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Dr. Alessandro Colella graduated “summa cum laude” from the University of Bari in 2014. His special interests are diagnosis and recovery of severely compromised teeth with surgical and conservative techniques. In his clinical practice he deals with Conservative, Prosthetics and Periodontology with a predilection for total additive adhesive rehabilitations and esthetics. Key Opinion Leader and lecturer in Italy. Author of articles on adhesive and restorative dentistry. Silver member Style Italiano 2021.

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Simplifying the Recovery of a Prosthetic Abutment: A Single Material for a Dual Purpose.

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Often in dentistry, we are forced to make clinical compromises with our patients. In the following case, we have the fracture of an abutment from an old prosthetic and are faced with the decision of either a complete overhaul, for example, a new bridge in the case of a lost abutment, or limit ourselves to simply addressing the emergency.

Functional and aesthetic needs require us to act quickly, so simplifying procedures, minimizing the number and duration of each step, is an objective that must always be sought in daily practice. At the same time, the materials used to handle restorative-prosthetic cases of this type must guarantee the highest performance possible in the hands of the general dentist and not only in those of the specialist. Ultimately, we must meet the expectations of patients in terms of speed of execution, final aesthetics and longevity of the work while ensuring that the clinician has easy-to-use materials that provide reliable results.

In the case described below, the patient came to my attention after losing the prosthetic crown of tooth 1.1 combined with tooth 2.1 due to a fracture of the respective abutment (Fig. 1).

Given the urgency of the situation, and the resulting esthetic impact, it was decided to endodontically retreat tooth 1.1 and to reconstruct it with a fiber post.



Fig. 1: Initial situation

This way a prosthetic preparation could be created and the patient could be discharged with a temporary crown until a later date when we could establish a definitive treatment plan for teeth 11-21, which were previously prosthetically joined. Given the juxtagingival position of the margin, before performing each operative act, the treatment site is isolated by drilling the rubber dam at tooth 1.1 only. This will allow clam 212 to apicalize soft tissue as much as possible (Fig. 2).

