# Optimizing Core Build-Up Material Using Proper Adhesive System.

## Introduction

Too Much Loss Of Dental Hard Tissues Might Affect How Aesthetically Pleasing The Results Of Later Prosthetic Restorations Can Be. In These Cases, An Interdisciplinary Approach Combining Endodontic And Prosthetic Therapy Is Required To Assess, Diagnose, And Repair Aesthetic Issues. A Wide Range Of Materials And Restoration Techniques Are Available For Endodontically Treated Teeth That Are Structurally Weak(1).

Prefabricated Fiberglass, Ceramic, Core Build-Up Material Or Prefabricated Metal (Cast Or Prefabricated) Can All Be Used To Make Intracanal Retainers. Nevertheless, The Intracanal Retainer Simply Serves To Preserve The Restoration; It Does Not Reinforce The Remaining Dental Structure, Regardless Of The Material. Retainers With Characteristics Akin To Dental Structures Might, Thus, Lessen The Tension Produced In Its Vicinity And Lower The Chance Of Root Fracture(2).

Most Articles Show No Post-Effect In The Presence Of The Ferrule For Endodontically Treated Tooth (3).

Restorations Using Posts And Cores Continue To Have A High Clinical Failure Rate.When Applying Core Buildup Resin Composite In Either The Self-Cured (SC) Or Dual-Cured (DC) Mode, Failure Of The Material Mostly Happens At The Adhesive Phase. The Resin Composite Material Is In Direct Contact With The Leftover Uncured Acidic Monomers From The Oxygen-Inhibited Layer Of The Cured Adhesives When SC And DC Core Accumulation Resin Composites Are Paired With Simplified Adhesives (Two-Step Etch-And-Rinse Or One-Step Self-Etch).

A Low Rate Of Polymerization And Potential Effects On The Bond Strength Of Simplified Adhesive Systems Arise From This Reaction That Occurs When The Simplified Adhesive Comes Into Contact With The Fundamental Catalytic Elements (Aromatic Tertiary Amines) Of Chemically-Cured Composites (4).

For This Reason We Either Need To Use A Dual Cure Activator With Universal Adhesives Or Go Forward With Chemical Cure Adhesives To Role Out Any Interaction Between Core Material And Adhesive System.

## Case Report

A 19-Years Old Young Female Came To Our Clinic Suffering From Improper Treatment For Her Maxillary Central Incisors As Shown In Figure (1). And She Was Seeking For Esthetic Enhancement. After Taking X-Ray As Shown In Figure(2) ,Root Canal Treatment Was Good No Sign Of Periapical Radiolucency Or Change And Clinically No Sign Of Discharge Or Any Patient Complain.

So Our Decision Was To Remove Their Improper Build Material , Clean The Field , Using Fiber-Reinforcement Core Build Up Material And Then Cover It With Two Esthetic Zirconia.

Figure (3) Shows Initial Smile Of The Patient, Figure (4) Shows Contrast View Of Upper Teeth. We Start Our Procedure With Local Infiltaration Of Lidocaine Then We Go Forward With Caries And Core Removal Without Rubberdam.

Figure (5) Shows A Bloody Field After Filling And Caries Removal So We Go For Rubberdam Placement As Shown In Figure (6).

After This Clean Field Teeth Were Ready For Adhesive And Build-Up.

To Ensure There Is No Defect With Our Intra-Radicual Adhesion We Used Two Bottle Chemical Cure Adhesive System From Tokuyama As Shown In Figure (7). Then Complete Our Core Build Up Using Fiber Reinforcement Core Build Up From Pentron Company Then Teeth

Prepared To Receive Their Crowns As Shown In Figure (8).

Figure (9) Shows The Contrast View Of Upper Arch After Crowns Cementation. Figure (10) Shows The Before And After Treatment . Figure (11) Shows The Final Smile Of Patient, Figure (12) Shows The Before And After Smile And Finally Figure (13) Shows The Final X-Ray.

It Is Worth Noting That The Lateral Incisors Were Also Treated With Direct Composite Restoration From Tokuyama Plafique LX5.

## Discussion

For Badly Broken Teeth It Is Mandatory To Replace The Coronal Tooth Structure With Suitable Material To Receive Its Final Prosthesis(5), However Debonding Still A Main Complain Associated With Post And Core Material Due To Different Factors Like Force Magnitude In Anterior Area, Flexural Strength ,Modulus Of Elasticity Of Posts And Finally Weak Links Between Tooth , Adhesive And Core Material. So Our Aim Is To Minimize These Factors To Obtain Maximum Longevity Of Our Restoration.

