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Unusual Use of Articulating Paper during Crown and Bridge Fit Check – Case Report

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Abstract

Dislodgement of crown or bridge is one of the common complications we get to attend in our routine dental practice. Dental crowns and bridges that have been detached or have fallen off for any reason can be reattached through a dental cementation procedure. This is a type of restorative practice is typically performed in a dental clinic or office. Cementation become challenging for the fractured tooth or some part of prepared tooth is chipped off permanently secure the crown against dislodgement (i.e. to secure the inherent retention provided in the preparation design) permanently seals the prepared tooth against marginal leakage (i.e. to seal the preparation margin and internal dentine from ingress of oral fluids and bacteria. Usually Articulating paper gives precision in correcting occlusal interferences for cementation of crown or bridge procedure. In this presentation Articulating paper dissolved in spirit (70 % isopropyl alcohol) is used to check any interferences of the crown on the prepared tooth where core build up done using composite resin. Existing prosthesis was used as index to shape the internal anatomy for core built up before core material is cured. This provides the correcting the interferences on to the intaglio surface of the indirect restoration.

Keywords: Dislodgement, Cementation, Isopropyl Alcohol

Introduction

Articulating paper and spirit are easily available in every dental clinic. Articulating paper is quantitative indicator made up of thin, non adhesive paper strip covered in fluorescent ink or dye containing wax. Basic constituents are coloring agent and bonding agent between two layers of film (transculase-bausch articulating paper).

Hydrophilic in nature. On occlusal contact, coloring agent is expelled from and bonding agent binds it on to the tooth surface. Other indicators –articulating paper, wax, silk, foil and newer materials – T-scan and virtual dental patients. Other requirement are –spirit commonly used in clinics, paint brush (small size), dappen dish.

Case Report-1

Patient, 19 years old reported to the clinic with dislodged crown in anterior tooth since 2 days (see figure -1). On visual inspection heat cure acrylic crown was given since patient is under orthodontic treatment (see figure -2). Some portion of tooth had chipped off that old crown could not be cemented directly as the internal anatomy of crown will not give the retention form left. All cement fragments thoroughly cleaned from the tooth using hand instruments. No visible remnants at all should remain as they may interfere with accurate seating and cement bonding. The core build up was done on the remaining tooth portion (see figure -3). But the old crown was not fitting properly on the tooth due to interferences (see figure-4). Articulating paper dissolved with spirit in dappen dish, as spirit is volatile in nature is applied on to the intaglio surface of the crown with help of small size paint brush (see figure-5). Place the crown on to the prepared tooth surface after drying the surface for the proper fitting of crown(figure-6) , then remove and check for the colour marking to be transferred on to the tooth surface . Colour marking represents the interferences coming in between tooth surface and intaglio surface of crown (see figure-7). Reduce the marking with finishing air rotor diamond (see figure-8). Now check again and repeat the procedure until the margins of the crown flushes with finish margin of the tooth (see figure -9). Cementation of heat cure acrylic crown was done using temporary luting cement.

Figure 1: Preoperative showing fracture tooth

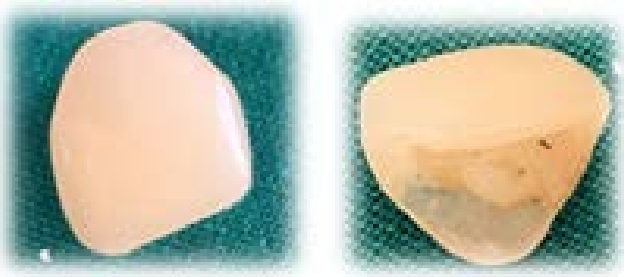

Figure 2: Dislodge crown

Figure 3: Core bulid up with composite

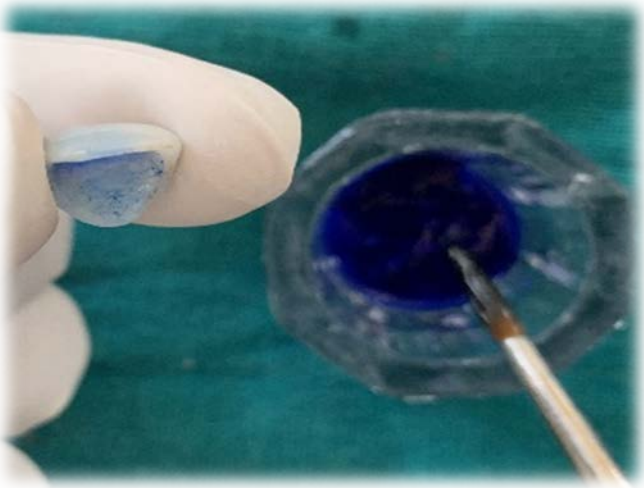

Figure 4: Paint intaglio surface of crown

Figure 5: Check for any interferences

Figure 6: Colour marking on to the tooth surface

Figure 7: Rmove any interferences with airrotor

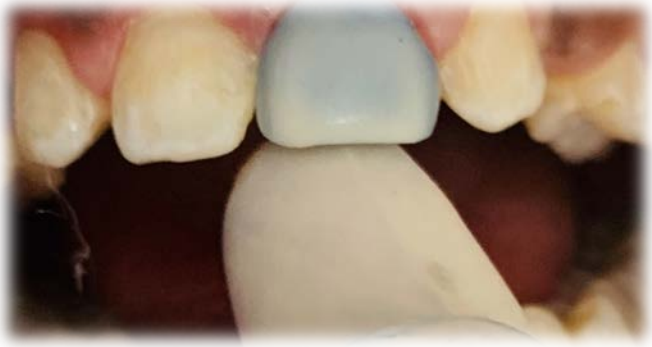

Figure 8: Check for proper flushing of margins of crown with finish margins of the tooth

Figure 9: Crown in situ

Case Report 2

Patient age 20 yr. old reported to the clinic with dislodge prosthesis in upper posterior right tooth since a day. Prosthesis was PFM as permanent definitive restoration given to the patient. On inspection core build-up of tooth had chipped off (same as in case report 1). We tried the same procedure using articulating paper. This procedure provides precision in cementing the FPD too. Remove the interferences with air rotor and recheck the proper flushing of the crown margins with finish margins of the tooth and occlusion. Finally cementation was done using glass inomer cement.

