



Chair-Side Technique to Repair Implant Supported Hybrid Restoration

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INTRODUCTION

The hybrid design was recognized as one of the original restorative options in the past forty years of implant dentistry. Hybrid restorations consist of a metal framework and acrylic resin superstructure. According to literature, the wear of hybrid prosthesis occlusal surface has been reported in more than 67% of the cases after fifteen years of use. If repair is necessary and the metal framework is intact, only the acrylic component requires replacement. This repair is performed by the dental laboratory to re-establish occlusion, vertical dimension, phonetics, and esthetics. To maintain function and esthetics during the repair of the restoration, a provisional restoration is traditionally provided.

Different types of provisional restorations can be offered to these patients, including removable restorations or laboratory and chair-side fabricated fixed temporary restorations. Most patients usually do not favor removable type prostheses due to discomfort and compromised esthetics. Conversely, a

laboratory processed provisional restoration is an expensive option considering the limited time of use. A chair-side fabricated temporary restoration provides function, patient comfort, and esthetics at a reduced cost and can be immediately delivered. However, a chair side fabricated provisional is difficult to construct due to time limitations and technical sensitivity. Therefore, an alternative protocol is needed to fabricate a chair side interim restoration utilizing the pre-existing implants to deliver a durable and functional provisional restoration to the patient.

The purpose of this retrospective case study is to discuss the indications, contraindications, and limitations of the previously described Acrylic Shell Alginate Impression (ASAI) technique and establish it as a reliable method to fabricate chair-side fixed provisional restorations.

MATERIALS AND METHODS

Clinical data in this retrospective study was obtained from the Implant Database (ID). This data set was extracted as de-identified information from the routine treatment of patients at the Ashman Department of Periodontology and Implant Dentistry at New York University College of Dentistry (NYUCD). The ID was certified by the Office of Quality Assurance at NYUCD. This study was in compliance with the Health Insurance Portability and Accountability Act (HIPAA) requirements.

Ten patients were included in this retrospective study. The inclusion criteria consisted of patient's presenting with moderate or severe occlusal wear of the fixed hybrid prosthesis, as evaluated by a faculty member. The group consisted of six male and four female patients with a mean age of 73 years (range: 63 to 84). Each subject selected for this study received a chair-side fixed provisional restoration, which was fabricated using the Acrylic Shell Alginate Impression (ASAI) technique.

The ASAI procedure for chair-side fabrication of a fixed provisional restoration was described by Froum et al in 2012. It consists of the following sequential steps:

- 1)The hybrid prosthesis is unscrewed, and an initial impression is made extra-orally with alginate material and a diagnostic cast is poured.
- 2)If necessary, the lost shape and contour of the hybrid prosthesis are re-established on the diagnostic cast with contouring wax.
- 3)Implant analogs are then attached to the prosthesis.
- 4)A cast forming container is filled with stone and the attached analogs are submerged up to at least 5mm away from the platform.
- 5)Soft tissue impression is then recorded by injecting addition silicone material between the intaglio surface of the framework and stone.

- 6)A master cast is generated.
- 7)The casts (master and opposing jaw) are then mounted on an articulator.
- 8)An alginate impression is made of the recontoured diagnostic cast (Step 2).
- 9)This impression is lined with a film of acrylic monomer, and a hand insufflator is used to flow the acrylic polymer into the alginate impression to create an acrylic shell.
- 10)The acrylic resin shell is then isolated by carefully removing it from the impression.
- 11)Scissors, burs, or disks are used to trim the acrylic resin shell.
- 12)Mounting of the acrylic resin shell to the opposing cast is done and secured with sticky wax.
- 13)Temporary cylinders or acrylic copings are screwed to the selected implant analogs on master cast.
- 14)The space between the acrylic shell and the temporary cylinder is filled with acrylic resin.
- 15)Additional acrylic resin and/or pink acrylic resin can also be later added as required.
- 16)The temporary restoration is polished after the occlusion is checked.
- 17)The provisional prosthesis is delivered, and final occlusal adjustments are made if necessary.

Post lab processing, the ten repaired hybrid prosthesis were adjusted and delivered to the patients. For each patient, the age, gender, hybrid and provisional restorations usage time, and type of connection were recorded.

The self-administered seven-item visual analog score (VAS) scale was used to evaluate patients' satisfaction. Comfort, ease of speaking, ease of cleaning, esthetics, stability, retention, and ease of chewing were assessed using this scale. All 10 patients were asked to grade their experience with the provisional restoration on a scale of 0-10 as per, where zero indicates poor outcome and 10 indicates excellent outcome.

SEQUENCE OF PROCEDURE



Item	1	2	3	4	5	6	7	8	9	10
Comfort	8	6	9	6	6	8	9	9	7	8
Ease of Speaking	7	7	9	7	7	9	8	8	7	9
Ease of Cleaning	7	6	9	6	6	7	7	8	6	7
Ease of Chewing	8	7	9	7	7	8	7	8	7	7
Esthetics	9	7	9	7	8	8	9	9	6	7
Stability	7	8	9	8	8	7	8	10	9	9
Retention	8	8	9	8	8	7	8	10	9	9
Overall	8	7	9	7	7	8	8	9	7	8

Subject	Age	Gender	Max/Man	Years of use	Provisional use weeks	Complication	number of implants	Selected	Patient satisfaction
1	82	M	Max	10	2	No	4	8	
2	53	F	Max	12	4	No	4	7	
3	77	M	Man	7	2	No	5	9	
4	65	M	Man	9	2	No	4	7	
5	73	F	Man	13	3	No	4	7	
6	72	M	Man	5	3	No	4	8	
7	84	F	Max	11	2	No	4	8	
8	73	M	Max Man	9	2	No	4	9	
9	65	M	Max	21	4	No	4	7	
10	64	F	Max	11	4	No	4	8	

CONCLUSION

The results of this retrospective case series concluded that the ASAI technique is a viable treatment option for fabricating chair-side fixed provisional restorations with high accuracy at low cost for the patients. In this limited case series, satisfaction level with the fixed provisional restoration was high. All restorations remained intact during function, until replaced by the laboratory repaired final hybrid restoration. Further studies with larger sample sizes are required to further substantiate the outcome reported in this investigation.

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