

Application of Sectional Matrix System

Techniques of Composite Resin Restorations

Innovative and Reliable



Composite Resin Restorations

- Composite resin filling belongs to the category of direct bonding restorations. After decades of development and improvement, great progresses have been made in resin adhesive techniques, which tend to be mature.
- With advantages of easy operation, good color, high strength, wide application, maximum preservation of tooth tissue and aesthetics, composite resin filling is widely used in clinical practice.
- Composite resins are the most widely used direct composite at present.



Problems of Composite Resin Restorations

- Postoperative sensitivity or pain: First to identify it is endodontic or periodontal. Endodontically, the condition of the pulp should be accurately judged, rebase before filling, dentin collagen fiber does not collapse, seal dentin tubular, filling acid etching illumination method is correct. Periodontally, to see if there is high occlusal point or overhang in proximal surface.
- Food impaction: The proximal contact is not recreated correctly. The position of approximal points are not proper.
- Microleakage and recurrent caries: Resin composite restorations are predisposed to microleakage. It is better to use fluid resin as a cavity liner prior to restoration. After the restoration, there should be no overhang. Proper finishing and polishing increases longevity of restorations.
- Loss of the restoration: The main reasons are the failure of bonding, the wrong method of preparing and filling the cavity or tooth, and the effect of resin polymerization shrinkage.

Composite Restorations

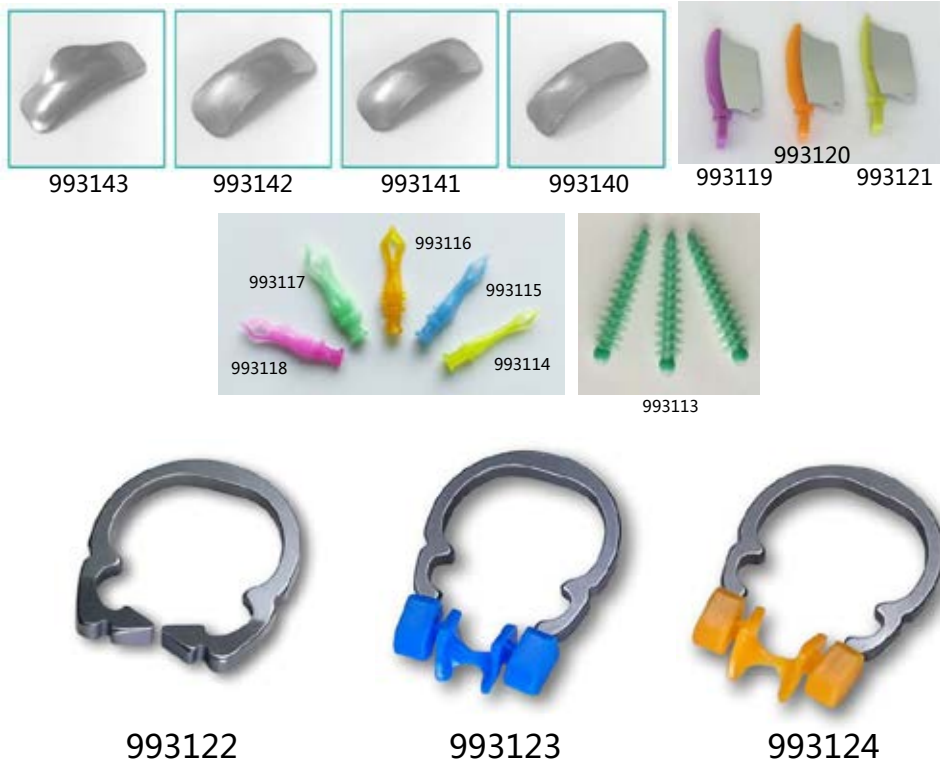
Requirements for Composite Restorations

- The Direct Composite Restorations with directly placed resin-bonded composite requires meticulous operative technique in order to ensure success. It also takes a lot of time to rebuild the proximal contact of composite restorations and conduct the finishing and polishing to avoid overhang carefully.
- The expert clinical operating techniques and suitable tools and instruments are required for the success of Direct Composite Restorations.

