THE JOURNAL OF PROSTHETIC DENTISTRY

TIPS FROM OUR READERS

Prosthodontic safety checklist before delivery of screw-retained and cement-retained implant restorations

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Dental implant therapy requires meticulous attention to detail at all stages, including treatment planning, surgical placement, and prosthodontic procedures involved in fabricating the restoration. Although knowledge, skill, and experience vary among clinicians, recognizing that the definitive insertion of an implant-supported restoration is distinct from the delivery of a tooth-supported restoration is important and should be regarded as an advanced dental procedure requiring meticulous attention to detail.[1]

Errors during the definitive insertion of implant-supported restorations can be classified as errors of omission (failure to do something that should have been done) and errors of commission (doing something that should not have been done).[2] Some of these errors will be minor and easily rectifiable, but some may have serious consequences. Nevertheless, both types of errors will result in increased costs and the loss of a clinician's time and may reduce treatment satisfaction by the patient. In medicine, a popular method of reducing errors of omission and commission is the use of procedural or safety checklists.[3] Checklists are typically used when a procedure requires multiple steps in situations where failure to appropriately address each step may result in unwanted or adverse outcomes. To ensure quality, the popularity of procedural checklists currently extends to several fields beyond medicine, including aviation, automotive, retail, litigation, software, marketing, and customer service. For dental implant therapy, 2 surgical safety checklists have recently been published to help clinicians prevent complications.[4,5]

The author is unaware of a safety checklist published in a peer-reviewed journal for implant-related prosthodontic procedures. It might be argued that a prosthodontic safety checklist for inserting implant restorations is unnecessary because of the absence of a surgical component, a reduced risk for medical complications, and its common misperception as a straightforward procedure. However, prosthodontic errors are known to be costly and time-consuming to rectify, and may result in several biological and mechanical complications. Some examples of prosthodontic errors related to the insertion of implant restorations include failure to use a torque wrench to tighten an abutment screw, failure to protect the abutment screw access channel before cementation,[1] failure to replace the abutment's laboratory screw with the clinical screw before insertion,[1] failure to use a trial abutment before cementation,[6] failure to detect and clean residual cement,[6] failure to record abutment screw access hole location before cementing a restoration,[7] and failure to arrange a follow-up appointment to detect early signs of complications.[8]

The medical literature has shown that clinicians who routinely perform the same procedures (known as high-volume clinicians) have fewer complications than clinicians who do not routinely perform the same number of procedures.[9-11] Therefore, using a prosthodontic safety checklist may help standardize the multifaceted procedure of inserting implant restorations, compensate for any lapses in human memory and attention, and eventually reduce or eliminate errors.

Therefore, the purpose of this article was to describe a straightforward yet detailed prosthodontic safety checklist that can be used by clinicians with varying experience levels during the definitive insertion of cement-retained or screw-retained implant restorations (Tables 1, 2). The checklist for cement-retained restorations is longer than the checklist for screw-retained restorations

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Table 1. Prosthodontic safety checklist before definitive insertion of cement-retained implant-supported restorations

Patient Name:		
Doctor Name:		
Implant system and tooth sites:		
Abutment type/design and tooth sites:		
Date of Insertion:		
No.	**Item**	**Check Off**
1	Disinfection of abutment and restoration.	
2	Availability of vacuum-formed matrix over definitive cast marked with location of screw-access channel.	
3	Availability of abutment replica ("copy abutment").	
4	Replacement of laboratory screw/used clinical screw with new clinical screw before insertion of abutment (when applicable).	
5	Try-in of abutment with new clinical screw and confirmation of seating and margin locations as planned.	
6	Try-in of restoration and confirmation of passive fit, marginal adaptation, proximal contacts, esthetics, and occlusion.	
7	Patient's verbal and written approval before insertion of cement-retained implant-supported restoration(s).	
8	Use of torque wrench to deliver manufacturer recommended torque to the abutment.	
9	Filling abutment screw access channel with impervious material (such as polytetrafluoroethylene tape).	
10	Preclinical cementation of restoration over abutment replica to extrude excess cement before immediate cementation over abutment in oral cavity.	
11	Cleanup of residual cement.	
12	Postoperative radiograph to confirm marginal adaptation and absence of residual cement in proximal and apical regions.	
13	Postoperative photographs.	
14	Scheduling patient's follow-up appointment.	
15	Entry of implant, abutment, restorative material, and cement information into patient record.	
16	Postoperative patient instructions for professional and at-home maintenance.	

because of the additional steps involved in cementation and the cleanup of residual cement. Advantages of this checklist include its comprehensiveness and the incorporation of minor elements in a sequential manner. It can be filled out by dental assistants and/or clinicians to reduce errors and can be incorporated into the patient's record to document the standard of care.

Most items in this checklist are based on recent scientific evidence, but some items are empirical and are listed on the basis of practicality and common clinical practices. For example, the use of postoperative radiographs to confirm the absence of residual cement has been shown to be inadequate because of its 2-dimensional nature and the fact that some cements are not radiopaque.[12] Nevertheless, radiographs can confirm marginal adaptation and detect residual cement on at least 2 of the 4 surfaces of a restoration. Disadvantages of the checklist are that adhering to it requires additional time and vigilance by the clinician and that the checklist may need to be updated with future changes in science and technology.

Table 2. Prosthodontic safety checklist before definitive insertion of screw-retained implant-supported restorations

Patient Name:		
Doctor Name:		
Implant system and tooth sites:		
Abutment type/design and tooth sites:		
Date of Insertion:		
No.	**Item**	**Check Off**
1	Disinfection of abutment and restoration.	
2	Replacement of laboratory screw/used clinical screw with new clinical screw before insertion of abutment (when applicable).	
3	Try-in of abutment/restoration(s) with new clinical screw and confirmation of seating.	
4	Confirmation of passive fit, marginal adaptation, proximal contacts, esthetics, and occlusion.	
5	Patient's verbal and written approval before insertion of screw-retained implant-supported restoration(s).	
6	Use of torque wrench to deliver manufacturer recommended torque to the abutment/crown	
7	Filling abutment screw access channel with impervious material (such as polytetrafluoroethylene tape).	
8	Postoperative radiograph to confirm marginal adaptation.	
9	Postoperative photographs.	
10	Scheduling patient's follow-up appointment.	
11	Entry of implant, abutment, and restorative material information into patient record.	
12	Postoperative patient instructions for professional and at-home maintenance.	

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