Indications, Tooth Preparation & Cementation

INDICATIONS

TECHCERAM™

- Single Unit Upper and Lower Crowns and Onlays 5-5.
- Upper Anterior Veneers - Incisal Overlay Design (Cojet Recommended).

IPS e.max® Press

- Single Unit Upper and Lower Crowns and Onlays 5-5.
- Upper Anterior Veneers - Incisal Overlay Design
- Premolar and Molar Inlays (All e.max Restorations - Etching Required).

In-Ceram Alumina/Zirconia

- Single Unit Implant Retained Crowns

Lava™

- Single Unit Crowns.
- Single Unit Upper Anterior Veneers (Cojet Recommended).
- Anterior Maryland Bridges (Cojet Recommended).
- 2 Unit Anterior Cantilever Bridges.
- 6 Unit Anterior Bridges (4 adjacent pontics).
- 6 Unit Posterior Bridges (2 adjacent pontics).
- Posterior Bridge with Cantilevered Premolar must incorporate 2 abutments.
- Splinted Crowns up to 41mm anatomical length.
- Implant retained Crowns and Bridges.

ZirCAD

- Single Unit Crowns.
- Single Unit Upper Anterior Veneers (Cojet Recommended).
- 2 Unit Anterior Cantilever Bridges.
- 6 Unit Anterior Bridges (4 adjacent pontics).
- 6 Unit Posterior Bridges (2 adjacent pontics).
- Posterior Bridge with Cantilevered Premolar must incorporate two abutments.
- Splinted Crowns up to 41mm anatomical length.
- Implant retained Crowns and Bridges.

TOOTH PREPARATION

CROWNS (INC POST CORE), ONLAYS & BRIDGES

- Anterior teeth should be reduced by 2.0 mm incisally. The incisal edge should be rounded and have a plateau width of at least 0.9mm labio-lingually. Fig.1
- Posterior teeth should be reduced by 1.5-2.0mm occlusally. Occlusal relief should be simple with an opening angle of no less than 120-140°. Fig.2
- Lateral edges should be prepared with a minimum 3° taper and no undercuts, to allow precise fitting. Fig.3
- Parallel sided preparations are contraindicated.
- Margins should be a SHOULDER PREPARATION and be reduced by 1.0mm, with a rounded axio-cervical line angle. Fig.4
- For post core type restorations, fibre posts/composite cores are the natural compliment to all-ceramic crowns. If non-precious/grey coloured metal posts are prescribed, then an opaque porcelain can be applied at the laboratory, to provide the appropriate background shade match.

  If the post is already in situ, a larger amount of opaceous dentine can be used in the porcelain build up and if necessary an opaque resin cement should be used.

  Gold post/cores do not normally require any special treatment.
- Path of insertion for Lava and Cercon bridge restorations must allow for a cone angle of 2 x 3° on corresponding axial surfaces of abutment preps. Fig.5a, 5b
- All faces should be prepared in a smooth, rounded manner.
- Sharp edges or excessive tapers are contraindicated.

MARYLAND BRIDGES

- Refer to 3M ESPE Prep Guide

INLAYS

- Preparations should have slightly divergent buccal/lingual walls. Internal angles should be rounded off.
- Any undercut areas should be blocked out with glass ionomer prior to taking an impression.
- Depth and width of cavity should ideally be in the order of 3-4.0mm. For deeper cavities, depth can be reduced via the application of a glass ionomer liner.
- Occlusally a butt finish is recommended.

VENEERS

- An incisal overlap design is recommended; this design promotes long term function and optimal aesthetics. The overlap should be extended to approximately 1.0mm lingually. Incisal reduction should be performed as indicated for anterior crowns. If a tooth is discoloured then labial reduction should be increased from 1.0-1.2mm. Proximally and cervically a defined 1-1.2mm shoulder should be prepared, to accommodate the overall thickness of the veneer.
- Over extension of the veneer proximally to prevent clear path of insertion is contraindicated.

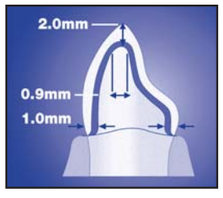

Fig.1

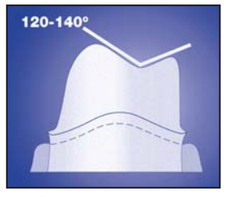

Fig.2

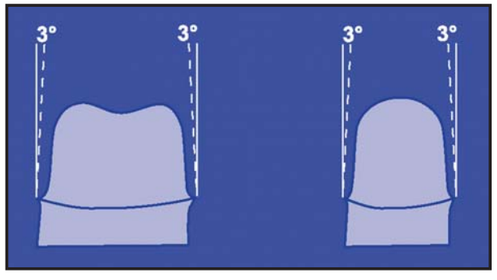

Fig.3

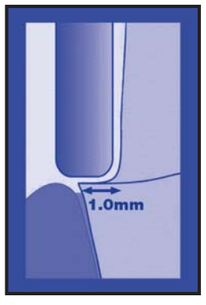

Fig.4

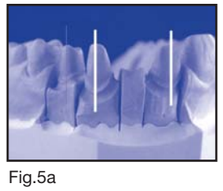
Fig.5a

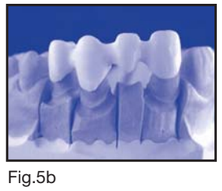
Fig.5b

- If a significant amount of resin-modified glass ionomer or compomer is used to re-contour a tooth prep, sufficient time should be allowed to take account of any post-set expansion, prior to taking impressions for the final restoration.