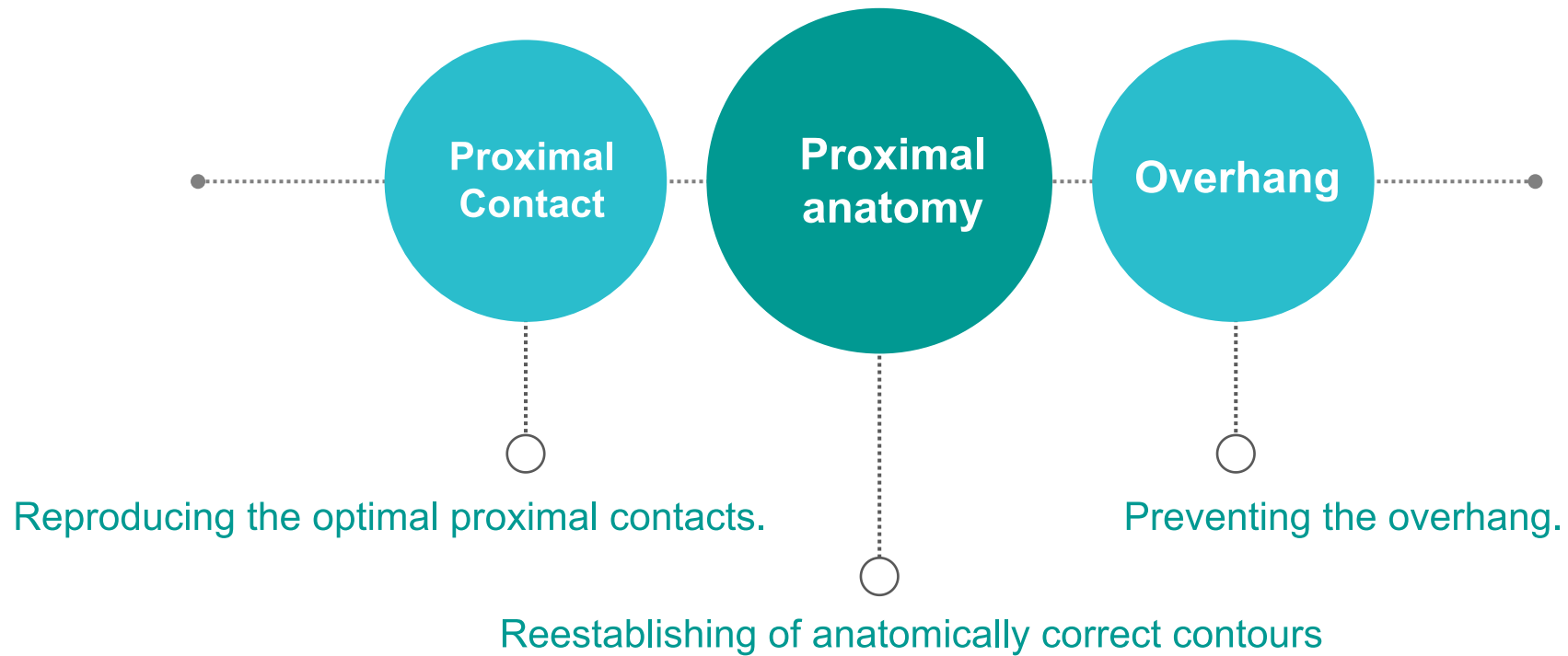


Composite Restorations

Sectional Matrix System



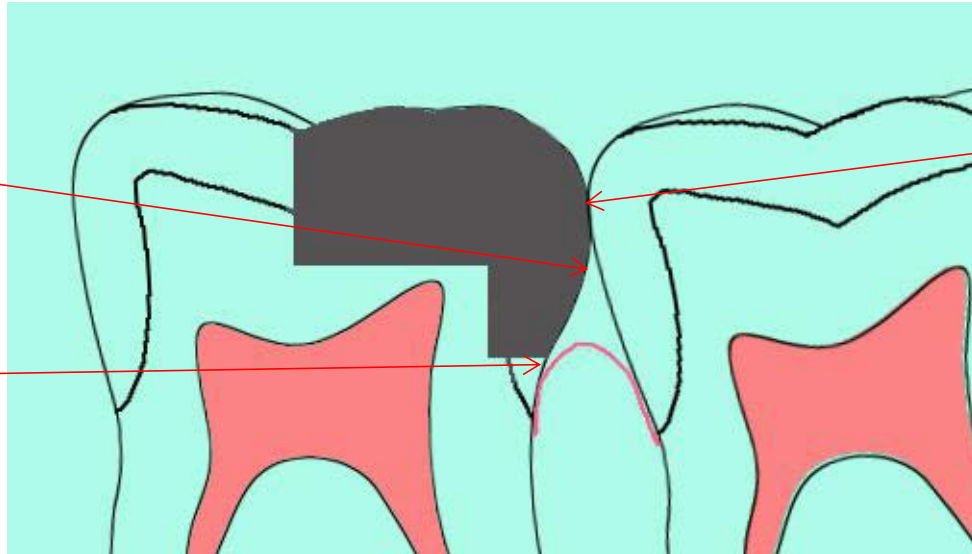
Three Key Points of Composite Restorations



Three Key Points of Composite Restorations

Reestablishing of anatomically correct contours

Preventing the overhang.



Reproducing the optimal proximal contacts.

1.Reestablishing of anatomically correct proximal contours

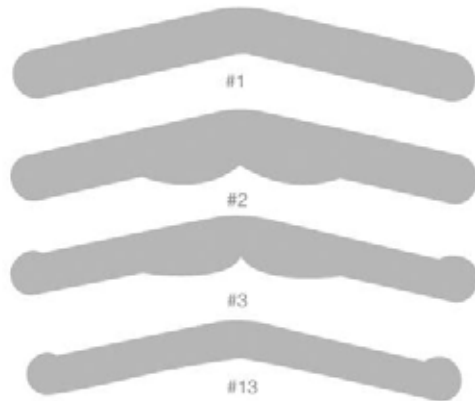
● Anatomically, the occlusal proximal surface of molars is convex, while facial is concave. And the proximal surface is elliptical from the buccal tongue. Its top is about 1 mm from the top of the marginal ridge. In the tooth abutment pointing down towards the enamel bone boundary, there is concave that is used to hold the gingival papilla in gums.



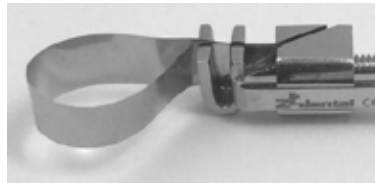
Anatomic morphology of molar proximal surface

Reestablishing of anatomically correct proximal contours

- Traditional matrix band and holder circumferential systems often result in anatomically incorrect restorations, with a flat proximal contour and contact points too near the marginal ridge.



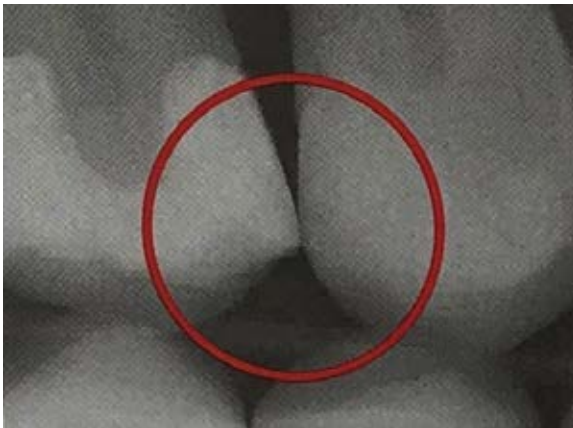
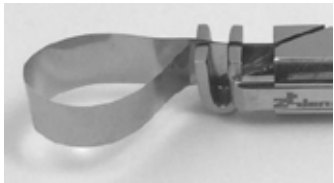
Inappropriate



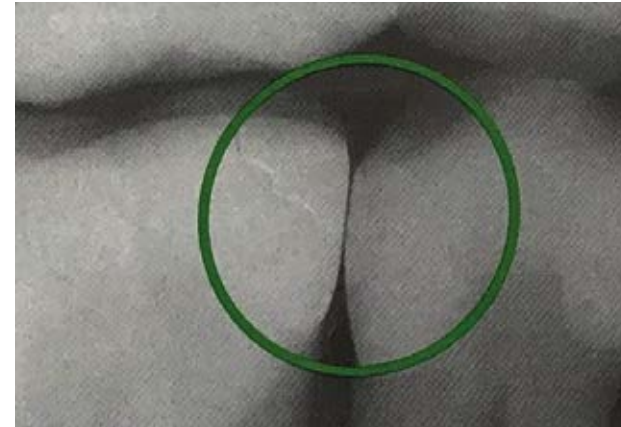
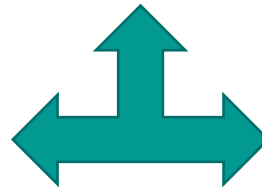
Inappropriate

Reestablishing of anatomically correct proximal contours

- Without the support of normal proximal surface, the interdental papilla cannot completely fill the gingival space which will lead to food impaction and accumulation of bacterial plaque.



Inappropriate

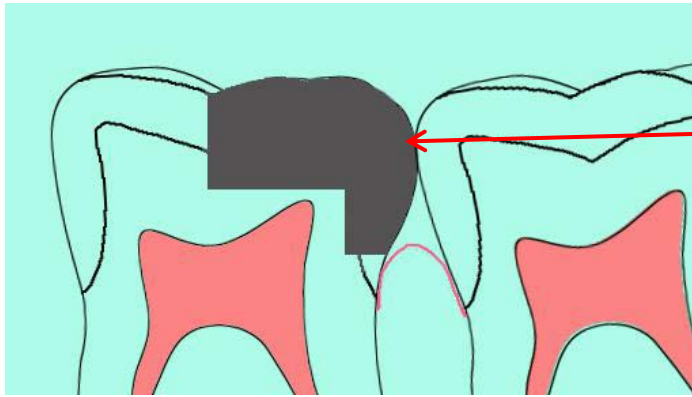


Proper



Reestablishing of anatomically correct proximal contours

- Selecting the appropriate matrix bands is a key step for recovering the right proximal anatomy.



