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Immediate Dentin Sealing - Fast Seal for A Lasting Deal

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Adhesive dentistry has evolved to enhance the longevity and predictability of indirect restorations. One such revolutionary concept is Immediate Dentin Sealing (IDS).

Definition

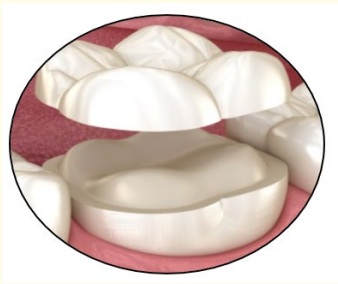
It is the application of a dentin bonding agent to freshly cut dentin immediately after tooth preparation and before impression-making or previsualization for indirect restorations.

This concept, first introduced by Magne and colleagues, has significantly altered the approach to bonded indirect restorations.

Traditionally, dentin sealing was performed only at the time of final cementation, leaving freshly cut dentin vulnerable to bacterial leakage, sensitivity, and contamination during the provisional phase. IDS overcomes these limitations by establishing a hybrid layer and resin infiltration on dentin surfaces, ensuring superior bond strengths compared to delayed dentin sealing. It also reduces post-operative sensitivity, prevents bacterial ingress, and enhances the integrity of the dentin–resin interface.

Objectives of Immediate Dentin Sealing

1. It increases the bond strength of restoration.



This is because freshly cut dentin is clean and hydrated , hence it is an ideal substrate to form a strong hybrid layer, thereby increasing the bond strength.

It has been proven by multiple studies that the immediate dentin sealing increases the bond strength up to three times as that of delayed dentin sealing.

2. It reduces the post operative sensitivity.

We can say that it is the most appropriate objective or an advantage as it reduces the patient discomfort until the permanent restoration is cemented.

3. It increases the longevity of the restoration.

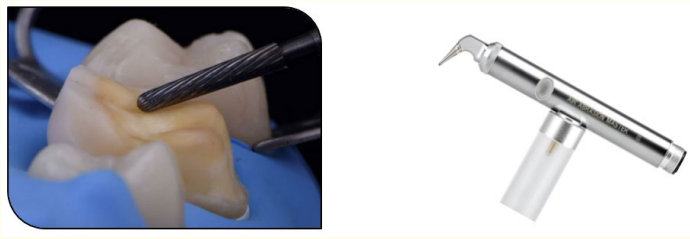
4. It provides pulp protection.

The tooth can be subjected to chemical irritants during the provisionalization process due to the cements, Immediate Dentin Sealing protects the pulp from these chemical irritants.

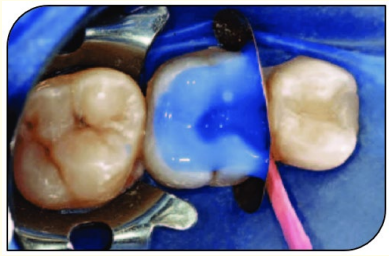
Procedure protocol of immediate dentin sealing

Steps in Immediate Dentin Sealing are:

1. After tooth preparation, the tooth is subjected to air abrasion under rubber dam isolation.



2. The tooth will then be etched with 37% phosphoric acid.



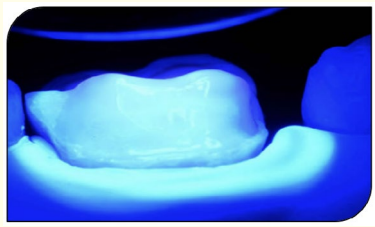
In total etch, the enamel is etched for 15 seconds and dentin is etched for 5 seconds. After etching, the tooth is rinsed and dried. Care should be taken not to completely dry the tooth surface as it can lead to the collapse of collagen fibers.

3. Application of dentin bonding agent.

Optibond FL is considered as the best bonding agent for immediate dentin sealing.

Other bonding agents are Clear-fill SE, Temp Bond etc.

Thin layer of bonding agent is applied and light cured for 20 seconds.



4. Flowable composite application.

A thin layer of flowable composite is applied to block any undercuts in order to obtain a smooth surface in the impression and it acts as a cushion layer and helps in stress absorption.

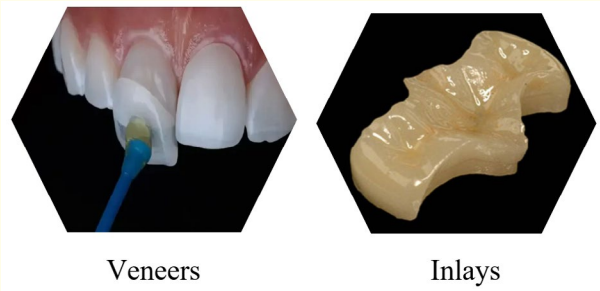
5. Application of glycerin.

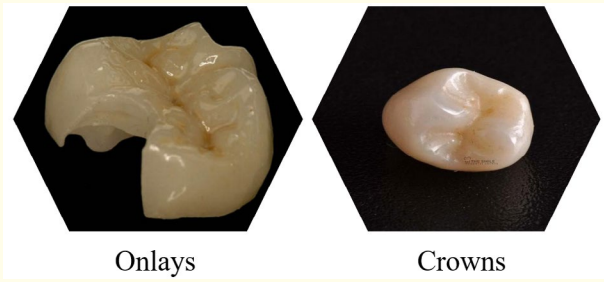
A layer of glycerin is applied and then the composite is again cured for 20 seconds , this glycerin removes the oxygen inhibition layer and helps in complete polymerization of the resin. Then the excessive glycerin is washed off.

6. Impression is made.

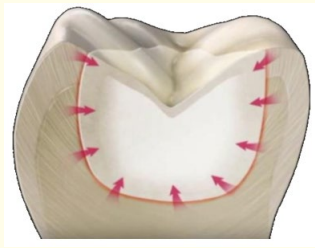
7. Provisional restorations are given.

Applications of Immediate Dentin Sealing.





Decoupling plays a role by reducing polymerization shrinkage and allows maturation of the hybrid layer.



This further reduces the microleakage.

Conclusion

Despite its numerous advantages, IDS demands strict adherence to isolation protocols, appropriate adhesive selection, and careful surface management before final bonding. As the dental profession moves toward more conservative and bio-mimetic approaches, Immediate Dentin Sealing stands as a valuable advancement that bridges biology and technology, safeguarding dentin while enhancing restorative outcomes.