.
Via Luigi Cadorna 69
I-20055, Vimodrone (MI)
Tel. +39 02 98 28 20 68
Fax. +39 02 98 28 21 00
info.italy@gc.dental

GC Danmark ApS
c/o Andersen Partners
Advokatpartnerselskab
Buen 11, 6
DK-6000 Kolding
Tel. +45 51 15 03 82
info.denmark@gc.dental

GC IBÉRICA
Dental Products, S.L.
Edificio Codesa 2
Playa de las Americas, 2, 1°, Of. 4
ES-28290 Las Rozas, Madrid
Tel. +34 916 364 340
Fax. +34 916 364 341
info.spain@gc.dental

GC AUSTRIA GmbH
Tallak 124
A-8103 Gratwein-Strassengel
Tel. +43 3124 54020
info.austria@gc.dental

GC Finland Oy
Lemminkäisenkatu 46
FIN-20520 Turku
Tel: +358 40 9000 757
info.finland@gc.dental

GC EUROPE N.V.
East European Office
Siget 19B
HR-10020 Zagreb
Tel. +385 1 46 78 474
Fax. +385 1 46 78 473
info.eeo@gc.dental

Discover GC courses:

Discover more about
Small changes, big smiles:

Discover all GC restorative solutions in
GC Restorative Dentistry app

Download on the App Store