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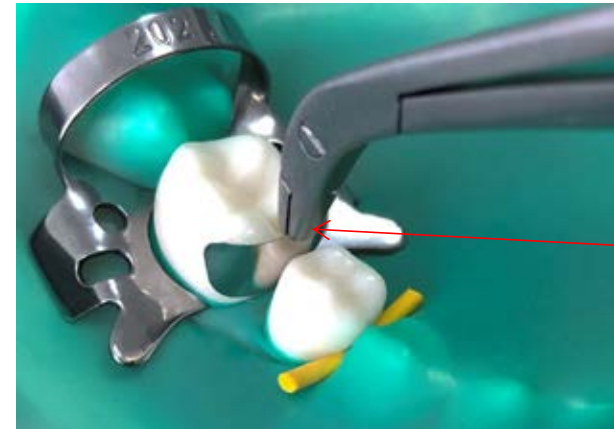
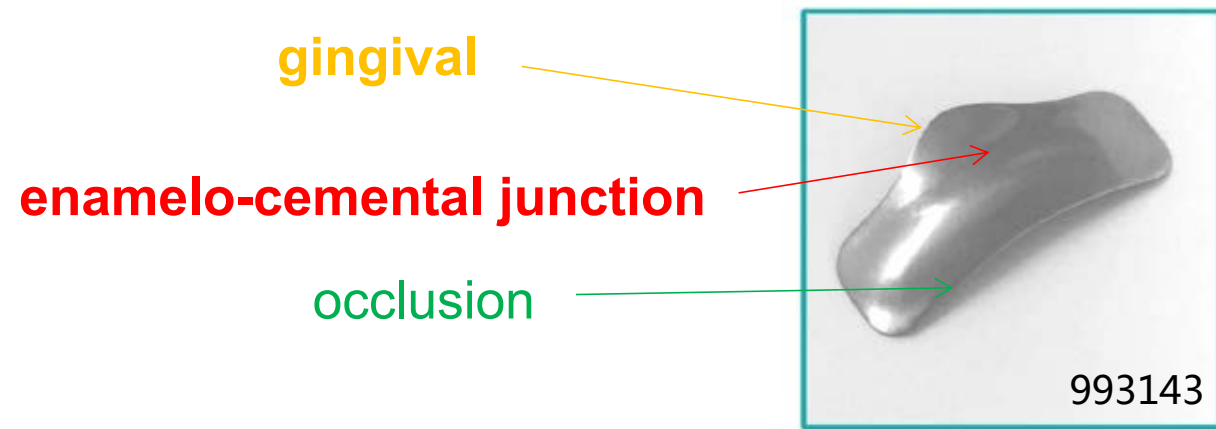


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Sectional Matrix Bands: 0.038mm, soft and flexible

Reestablishing of anatomically correct proximal contours

- Restorations reshape the marginal ridge, approximal point and most of the proximal surface. The shape and placement of matrix bands are significant in the process of reshaping.



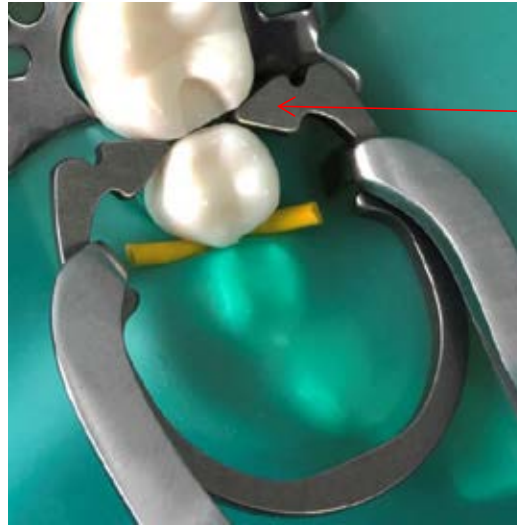
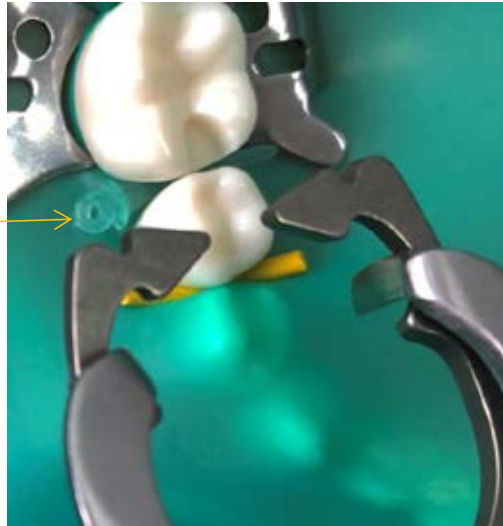
Place the sectional matrix precisely

Sectional Matrix Bands

Re-establishing of anatomically correct proximal contours

- How does the separating ring work

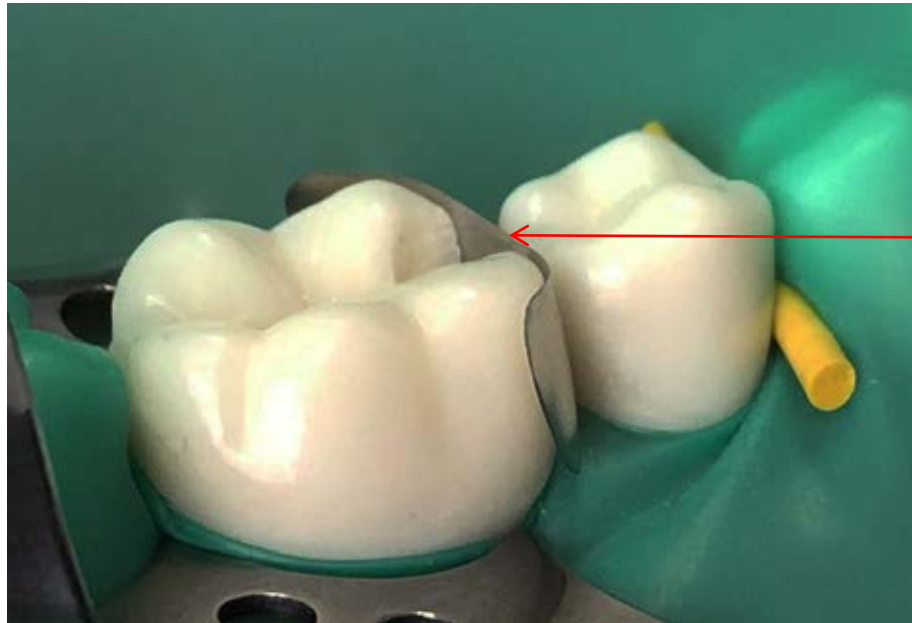
Place the separating ring on the interdental wedge to protect gingival tissue, preventing gum trauma.



If the adjacent teeth are too close to replace the matrix band, the separating ring can be placed firstly, and then put the matrix band.

Re-establishing of anatomically correct proximal contours

- The matrix band will impact the width and height of approximal surface, so the proper selection of matrix band matters. The height of the matrix band should not exceed that of the marginal ridge of the adjacent teeth.



Select the matrix band with proper height which should not exceed that of the marginal ridge of the adjacent teeth.

Re-establishing of anatomically correct proximal contours

● Specifications of sectional matrix bands



Order No.	993140	993141	993142	993143
Specification	<div>Bicuspids 4.5 mm</div> <div></div>	<div>Molar 5.2 mm</div> <div></div>	<div>Tall molar 6.4 mm</div> <div></div>	<div>Molar with extensions 6.4 mm</div> <div></div>
thickness	0.038mm			
Packing	50pcs/box			

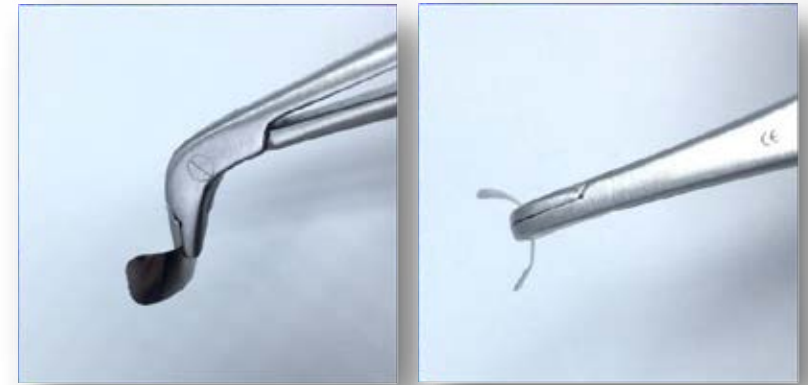
Re-establishing of anatomically correct proximal contours

- To place the matrix band precisely, specialized forceps are needed to ensure the right direction and position without bending or damaging them.