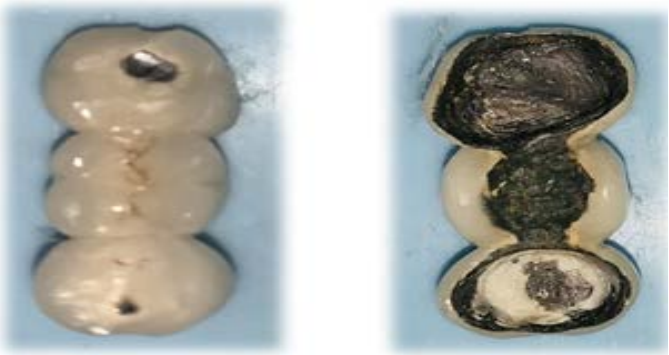

Figure 1: Dislodge prosthesis

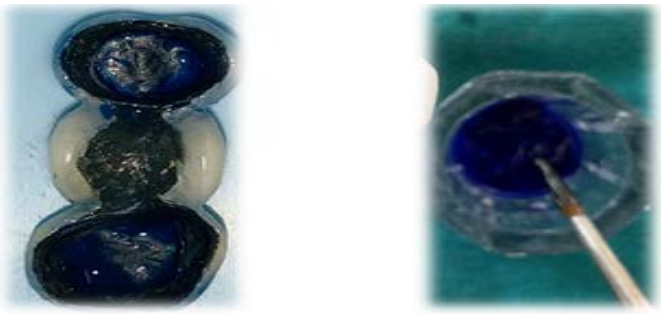

Figure 2: paint on the intaglio surface of prosthesis

Figure 3: check for the fitting of prosthesis

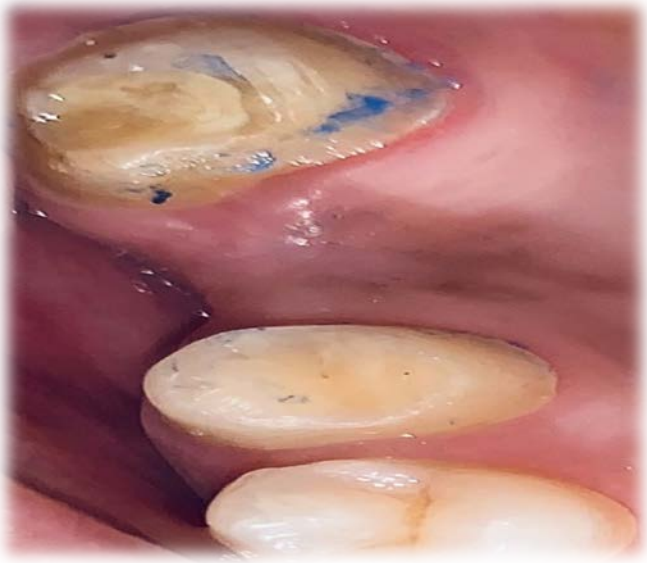

Figure 4: Remove all interferences

Figure 5: Cementation was done using glass inomer cement

Discussion

Clinical studies have shown that a) recurrent caries and b) lack of retention are the major causes of failure of traditional crowns and bridges. Recurrent caries is the foremost cause of failure but displacement of crowns can occur earlier. Optimal marginal accuracy and preparation retention form are therefore two of the most important pre-requisites for crown longevity that are under the control of the dentist.

The fit of the crown margin is first assessed using the tine of an explorer around the total margin periphery, ensuring that the crown remains completely seated on the tooth. There should be a relatively smooth transition from crown to tooth with no visible crown opening, overhang or other discrepancy. The crown should be “flush” with the tooth surface and adjacent contours of the crown should be continuous with the contours of the tooth These should be assessed using dental floss and adjusted if hindering the seating of the crown. Other causes of non-seating include remnants of temporary cement or other debris on the tooth surface, trapped gingiva and/or other discrepancies on the internal surface of the crown.

The latter should be carefully assessed and, if necessary, the internal fit can be confirmed using a coating of dissolved articulating paper. The internal surface is coated and the crown seated and removed. Areas where the metal shows through the coating can be adjusted to allow accurate seating.

When the crown has been completely assessed and no further adjustments are necessary the crown is ready for permanent cementation. The occlusal surface of the crown should be smooth and the internal surface clean and dry.

Conclusion

Articulating paper and spirit are easily available in clinics. This simple and easy method can be used for cementation of dislodged crown with fracture tooth where core build

up is necessary. Use for checking premature contacts of the crown which can be removed and cementation of the dislodged crown can be done. This method can be used for both crown and fixed partial denture .This method provide benefit to both dentist and patient as it saves the time of dentist and expense to the patient for fabrication of new crown. This avoid additional visit of patient and unnecessary expenses and time.

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