Dynamic Paradigms in Bonding Throughout COVID Pandemic

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ABSTRACT

Background: COVID-19 has affected all aspects of human life. Health care employees face real-life challenges everywhere in the globe. Dentistry has been equally affected by this pandemic, imposing new precautional steps to be taken in routine practice.

Objective: This text aimed towards introducing alternatives to many crucial steps in bonding procedure in orthodontics.

Methods: Air free bonding was performed using a plastic water squeezer bottle along with blotting paper instead of using 3 way syringe.

Results: The adopted ways resulted in aerosol free bonding.

Conclusion: These will be used as an alternate throughout the pandemic.

Key Words: Bonding, Covid-19, Health care employees, Orthodontics

INTRODUCTION

Corona-virus originated in the city of Wuhan in 2019 has drastically affected human life, affecting social and financial aspects of the human race all over the world.¹-³ This state of affairs has put some challenges in the routine dental practice.⁴ Although elective procedures were supposed to be delayed for the initial few months but ultimately, one has to resume back to the duties with this new normal, which required few alterations in the routine procedures.⁵ Though we orthodontists don’t have much exposure to aerosols compared to the other specialties of dentistry but now, we are also compelled to build changes within the antecedently used techniques been a rise in the number of asymptomatic patients.⁵-⁷ Presently as the procedures are being done differently with utmost precautions⁵, bonding being the foremost necessary part in orthodontics is none the less totally different. Here could be a transient illustration of the methodology taken into thought that is being practised during this pandemic.

MATERIALS AND METHODS

After the patient’s thorough clinical examination, which included thermal screening and taking the relevant history, Lateral Cephalogram and OPG were done. Impressions of Maxillary and Mandibular arches were taken in autoclaved impression trays. Impressions were efficiently washed underneath running water and disinfected. For this, Dimenol (Sep-todent) solution was sprayed equally and allowed to be in touch for quarter-hour.

Prior to bonding, the teeth’ mechanical cleaning was advised to the patient using Pumice slurry and toothbrush to remove the debris and the smear layer. For this purpose, a prophylactic paste may be used as an alternate. After vigorous rinse with sterile water, the oral cavity was disinfected by using antimicrobial mouth wash Povidone-iodine. Other mouthwashes like chlorhexidine gluconate and hydrogen peroxide can also be used as these mouthwashes have been effective in controlling the virus load of saliva⁸,⁹ and reducing the risk of COVID-19 transmission as virus is being secreted even in the saliva of asymptomatic patients.¹⁰ After this preparation of the oral cavity, a disposable mouth retractor was placed.

Etchant (37% phosphoric acid) was applied for 15-20 seconds with an applicator tip employing a palette, in which few drops of etchant were dispensed. Cotton rolls were placed between the teeth and distilled water was poured with an autoclaved plastic squeezer dispenser (Figures 1 and 2) to flush...
the etchant. Once the primary wash was done, cotton rolls were replaced, and thereafter same procedure was repeated for the second time. Teeth were dried with the blotting paper (Figures 3 and 4). Once the opaque white look appeared, the bond was applied with the disposable micro brush applicator tip.

After that routine bonding procedure was followed for the bonding of brackets with MBT technique and initial wire was placed. Used cotton rolls, blotting paper and tips were discarded within the trash can with lids, following the colour coding of biomedical waste management. These can be disposed of inside the plastic zip locks; just in case of open dustbins.

RESULTS

These incorporated changes resulting in aerosol free bonding were equally efficient compared to the routine conventional methodology as currently, the patients are on the canine retraction stages, and there are hardly any breakages.

DISCUSSION

Though with time, new generation “All in one” bond emerged which eliminated the probability of contamination by the elimination of few steps in bonding and that they might have been used during this Pandemic, however attributable to some disadvantages over the previous etch prime technique, these could not attain abundant popularity. The shear bond strength is higher for the standard adhesives (used in conventional technique) as compared to the one exhibited by the new generation self-etch adhesives.

Secondly, for the single etch prime technique or self-etch primers, one must dry the tooth surface with oil-free compressed air (which is responsible for the generation of aerosols) after application but alterations in the contemporary method is the need of the hour. Therefore, this text emphasizes on the air free bonding during the pandemic.

As we all know, three-way syringes use compressed air at much higher pressure, which is 4-6 bar or 43-72 psi, while the pressure from the squeezer bottle is very less and the pressure control is in the operator’s hand. So, spilling of contaminated saliva and generation of aerosols is negligible. Another alternative for squeezer bottle could have been the use of disposable syringe, but again, the pressure of water from disposable syringe is higher comparatively because even if one can control the pressure exerted by piston but dispensing part or nozzle of syringe is very narrow (Narrower is the opening, more will be the pressure) while comparing with the dispensing part of squeezer bottle used.

The use of rubber dam has also been advocated while doing orthodontic bonding but that is not cost-effective. So, the highlights of the present study were bonding of orthodontic brackets without generation of aerosols and reducing the chances of cross-contamination in the operatory area as follows:

1. Usage of disposable cheek retractor
2. Use of minimized pressure for flushing the etchant by using the squeezer water bottle
3. Drying of tooth surface by using Blotting paper

CONCLUSION

As WHO warned that Coronavirus is going to stay with us forever and one has to resume back to the duties sooner or later. Taking utmost precautions along with few alternatives in the routine techniques is the sole way to combat the situation. So, the alternatives suggested here have been incorporated in the routine practice while not compromising the end result for bonding.

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REFERENCES

1. Coronavirus (COVID-19) origin: Cause and how it spreads. Available at: https://www.medicalnewstoday.com/articles/coronavirus-causes
17. Dental air compressors: choosing the right one. https://www.compressedairsystems.com/blog/dental-air-compressors-choosing-right-one