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Forceps for placing sectional matrix bands



Reproducing the optimal proximal contacts

- The recovery of position of approximal points is vital, requiring outstanding skills and proper instruments.



Proximal area is the surfaces of two adjacent teeth in the same arch touch. The area in posterior is larger than in anterior and it is closer to gingiva with more proximal contact tightness.

Reproducing the optimal proximal contacts

- It is an effective way to reconstruct the proximal contacts and prevent the vertical food impaction by using the separating ring to adjust the physical degree of teeth mobility before restorations.



Separating teeth without impaction

Reproducing the optimal proximal contacts

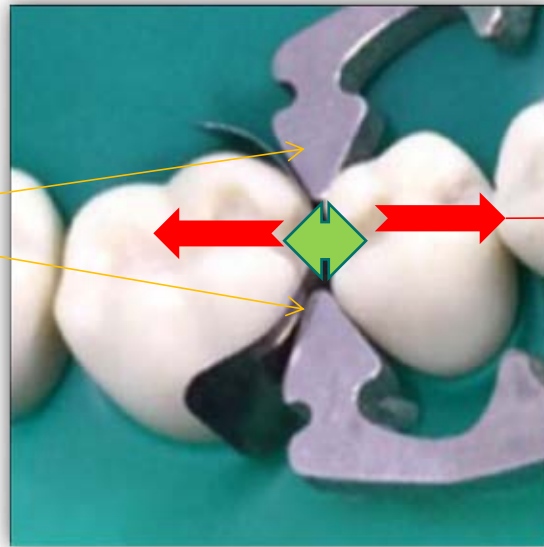
- The insertion of composite restorations will lead to interproximal gap and food impaction due to the resin shrinkage, the thickness of matrix band and polishing. The separating ring in the sectional matrix system is specially designed to prevent their occurrences. It clamps the matrix band, meanwhile it creates an effective force to separate the adjacent teeth during the insertion. After the removal of the separating ring, the adjacent tooth returns to the original location with tight proximal contact to avoid food impaction.



Reproducing the optimal proximal contacts

- The separating ring in the sectional matrix system is specially designed to prevent their occurrences. It clamps the matrix band, meanwhile it creates an effective force to separate the adjacent teeth during the insertion. After the removal of the separating ring, the adjacent tooth returns to the original location with tight proximal contact to avoid food impaction.

**Retention force of
separating ring**



**The adjacent tooth moves within the
physical degree of mobility**

Reproducing the optimal proximal contacts

- The separating ring in the sectional matrix system is specially designed to prevent their occurrences. It clamps the matrix band, meanwhile it creates an effective force to separate the adjacent teeth during the insertion. After the removal of the separating ring, the adjacent tooth returns to the original location with tight proximal contact to avoid food impaction.

Stress point



Proper angle ensures the force balance

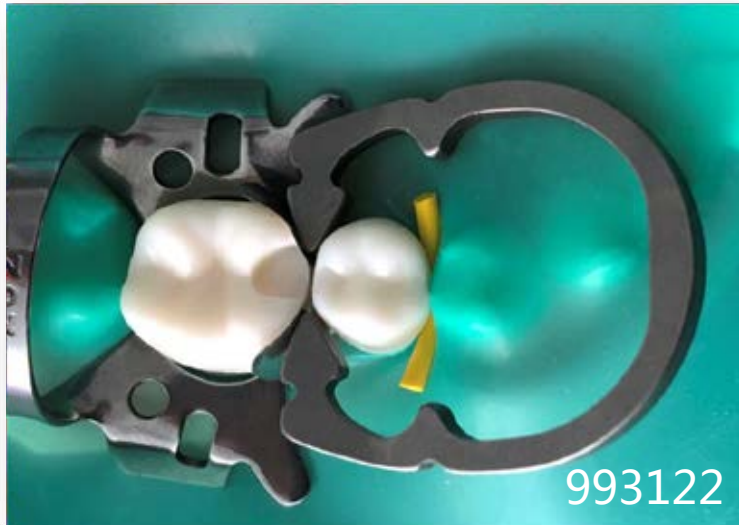
Reproducing the optimal proximal contacts



It is easy and efficient to clamp the matrix band by using the separating ring, especially for low-crown and narrow restorations.

Reproducing the optimal proximal contacts

- The separating ring is made of nickel-titanium, especially suitable for low-crown and narrow restorations. It can perfect match the interdental wedges and function as separating, clamping and retention, without collision with rubber dam clamps.



Function as separating, clamping and retention

Reproducing the optimal proximal contacts

- Placing the wedge guard during the preparation to protect the proximal tooth with the function of separating



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To protect the proximal tooth

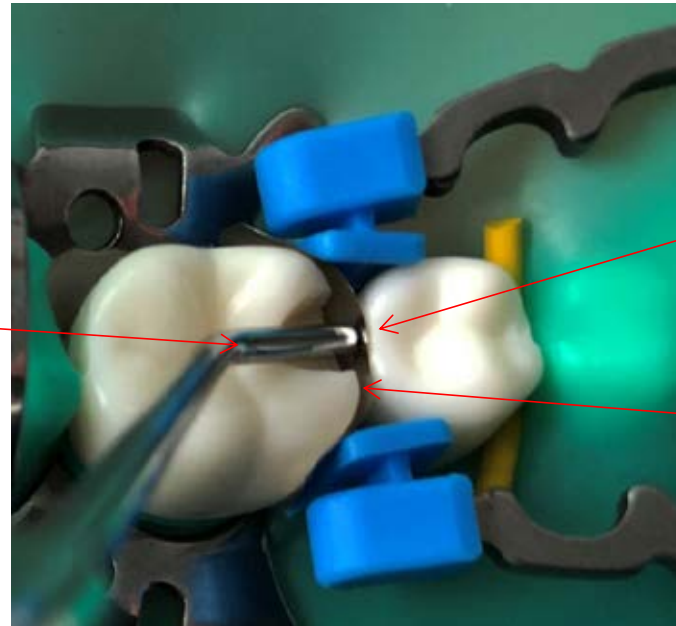


Protecting the proximal tooth,
separating the teeth in the meanwhile

Reproducing the optimal proximal contacts

- Due to the convex morphology of proximal contacts, the approximal point should be in the location around 1mm below the top of marginal ridge.

