Dental Follicle

The E- Journal Of Dentistry

ISSN 2230-9489 (e) | Dr. Syed Nabeel

Dentistry United.com
Complete Dentistry Information

Contents

Editorial Board of Dental Follicle – The E Journal of Dentistry

Scientific Editorial 1- Adjunctive Orthodontics and Aesthetics

Dr. Syed Nabeel| Editor in chief, Dental Follicle – The E Journal of Dentistry| Managing Director – Smile Maker Dental Clinic (Smile Maker Clinics Pvt Ltd)| Mysore| India

Adjunctive Orthodontics is of much use in full mouth rehabilitation cases as well as cases where aesthetics are a concern. In this case report a small case of diastema closure has been portrayed with successful outcome.

Key words : Adjunctive Orthodontics , Smile Makeover

Case report : (Pictoral)

Fig 1

Fig 2

Fig 1 :Patient with a midline diastema of 7mm and smaller diastemas beteeen lateral and canines (Fig 2). Patient wished to use crown for closeing the diastemas. Initially adjuntive Orthodotnics was used to close the space between lateral and canines and reduce the space between the centrals.

Fig 3 – Bonded with MBT .022

Fig4

Fig5

All four teeth went for a lithium disilicate crown and 11 and 21 was a 2 unit bridge to avoid relapse. (Fig 4 and 5) Stern et.al [1] said “It should be noted that, irrespective of the method used, some form of stabilization will be essential on completion of the tooth movement.”

Result:

Adjunctive Orthodontics is tooth movement to carried out to facilitate other dental procedures necessary to control disease, restore. function, or enhance appearance for a period not more than 6 months. In today's practice where aesthetic demands of the patients are very high such adjunctive[2] orthodontics plays a major role in restoring aesthetics and function. In this case successful results were achieved .

Refernces :

1. Adjunctive orthodontics in oral rehabilitation. Refuat Hapeh Vehashinayim. 1977 Oct;26(4):15-9.
2. Adjunctive orthodontic treatment for adult patients. J Can Dent Assoc. 1996 May;62(5):423-7.

Scientific Editorial 2- Retention in Orthodontics – A Review and Case Reports

Dr. Syed Nabeel| Editor in chief, Dental Follicle – The E Journal of Dentistry| Managing Director – Smile Maker Dental Clinic (Smile Maker Clinics Pvt Ltd)| Mysore| India

Retention is defined holding teeth in an ideal aesthetic and functional position. After orthodontic treatment is complete the various gingival fibres take different duration of time to reorganize- The Collagenous fibers take over 6 months and supracrestal fibres take a year whereas the PDL takes 3 months . Teeth relapse in the direction of the the original tooth position ,due to elastic recoil of the PDL fibres. While planning retention few things that should be kept in mind include cases where derotation is done and cases with diastemas. Added to it expansion cases and cases that are preiodontially comprasied

A technique for repair of a fractured porcelain fused to metal bridge

1 Dr. Gregori Kurtzman | Assistant Clinical Professor |University of Maryland | Baltimore College of Dental Surgery| Department of Restorative Dentistry | Maryland

Introduction:

Fracture of the overlaying porcelain on a porcelain fused to metal prosthesis can be a challenging problem. Ideally, replacing the PFM prosthesis is the best treatment but this may not be financially within the patient's means at this time.[1] * This becomes more costly with longer span prosthesis. Repair of the damaged prosthesis may be the next best treatment and allow further function of the prosthesis until a more permanent solution can be rendered.

Loose of a portion of the porcelain from the prosthesis creates an esthetic issue which may be corrected at chairside using adhesive materials.[2] Surface damage to the PFM may be broken into two categories depending on which type of material is exposed. The first category is porcelain chipping. This is identified by a piece of missing porcelain with no exposure of the underlying metal substructure. The second category is porcelain debonding, where the porcelain fracture has exposed an area of metal substructure. (figure 1 and 2) Depending on which category the damaged PFM falls into, will determine how the surface to be repaired is treated to increase retention of the overlaying material.[3]

Porcelain Chipping:

This type of repair requires bonding to the remaining porcelain and is more difficult to achieve if the area comes into occlusal contact. Small chips at the cervical are easier to repair and less likely to debond due to lower loading forces being placed on this area during mastication. When the chip involves the incisal edge, preparation extending on to the lingual surface will provide more bulk for the repair in the area where forces of mastication work to debond the repair. These can prove challenging as incisal chips may have occurred due to the occlusal scheme and excursive contacts.

Repairs when the damage is confined within porcelain are initiated by roughening with a coarse diamond to create some mechanical retention.[4] A silane agent has been recommended to activate the porcelain surface and increase bondability between the porcelain and adhesive.

Porcelain Debonding:

These type repairs require bonding to two different surfaces; metal and porcelain. As with porcelain chipping, repair is initiated by roughening both the metal and porcelain surfaces. A coarse diamond is moved over both the porcelain and metal to receive the

repair. (figure 3) A carbide bur may be used to create small retentive dimples in the metal. If necessary, penetration of the metal to the underlying tooth structure, may be done to increase retention. Application of aluminum oxide in an air abrasion microetcher will create micro retention to augment the macro retention placed by the diamonds and carbides. (figure 4)

Exposed metal is treated with Metal Primer II (GC America, Alsip, IL) applying two coats and allowing each coat to dry for a few seconds. (figure 5) Metal Primer II contains a special monomer (MEPS thiophosphoric methacrylate) which promotes bonding by penetrating the metal alloy and co-polymerizing with the overlaying resin to produce both a mechanical and chemical resin to metal bond. The improved tensile bond strength from alkane thiol molecule absorption significantly enhances the normal mechanical bond of the overlaying resin. This primer can be used with either nonprecious or precious alloys, eliminating the need to tin plate exposed metal prior to bonding.