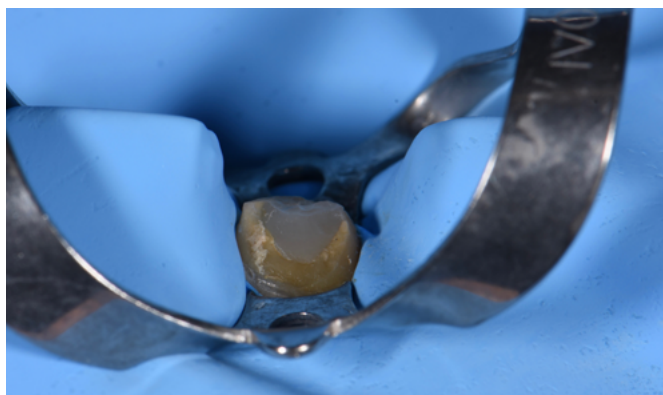


Fig. 2: Isolation of the treatment site with rubber dam

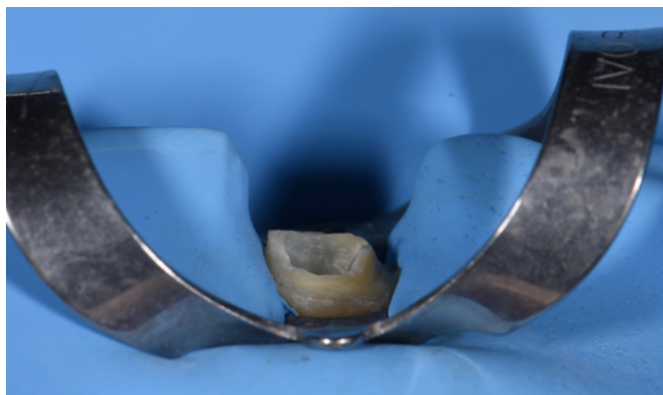


Fig. 3: Removing the coronal seal and gutta-percha to prepare for post-space

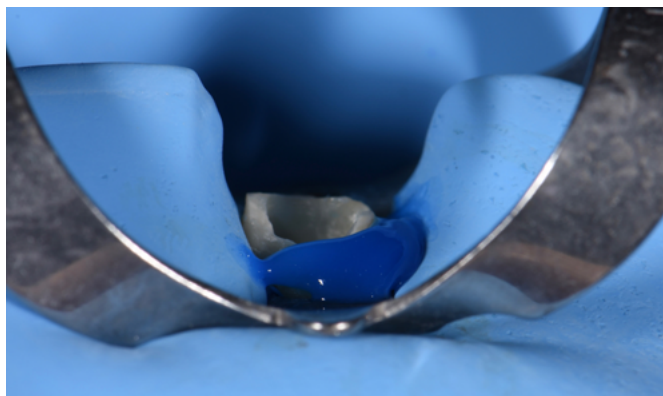


Fig. 4: Selective etching with etching gel 37% (ANA Etching Gel - Directa)

After removing the coronal seal applied by the endodontist, the excess root canal filling material is removed (Fig. 3). Once the canal has been cleaned, the little residual enamel is etched with phosphoric acid (selective etching) for 15 seconds (Fig. 4).

The tooth is rinsed and dried properly. A universal adhesive system is then applied and rubbed onto the application site with a microbrush for 20 seconds (Fig. 6).



Fig. 5: A universal adhesive is chosen (Parkell)

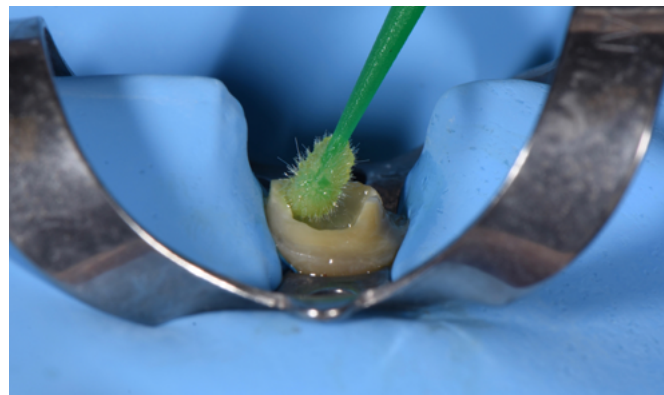


Fig. 6: Application of the adhesive with a microbrush

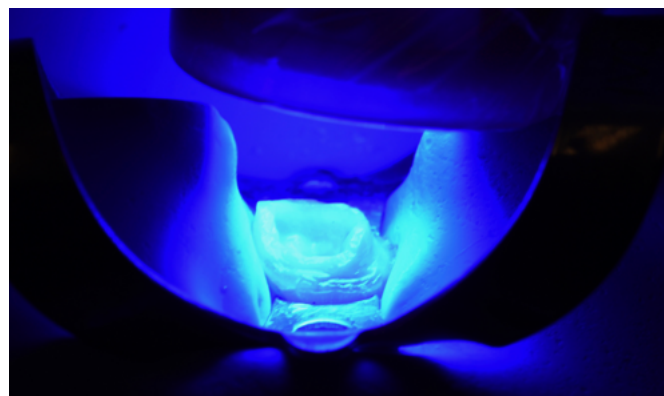


Fig. 7: Polymerization

After curing the adhesive (Fig. 7), we select a fiber post that best fits the anatomy of the canal. Next, we cement the post and reconstruct the abutment with the same dual-cure composite. The material is first extruded through a dedicated dispenser to the mouth of the canal.

Taking advantage of the self-leveling characteristic of the flowable resin, the post is inserted into the tooth canal while taking care not to

incorporate bubbles. It is then held in position for a few seconds in order to compensate for the hydrostatic pressure that develops.