Shaping the matrix band with a oval tip instrument to reconstruct the proximal contact



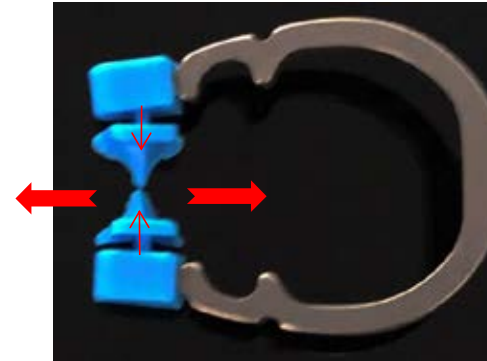
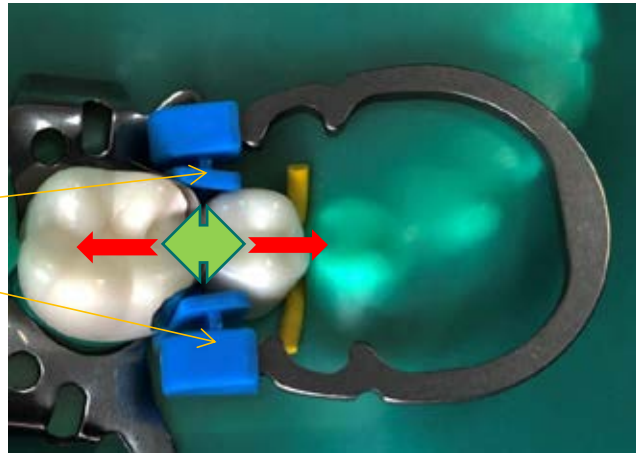
The proximal contact is 1mm below the top of marginal ridge.

The matrix band is soft and easy to reshape.

Reproducing the optimal proximal contacts

- Clamps with wedge-shaped tips-the important tool for both separating and retention
Three functions: separating, retention and tight contact

Separating and
retention



Separating force of the
wedge-shaped tip

Reproducing the optimal proximal contacts

- There are 2 kinds of wedge-shaped clamps: blue for premolars and orange for molars. They are used with adaptive wedges and diamond wedges.



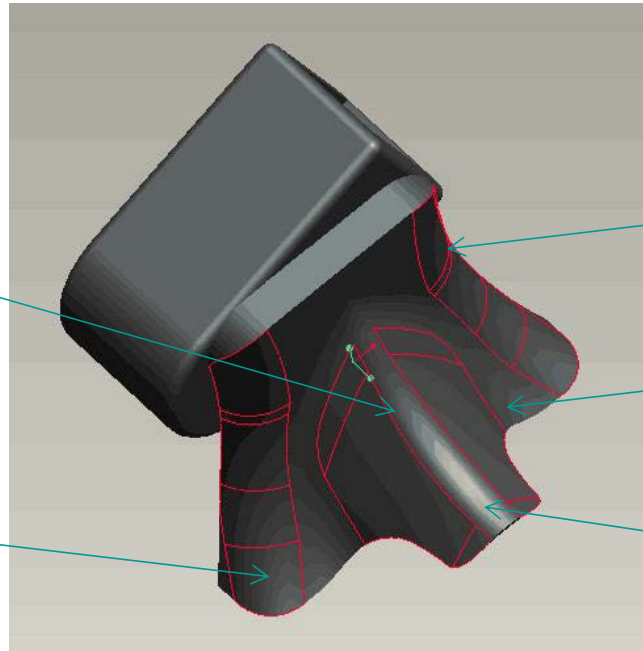
Reproducing the optimal proximal contacts

- The clamp tip includes two wings, an extrude and two arc edges.

Retention

The extrude can wedge in the gap to fix the position

The bottom part can insert in the undercut to fix the position



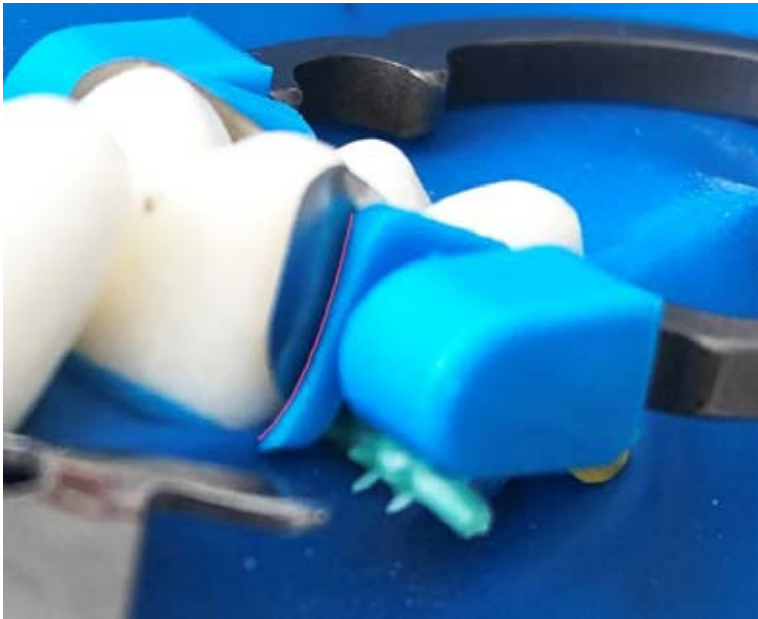
Tight contact

Tight contact between cavity and buccal margin

Tight contact between arc edge and cavity edge

Tight contact between wedging extrude and subgingival area of cavity

Reproducing the optimal proximal contacts



Tight contact between wings and buccal margin



Tight contact between arc edge and cavity edge

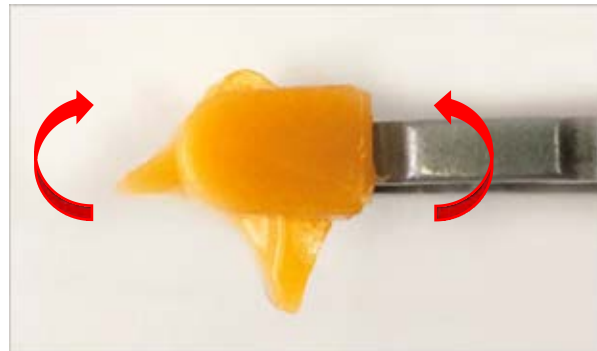
Reproducing the optimal proximal contacts

- Wedge-shaped clip tips is capable of three-dimensional deformation to fit various dental contour and irregular tooth alignment. Especially for No. 5 and No. 6, there is obvious difference, It can make the deformations to keep the tight contact, separate teeth and fix the position.

Three-dimensional deformation of wedge-shaped clip tips



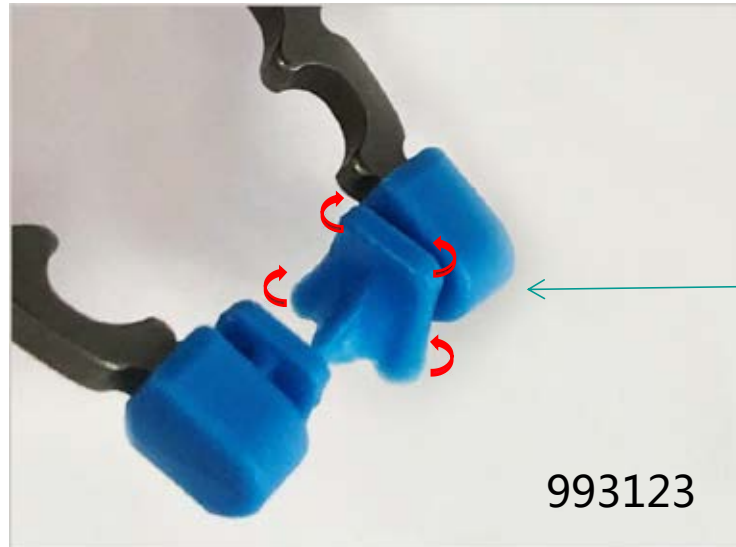
Vertical deformation



Horizontal deformation

Reproducing the optimal proximal contacts

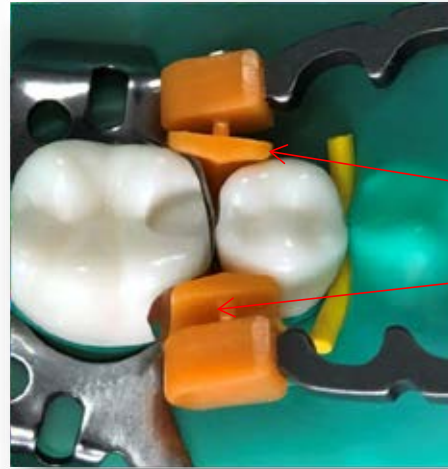
Deformations



Wings of the tips can be reshaped to fit contours of teeth.