CEMENTATION

TECHCERAM

Techceram now has fourteen years of clinical feedback experience, with single unit alumina ceramic restorations. The most successful cementation materials for Techceram all-ceramic restorations, are the dual/self-cure resin cements. In anterior positions glass ionomer cements have also been used successfully, although longer term biocompatibility is enhanced with dual cure resin cements.

LAVA & ZirCAD

For Lava and ZirCAD single unit and multiple unit bridge restorations, Techceram recommend that dual/self-cure resin cements are used, as they will optimise long term function and biocompatibility.

IPS e.max® Press

e.max Press is a glass-ceramic material and should be etched (5%HF) for 20 seconds immediately prior to cementation.

PROCEDURE

- Restoration should be checked on the production model.
- Clean prepared tooth surface and try restoration on (dry) for marginal integrity and fit.
- Carefully clean restoration in a solvent such as acetone or alcohol.
- Clean tooth with oil free pumice and water. Wash and dry.
- Occlusal check should ideally be conducted after cementation.
- Heavy occlusal forces at the try-in stage can result in fracture of the restoration.
- To optimise adhesive bond to restoration fit surface see information below.
- Apply suitable bonding agent/cement (see recommended cements).
- When seating the restoration, use a gentle vibrating motion. Light finger pressure should be applied until the cement is set or resin cured.
- Any necessary adjustment may be made using a fine diamond bur and water spray and subsequently polished.

VENEER RESTORATIONS

It should be noted that for Veneer type restorations, which are cemented to a tooth, which is only prepped into enamel, an etch/bond resin technique should be used e.g. Rely X Veneer Cement. Rely X Unicem can be used for cases which have more depth and are prepped into dentine, although the issue of colour stability should be taken into consideration if an aesthetic match is critical, as in the case of a single central veneer. In such cases Rely X Veneer Cement should be used. For Techceram, LAVA and ZirCAD fixed Veneers the inner fit surface should be cleaned and dried following any final fit procedure and treated with Cojet immediately prior to cementation.

Ideally any HF etching and certainly Cojet treatment should be conducted on a clean, dry surface immediately prior to cementation.

MARYLAND RESTORATIONS

For cementation of LAVA Maryland type restorations refer to the 3M ESPE Prep Guide. The inner fit surface of the wing should be cleaned and dried following any trial fit procedure and treated with Cojet immediately prior to cementation.

RECOMMENDED DUAL/SELF-CURE RESIN CEMENTS:

1. Rely X Unicem (3M ESPE)
2. Panavia F, X, or 21 (Kuraray)
3. Nexus 2, NX3 (Kerr)
4. Variolink II, Multilink Automix (Ivoclar)
5. Calibra, SmartCem2 (Dentsply)

Rely X Unicem incorporates its own etching and bonding agent and thus does not necessarily involve the extra steps of etching and bonding, normally associated with the adhesive bonding technique. Some clinicians do however still prefer to etch any exposed enamel, in order to optimise the bond achieved in the marginal area.

CONTRAINDICATED CEMENTS

- Fuji Plus (GC)
- Rely X Luting (3M ESPE)
- Dyract-cem (Dentsply)
- Embrace (Pulpdent)

At present Techeram contraindicate the use of Resin-modified Glass Ionomer and Compomer cements for bonding All-ceramic restorations. These cements contain HEMA resin which is hydrophilic and can result in post-set expansion. This may cause delayed fracture in an all-ceramic restoration. Examples of such cements are given above.

It should be noted that Rely X Luting cement is presently an indicated cement in the Lava clinician brochure. Techeram believe that the post-set expansion of this cement is too high to be used with any all-ceramic restoration.

OPTIMISATION OF ADHESIVE BOND TO RESTORATION FIT SURFACE

Techeram alumina substructures incorporate a small amount of glass phase which aids colour, translucency and final sintered strength. Due to the flame spray technique used and the microstructure produced, it is possible to etch the inner fit surface of Techeram restorations if desired (60 secs, 9%HF ultradent gel etchant).

Experience over the past 14 years however, shows that grit blasting the inner fit surface of the final Techceram restoration using 110μm alumina at the Laboratory, yields a surface that is sufficiently micro-retentive for optimal physical bonding with cements for crown and onlay type restorations without the need to etch.

For Techceram Upper Veneer restorations the inner fit surface should be cleaned and dried following any trial fit procedure and either etched or treated with Cojet immediately prior to cementation.

Lava and ZirCAD zirconia substructures do not incorporate any glass phase. Etching the inner fit surface has no beneficial effect. Grit blasting with 110μm alumina, only acts to “slightly” roughen the fit surface, hence it is difficult to treat the fit surface to yield optimal “physical bonding” with cements. This treatment is however commonly used for crown and bridge type restorations.

It is recommended that with Lava and ZirCAD Veneers and Maryland wings that the inner fit surfaces are treated with the 3M ESPE Cojet system, to give optimal “chemical bonding” with cements. Applied using a conventional hand held microblast unit, at the surgery, the inner fitting surface of the restoration is impregnated with a silicatized layer.

Cojet treatment should be applied to a clean dry surface after any trial fit procedure and immediately prior to cementation.

If a traditional resin cement is used for cementation, the silicatized layer should be treated with silane (included in the Cojet kit) prior to cementation.

If Rely X Unicem is used, silane treatment prior to cementation is not necessary.

Note 1: The Cojet treatment should only be conducted on a clean, dry surface and immediately prior to cementation.

Note 2: The Cojet kit can also be used for the intra-oral repair of chipped metal-ceramic and all-ceramic restorations, using modern day composite materials such as Filtek Supreme and HFO.

TECHCERAM

Innovation in All-Ceramic Dental Restoration Technology

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