Dear Readers,

Pioneers of the Japan Prosthodontic Society have previously stated the following opinion:

Adhesive dentistry and dental implants have caused a major impact on modern prosthodontics. It is noteworthy that these two are not only new materials and technologies but have also brought about a paradigm shift in dental treatment [1].

I agree with this statement and would like to take this opportunity to promote "Adhesive Dentistry" in the field of Prosthodontics.

Minimal Intervention and Prosthodontics

In the past, there was a difference between Restorative (or Operative) dentistry and Prosthodontics in many countries around the world. For example, in terms of materials, the former uses resin composite filling materials, while the latter uses prosthesis and luting cement. In clinical practice, the former treatment utilizes direct methods, while the latter treatment is indirect. The concept "Minimal Intervention" is often thought to have been driven by the former. However, Minimal Intervention is also pursued in prosthodontics; for example, resin-bonded fixed dental prostheses could certainly be considered Minimal Intervention [2].

CAD/CAM Technology

Advances in computer-aided design/computer-aided manufacturing (CAD/CAM) technology have enabled the manufacturing of crowns from several materials. In particular, zirconia is a material that cannot be used without CAD/CAM technology, and the use of resin composite blocks has achieved superior mechanical properties than that of conventional resin composites. The benefits of CAD/CAM treatment are clear, but this technology also has its drawbacks. In order to improve the quality of the prosthesis produced by CAM (i.e., milling), a particular abutment tooth morphology was required, and dentists undoubtedly modified the preparation to ensure the required morphology. Unfortunately, despite this shift, there is a tendency for dentists to penetrate many teeth to improve the accuracy of prosthesis fitting. Increasing the amount of tooth preparation should be absolutely avoided. In the future, an optimum treatment method should be developed [3].

Adhesive Dentistry and Full-digital Treatment

It should not be overlooked that highly developed Adhesive Dentistry was used prior to the establishment of the CAD/CAM technology in dentistry. Without adhesive technology, the prosthesis produced by CAD/CAM would not be clinically initiated. Moreover, together with an intra-oral scanner and the CAD/CAM treatment, semi-direct treatment, which is definitely an indirect method, can be completed on the same day. Therefore, the differences between direct and indirect methods are reduced. It is said that this innovation has achieved "full-digital treatment." However, at this moment, preparation and luting still remain as analog procedures. Adhesive dentistry has a profound effect on both analog procedures and is key to developing a true fully digital prosthetic treatment.

The Future of Adhesive Dentistry

Pioneers of the Japan Prosthodontic Society have previously stated the following opinion:

It is important to create a strategy for the future of dentistry that looks 10 to 20 years into the future from a high place to avoid misunderstandings about the direction of future basic and clinical research in the field of prosthodontics [4].

I agree with this declaration and would like to look 10 to 20 years into the future of adhesive dentistry. I hope these perspectives will help you someday.

(1) Establishing adhesion to novel materials: If a new bonding surface is developed, basic research on adhesion to the surface is indispensable [5], and it is necessary to raise the findings obtained in basic research to a higher level of evidence in clinical research [3].

(2) Next generation of bonding: There is a need for a method for canceling the effects of adhesion inhibitors and a technology for acquiring long-term durability [6-10]. In addition, newly developed adhesives are also promising, with many beneficial properties, such as imparting a bioactive effect and realizing a higher degree of polymerization (might to return auto-curing).

(3) Detachable/Re-attachable adhesive, Adhesive-free: Materials that bond with an appropriate force that can easily be reduced when removed would be highly clinically useful. Furthermore, methods which do not require the use of adhesives, which instead involve direct modification of the surface, would be ideal.

(4) Detection, Adaption, and Control of interfaces: Control of interfaces including soft tissues can be targeted via adhesive dentistry, although hard tissues remain the primary targets for now. In addition, the invention of new diagnostic equipment to predict interface collapse is highly important [11,12].

The Prosthodontics Utilizing Adhesive Dentistry is constantly changing, and significant research for establishing new treatments should be conducted. JPR is the place where these research outcomes are distributed; therefore, one of the most-targeted topics of JPR is definitely "Adhesive Dentistry".

Sincerely,

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References


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