Reproducing the optimal proximal contacts

Reshaped



Reshaped

Reshaping of tips during the application

Reproducing the optimal proximal contacts

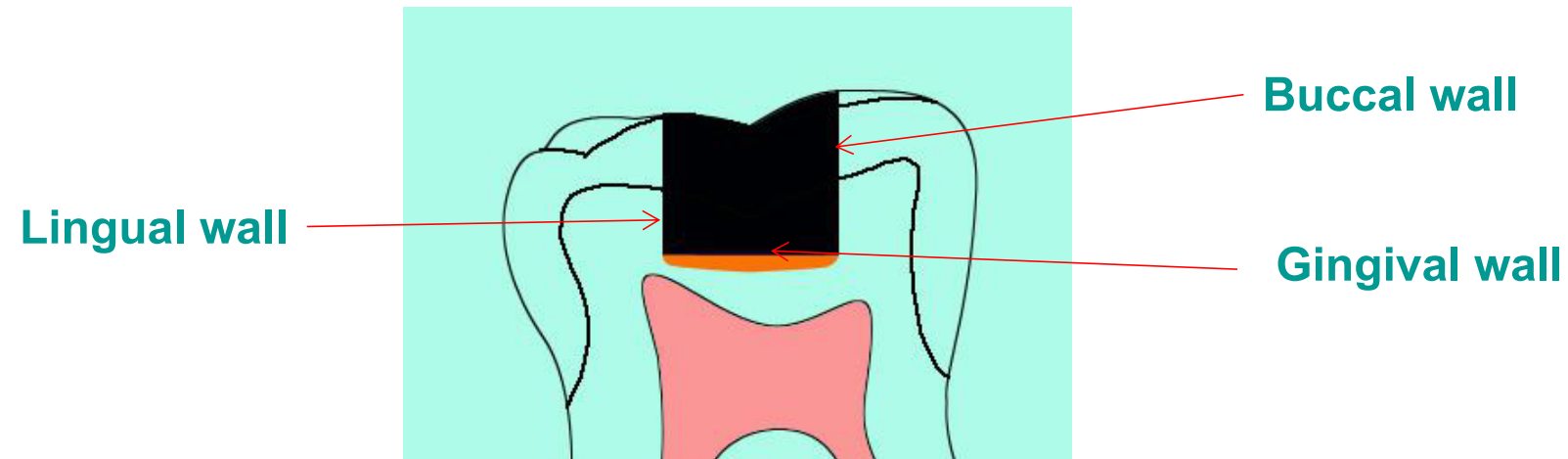
- The configuration of clip forceps is customized which makes the forceps much safer and easier to use.



Forceps for clips

Prevention of overhangs

- The proper process of gingival margin in composite restoration is imperative to the prevent of overhangs.



Prevention of overhangs

- The clip tip should make the matrix band be in tight contact with lingual margin



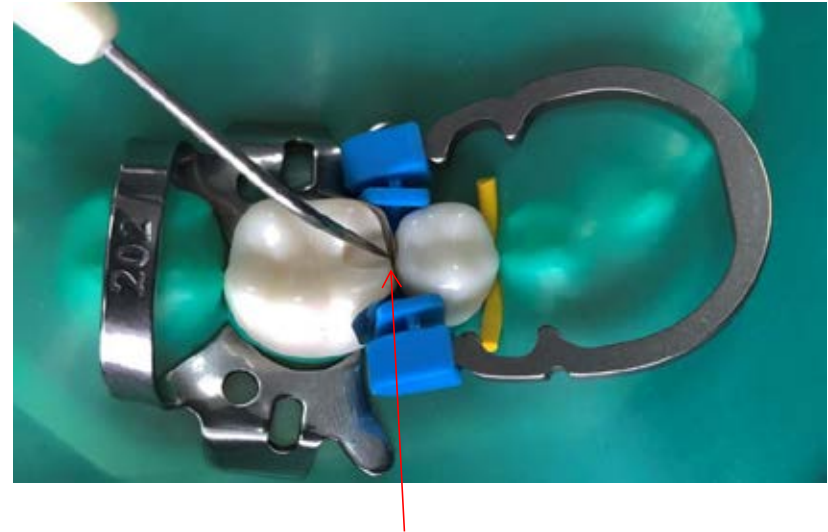
Tight contact between matrix band and lingual margin

Prevention of overhangs

- The tight contact can be achieved by the matched functioning of wedges and clip tips.



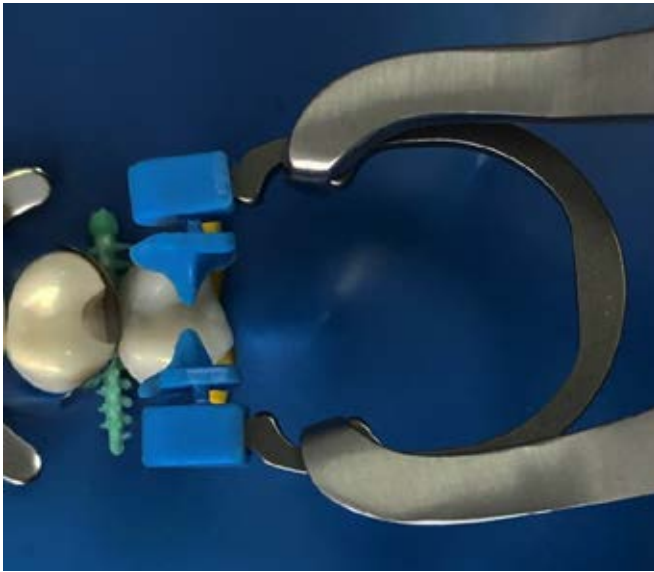
**Gingival
wall**



**Tight contact between matrix band
and gingival margin**

Prevention of overhangs

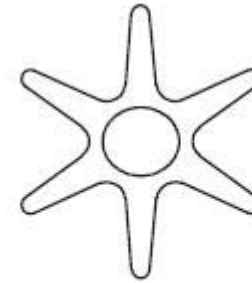
- The tight contact can be achieved by the matched functioning of wedges and clip tips.