Fig. 8: Dual-cure composite material for post reconstruction (Predicta® Bioactive Core - Flowable, Parkell)

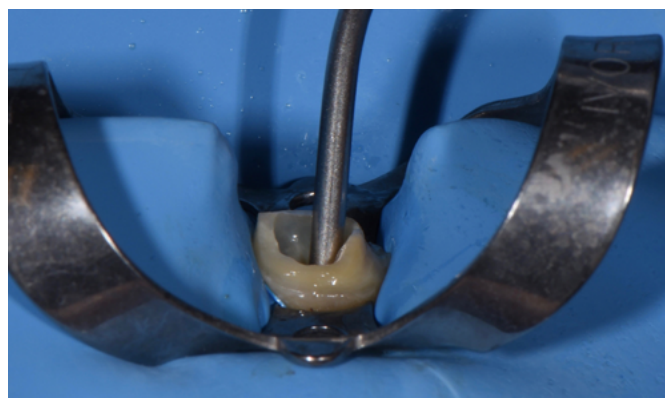


Fig. 9: Extrusion of the post composite (Predicta® Bioactive Core - Flowable, Parkell)

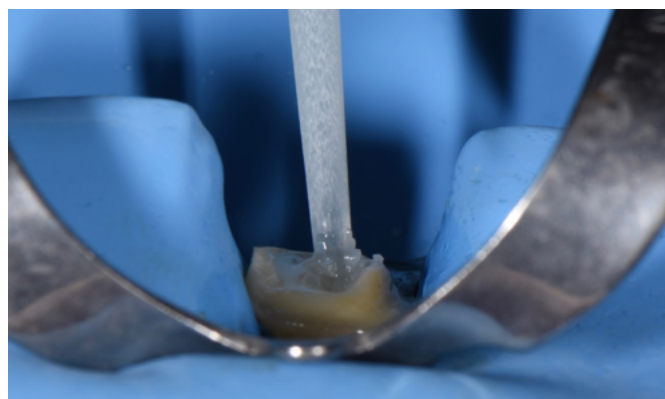


Fig. 10: Insertion of the post and light curing

After waiting approximately one to two minutes, the shrinkage stress is reduced and the self-curing feature is activated. The composite resin is then light cured for 20-40 seconds.

A matrix is inserted so that the abutment can be formed and reconstructed easily and quickly. While the restorative material is



Fig. 11: Insertion of the matrix and reconstruction (Predicta® Bioactive Core - Flowable, Parkell)



Fig. 12: Prosthetic preparation of tooth 1.1



Fig. 13: Final results

The matrix is then finally slightly overfilled, which completes the restoration phase. The newly formed restoration is then allowed to completely self-cure for approximately five minutes before removing the matrix and rubber dam. At this point, the dentin-like consistency makes the prosthetic preparation of tooth 1.1 quick and easy, and the tooth is ready to receive a temporary crown.

Conclusions

Modern dentistry enables us to respond quickly and efficiently to patient requests. Aesthetic dentistry, in particular, require us to immediately rectify situations such as the one shown, without sacrificing the main requirement for long-lasting work: quality.

Having the ability to rebuild a prosthetic abutment in only a few minutes, allows the clinician to spend more time performing other procedures (i.e. the finishing of the preparation) at the time of treatment as opposed to waiting till a second appointment. The consistency of the material is very similar to dentin due to the presence of zirconium dioxide. This makes the preparation phase of the abutment extremely easy. The fluidity and smoothness allows for easy cementation of root canal posts without forming bubbles or microgaps. This is particularly relevant at the tooth-restoration interface, which is often the critical portion of the restoration itself and could lead to early failure. The dual polymerization allows a complete conversion of the material in a few minutes, which is especially beneficial in areas that are difficult to reach by the curing light such as within the *post space*. Also, the high radiopacity is ideal to perform radiographic checks and detect any errors before proceeding with the finalization of the prosthetic case.

These characteristics, together with the mechanical properties of the material, encourage its use and make it a reliable choice when handling “one appointment” cases like this one.