## Conclusion

The Long-Term Success Of Treatment Depends On Selecting The Appropriate Post Or Core System And Material. A Number Of Factors Need To Be Taken Into Account When Choosing The Best Post Or Core System, Including The Amount And Quality Of Tooth Structure That Has Been Preserved, Aesthetic Requirements, And The Benefits And Drawbacks Of Each Material.

This Wide Range Of Material And Approaches Help Clinicians To Use A Proper Method For Each Situation In Daily Routine Practice

## Legend Of Figures

Figure 1 : Initial Situation

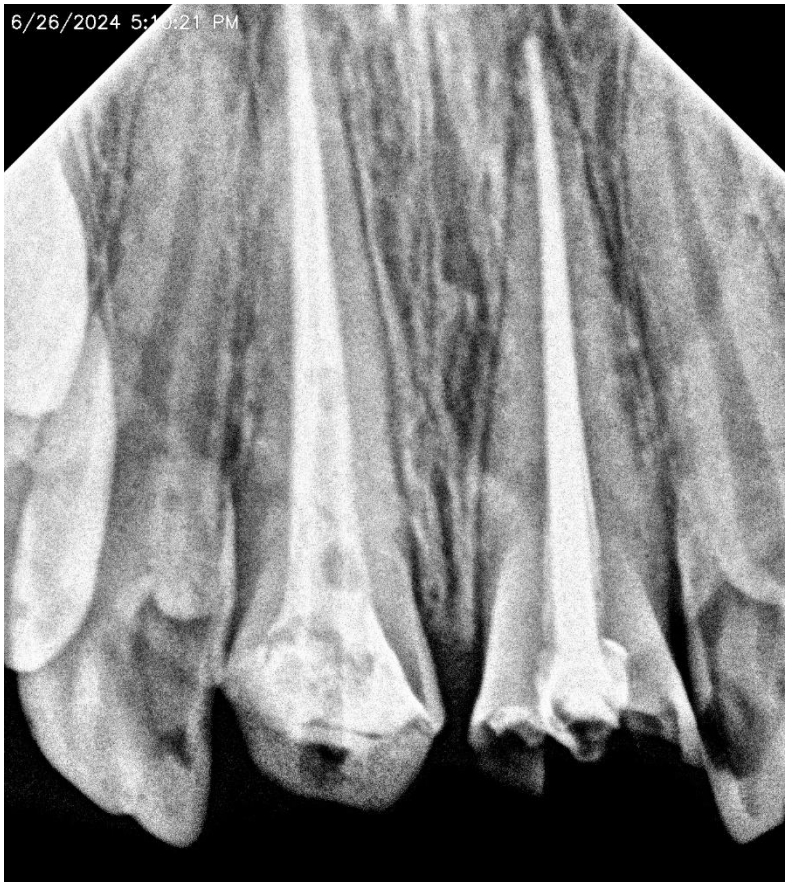


Figure 2 : Pre-Operative X-Ray Showing Good Endodontic Treatment

Figure 3 : Initial Smile Of Patient

Figure 4 : Contrast View Of Upper Teeth

Figure 5 : Bloody Field After Defective Restoration Removal

Figure 6 : Rubberdam Placement, Clean Field Ready For Filling Placement


Figure 7: Palfique Universal Adhesive From Tokuyama

Figure 8 : Core Build-Up And Tooth Preparation Ready For Crown

Cementation

Figure 9 : Crowns Cementation Of Two Centrals

Figure 10 : Before And After Treatment

Figure 11: Shows The Final Smile Of Patient

Figure 12 : Pre-Operative And Post-Operative Smile

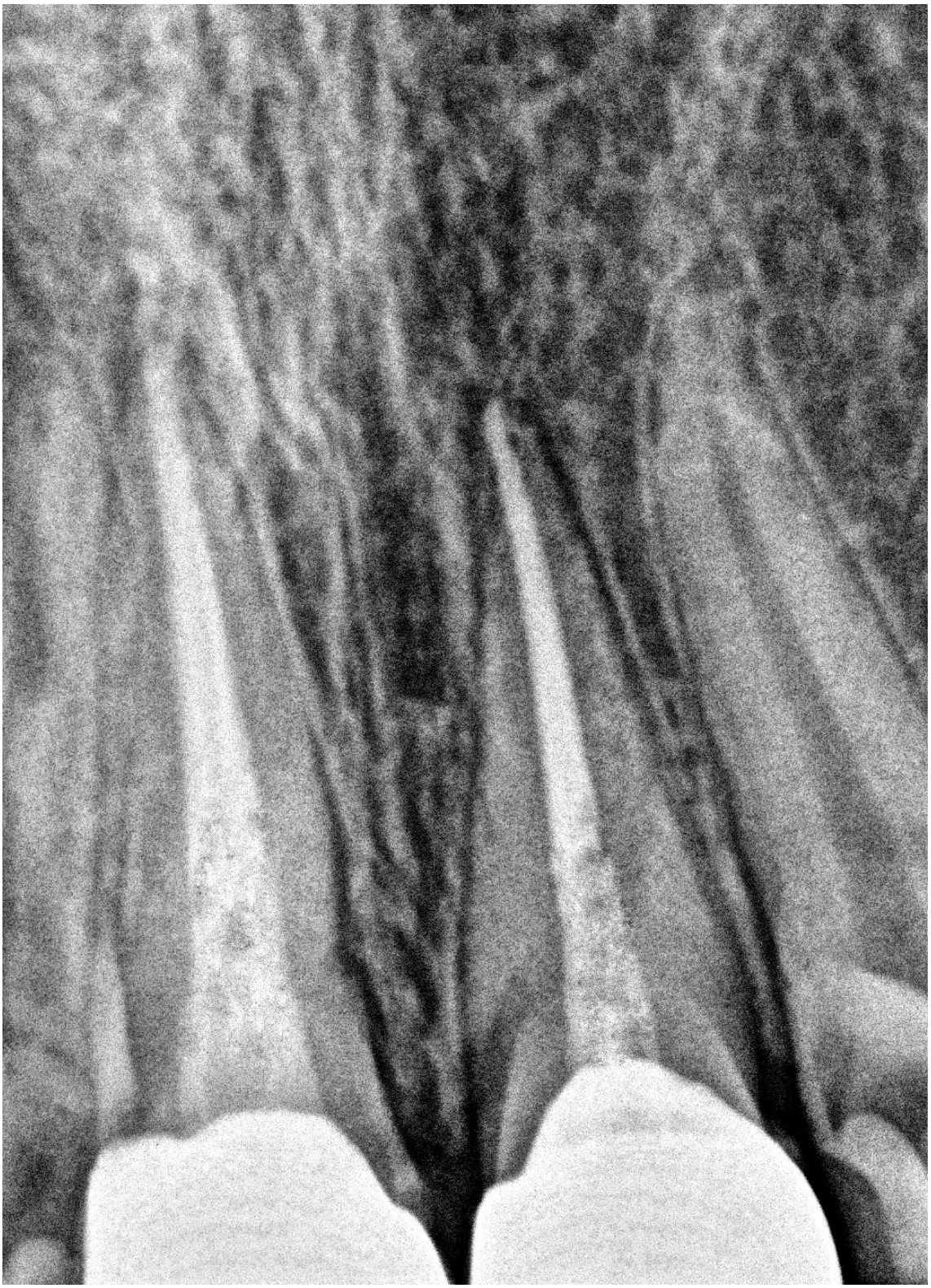

Figure 13 : Post-Operative X-Ray