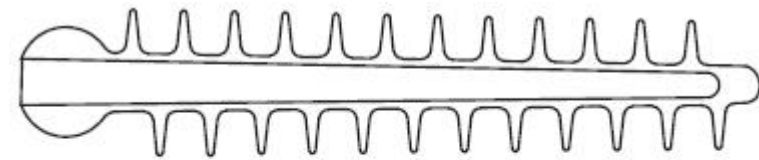
The use of adaptive wedge and wedge-shaped clamp

Prevention of overhangs

Adaptive wedges

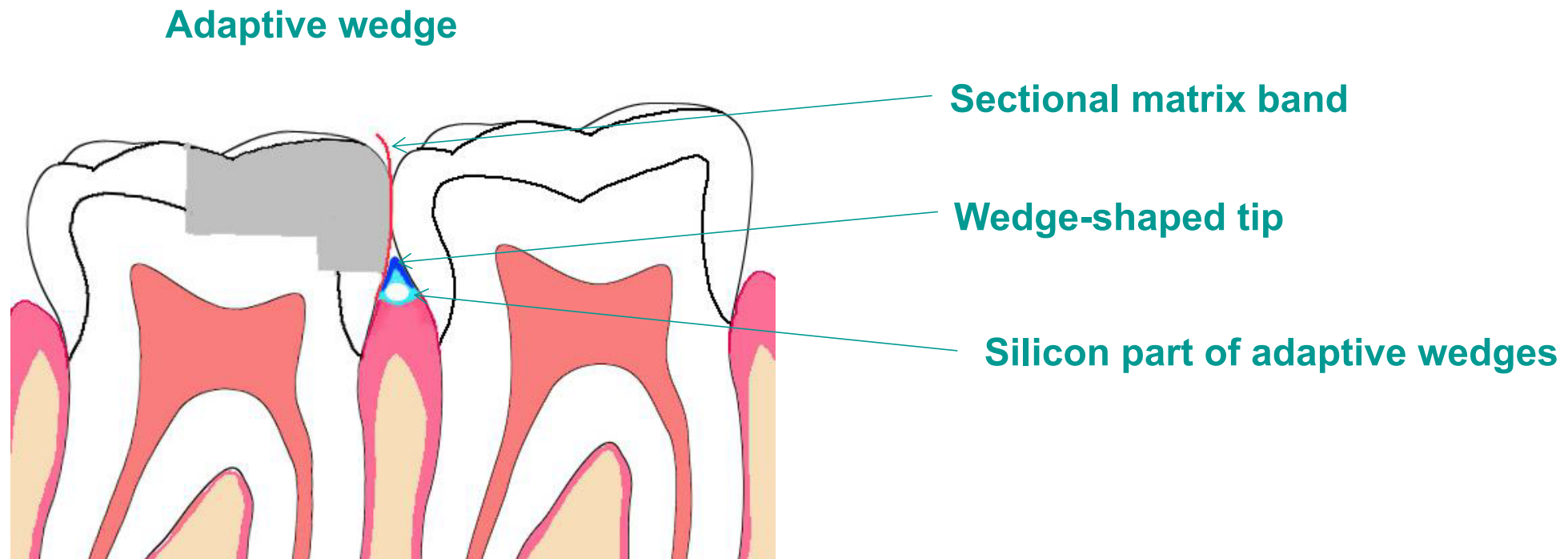


Inner core intermediate section: 0.75mm*0.6mm
Total diameter of silicone bur: 3mm

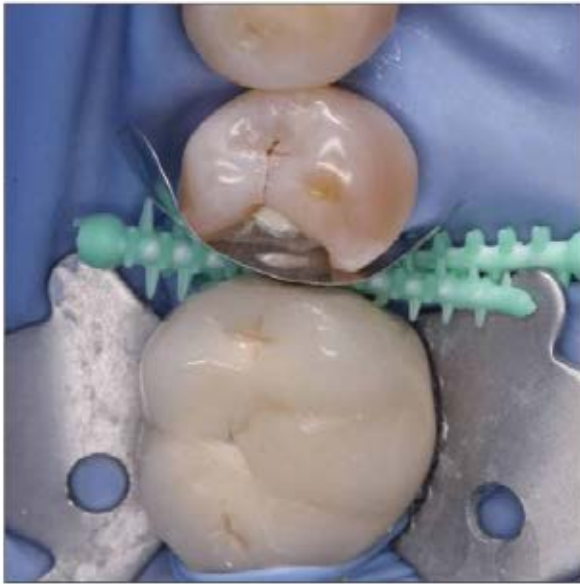


Total length: 16mm
Head diameter about: 1mm
Tail diameter about: 0.5mm

Prevention of overhangs

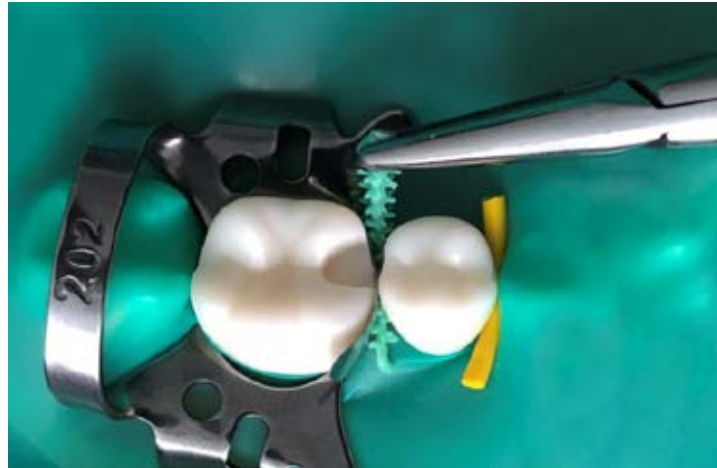
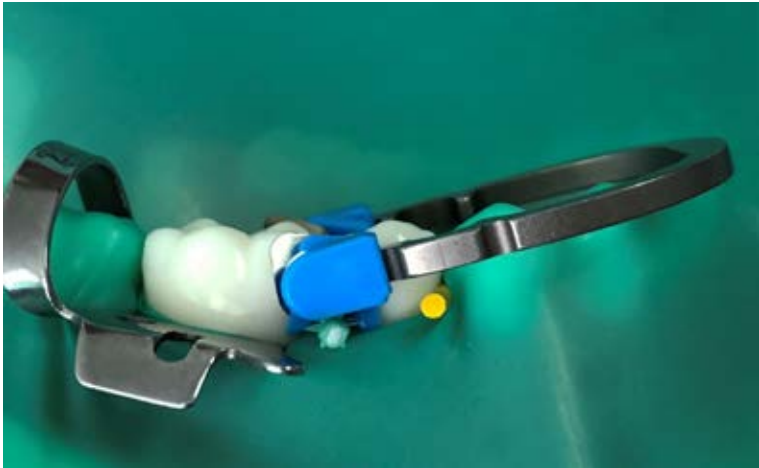


Prevention of overhangs



Hard core and soft silicon cover of wedges

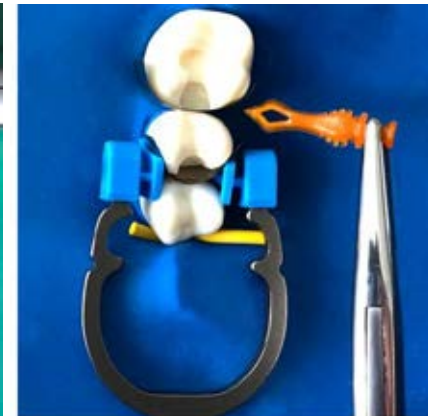
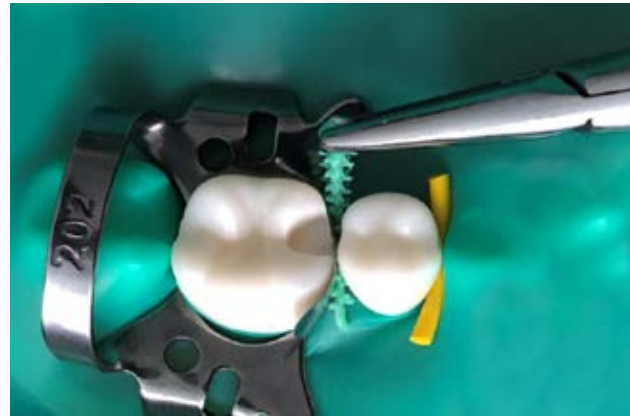
Prevention of overhangs



Matching with adaptive wedges

Prevention of overhangs

- It is easy to insert and take out wedges when the special forceps are used.