Next, Ceramic Primer (GC America, Alsip, IL) is mixed (a drop from both bottle A and B mixed together prior to application) and applied to the porcelain surfaces to receive bonding. (figure 6) This is allowed to dry for several seconds prior to the next step in the repair process. The ceramic primer activates the porcelain's surface silanting the porcelain and depositing methyl methacrylate, which will increase bond strength to the ceramic surface. Care does not need to be executed confining the Ceramic Primer from contact with the metal and will not hamper the bond to the pretreated metal surface.

A flowable composite resin (Unifil Flow, GC America, Alsip, IL) is flowed in a thin layer over the treated metal/ceramic surfaces and cured with a hand held curing light. (figure 7) Use of a flowable allows locking into the mechanical retention previously created and will permit some masking of the grey of the metal. Use of a white opaque shade may be more beneficial to masking then a tooth color. Because the layer of flowable is very thin the brightness of the white opaque flowable will not be difficult to neutralize with the overlaying composite. Next, a micro-hybrid composite (Gradia Direct, GC America, Alsip, IL) in a shade to match the adjacent porcelain is applied and sculpted to full contour of the desired final result. (figure 8 and 9) Because the layer of micro-hybrid will be under 2mm in thickness, it can be placed in a bulk and incremental layering is not necessary. Thorough curing with a hand held curing light is performed.

Finishing is accomplished using diamonds and finishing carbides in a highspeed handpiece. A final coat of flowable composite is applied over the repair to provide a smooth esthetic surface. (figure 10, 11 and 12) Occlusion should be checked, specifically contact with the incisal edge both during centric and lateral excursions. All occlusal contacts should be removed from the repair material and kept on sound crown surface.

Discussion:

Repairs to damaged porcelain fused to metal prosthetics may be multicausal.[5] Porcelain chipping may be the result of contact with a harder substance loaded at an angle to the porcelain surface (shearing forces) that cause micro cracks to spread leading to visible lose of porcelain. Porcelain debonding also may result due to shearing loads. Another possible cause of chipping and debonding in fixed bridges is torque placed on the prosthesis under function. Since porcelain is a stiff material, these torquing forces twist the cast framework microscopically leading to failure either within the porcelain (through microcracks) or at the porcelain to metal interface (due to their dissimilar properties). A repair made from composite resin, having more flexural strength then porcelain may tolerate these micro torsional strains and remain in function.

Occlusion plays a part in how successful the repair will be and how long it will last. Centric contacts should be kept off the repair material or its junction with the porcelain or metal when possible. Care should be taken to adjust lateral excursionary contacts so that shear load can be minimized on the resin repair and a decrease in “pop-off” can be achieved.

Conclusion:

When failure occurs in the overlaying porcelain of a PFM prosthesis, replacement of the prosthesis may not be financially possible. Repair of the prosthesis will permit improved esthetics and functional use of the prosthesis until a more permanent solution may be possible.

Figure 1: The patient presented with a fracture of the cervical porcelain on a multi-unit porcelain fused to metal removable prosthesis.

Figure 2: Removable portion of the porcelain fused to metal prosthesis has been removed intraorally showing the fixed metal copings on the abutment teeth used to retain the removable portion.

Figure 3: Exposed metal has been roughened with a diamond in a high speed handpiece to increase mechanical retention.

Figure 4: Further mechanical retention is achieved by sandblasting the exposed metal and surrounding porcelain margins.

Figure 5: Metal Primer II is applied to the exposed metal to increase bond strength of the resin used to repair the missing porcelain.

Figure 6: Ceramic Primer is applied to the porcelain margins surrounding the exposed metal to increase resin bond strength.

Figure 7: A thin layer of flowable composite resin is applied over the exposed metal and porcelain margins, then cured.

Figure 8: A micro-hybrid composite resin is incrementally placed to cover the exposed metal and porcelain margins.

Figure 9: Composite instruments are used to achieve a normal contour.

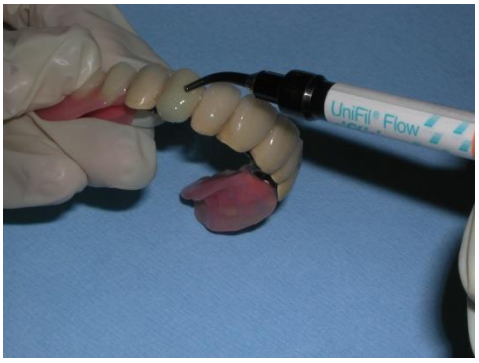

Figure 10: Following final shaping with rotary instruments, flowable resin is applied to the repaired surface.

Figure 11: Completed repair of the fractured removable prosthesis.

Figure 12: Repaired prosthesis intraorally.

References:

1.Rosen H.: Chairside repair of ceramo-metallic restorations. J Can Dent Assoc. 1990 Nov;56(11):1029-33.

2. Galiatsatos AA.: An indirect repair technique for fractured metal-ceramic restorations: a clinical report. J Prosthet Dent. 2005 Apr;93(4):321-3.

3. Yanikoglu N.: The repair methods for fractured metal-porcelain restorations: a review of the literature. Eur J Prosthodont Restor Dent. 2004 Dec;12(4):161-5.

4. Burke FJ, Grey NJ.: Repair of fractured porcelain units: alternative approaches. Br Dent J. 1994 Apr 9;176(7):251-6.

5. Ahmad I.: Salvaging fractured porcelain crowns with a direct composite repair technique. Pract Proced Aesthet Dent. 2002 Apr;14(3):233-8; quiz 240.