## References

Pereira, J. R., Valle, A. L. D., Shiratori, F. K., Ghizoni, J. S., & Melo, M. P. D. (2009). Influence of intraradicular post and crown ferrule on the fracture strength of endodontically treated teeth. *Brazilian dental journal*, *20*, 297-302.

Calabro, D. E., Kojima, A. N., Gallego Arias Pecorari, V., Helena Coury Saraceni, C., Blatz, M. B., Özcan, M., & Mikail Melo Mesquita, A. (2019). A 10-year follow-up of different intra-radicular retainers in teeth restored with zirconia crowns. *Clinical, cosmetic and investigational dentistry*, 409-417.

Naumann, M., Schmitter, M., Frankenberger, R., & Krastl, G. (2018). "Ferrule comes first. Post is second!" Fake news and alternative facts? A systematic review. *Journal of Endodontics*, *44*(2), 212-219.

Malaquias, P., Gutiérrez, M. F., Sutil, E., Matos, T. D. P., Hanzen, T. A., Reis, A., ... & Loguercio, A. D. (2020). Universal adhesives and dual-cured core buildup composite material: adhesive properties. *Journal of Applied Oral Science*, *28*, e20200121.

Sharma, J., Pandey, S. K., Vaswani, D., Gupta, P., & Dhanvijay, T. (2022). Restoration of severely worn anterior tooth with cast post: A case report. *J Clin Dentistry Oral Health*, *6*(1), 05-07.