Forceps for placing wedges

Prevention of overhangs

Diamond Wedges



Prevention of overhangs

Diamond Wedges

Strong internal spine creates tooth separation, increases seal at proximal box

Notched handle for easy to hold, place and remove.

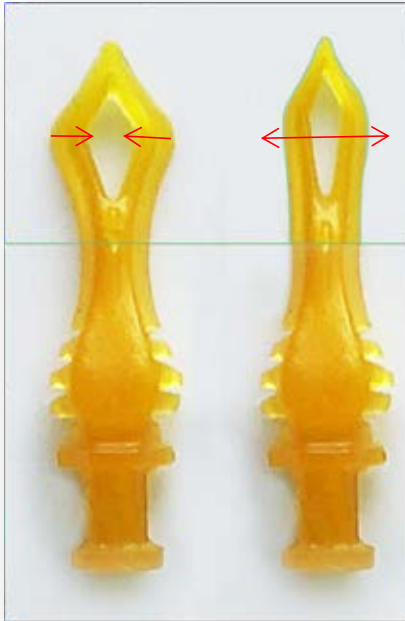


Collapsing tip for easy placement, rebounds when fully seated

Ideal contour to provide matrix/wedge/tooth seal to minimize flash and eliminate overhangs

Prevention of overhangs

Diamond wedge



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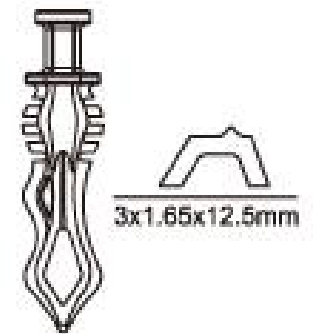
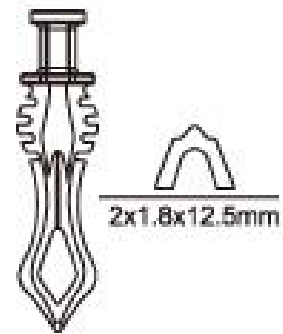


Collapsing tip for easy placement, rebounds when fully seated

Prevention of overhangs

Diamond wedge

5 Styles



Prevention of overhangs

Diamond wedge



The use of diamond wedges and wedge-shaped clamp

Prevention of overhangs

- A key process to prevent overhangs in composite restorations: finishing and polishing for the proximal surface



Finishing and polishing for the proximal surface

Prevention of overhangs



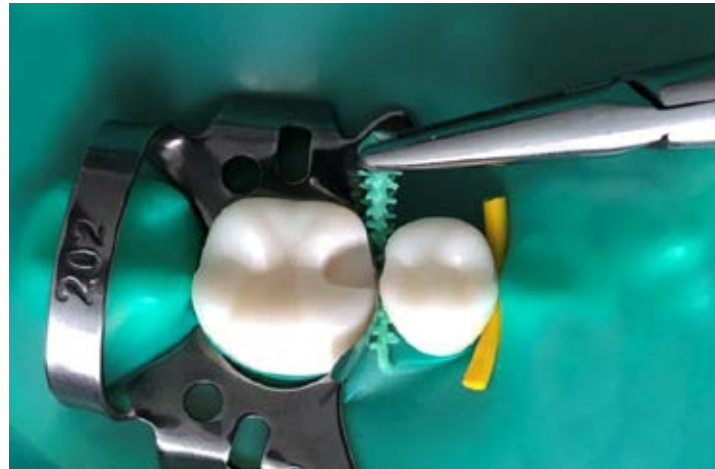
Finishing and polishing for the proximal surface

Application of sectional matrix brand system

- Application of sectional matrix system: only three steps (separating ring)



Step 1:
Placing the sectional matrix band



Step 2:
Placing wedges



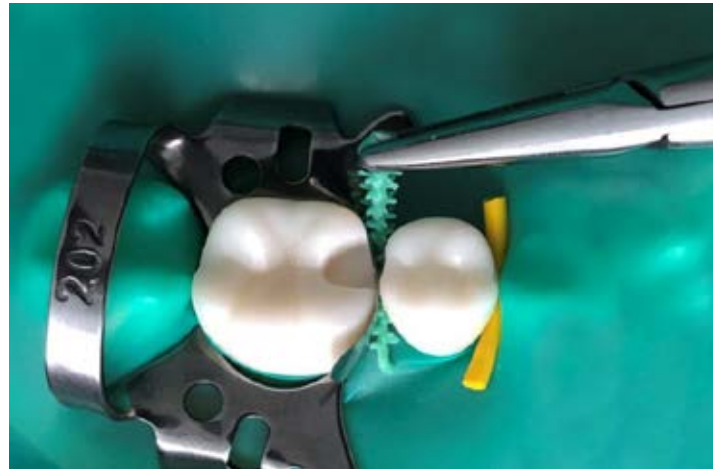
Step 3:
Placing separating ring

Application of sectional matrix brand system

- Application of sectional matrix system: only three steps (wedge-shaped clamp)



Step 1:
Placing the sectional matrix band



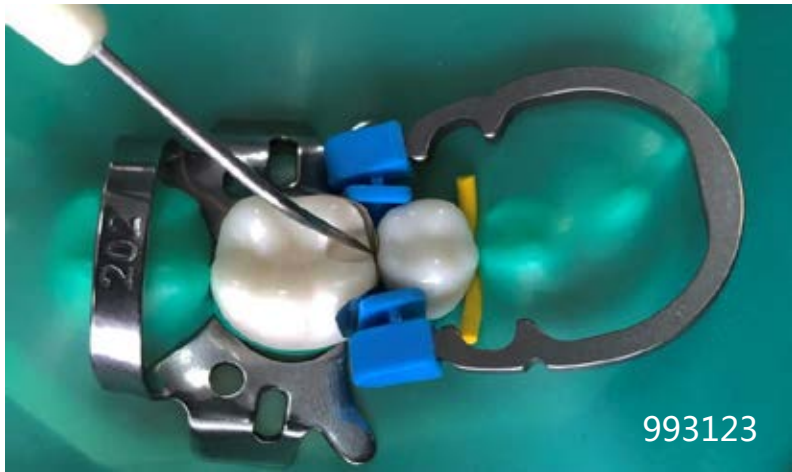
Step 2:
Placing wedges



Step 3:
Placing wedge-shaped separating clamp

Application of sectional matrix band system

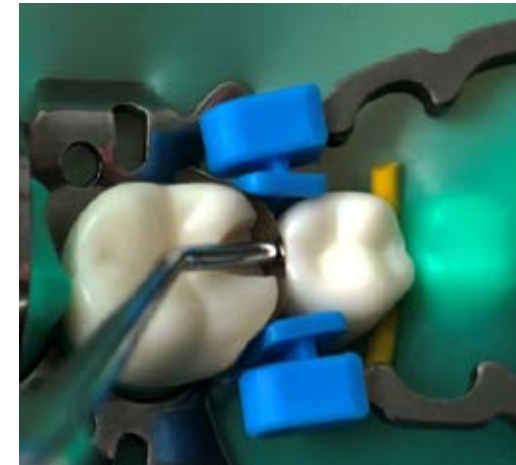
- It is easy to use the sectional matrix system, just focusing on 3 points, gingival margin, buccal margin and approximal point.



Key 1:
tight contact with gingival margin



Key 2:
tight contact with
buccal margin



Key 3:
Reshaping for approximal point

Application of sectional matrix band in composite resin restorations

