

Prosthetic Concerns About Atrophic Alveolar Ridges

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As a prosthodontist, I routinely see patients that require extensive prosthodontic reconstruction due to their atypical oral anatomy. Frequently, this situation was created at the time of tooth extraction and is the result of residual ridge resorption. Residual ridge resorption is a major oral disease entity as described by Tallgren in the early seventies¹. Following tooth extraction, patients can expect to lose a significant portion of their residual ridge due to normal physiologic activity². This resorption is unpredictable and can be a very challenging situation when fabricating replacement prostheses. The challenges range from functional to esthetic depending on the location and severity of the resorption. Newer advances in bone physiology have let us appreciate a more in-depth picture of bone healing. In the past, it was assumed there was no need to treat an extraction site for future prosthetic considerations. However, today we know this is not the case. It is well documented that without augmentation, the maximum osseous fill or regeneration in the extraction socket will be minimal³. Because of this lack of optimal bone fill and unpredictability in the total resorption of the alveolar ridge, the prosthodontic treatment of these patients has been less than optimal and

frequently compromised. To illustrate these concerns and difficulties, two patients exhibiting significant residual ridge resorption with significant prosthodontic challenges both in function, esthetics, and patient expectation, will be discussed.

PATIENT # 1

This patient presented with a history of periodontal problems and treatments. His mandibular anterior teeth had been extracted and a removable partial denture (RPD) fabricated approximately five years previous to being seen in my office. His chief complaint now was dissatisfaction with the instability of the RPD. Due to the significant amount of residual ridge resorption (RRR) (Figure 1), it was likely that a new RPD would yield similar results for this patient. After being advised of my concerns, the patient chose to be restored with a composite retained fixed partial denture. However, the esthetic results were, in my opinion, compromised because of the severity of the RRR. The replacement teeth were

unnaturally long (Figure 2), but due to the patient's lip line, it was acceptable to him. I believe the severity of the resorption was due to several factors: (1) pre-existing periodontal disease that went untreated for several years, (2) an ill-fitting RPD and, (3) most importantly, the lack of augmentation of the sockets at the time of extraction.

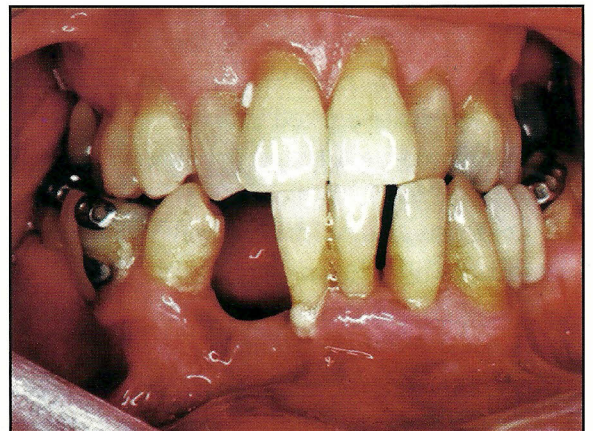


Figure 1. Residual Ridge Resorption.



Figure 2. Composite retained fixed partial.

PATIENT #2

This patient was first seen in my office by referral from a periodontist. The periodontist had stabilized the patient's periodontal condition making the patient ready for prosthodontic evaluation and treatment. Due to the severity of the residual ridge resorption in the anterior maxilla (Figure 3) and the patient's smile line, restoration with an anterior fixed prosthesis was not indicated. The pontics would have been excessively long and no doubt, esthetically unacceptable to the patient. The alternative treatment was to fabricate a fixed prosthesis incorporating a tissue bar that would provide both direct and indirect retention with the final removable prosthesis. The residual ridge would provide very little support for the basis of the RPD. Through the use of a diagnostic wax-up, and fabrication of a provisional restoration fabricated from the wax-up, an optimal esthetic result was finally achieved through modification of the fixed provisional restoration and temporary removable partial denture. The final prosthesis was fabricated only after the patient approved the temporary provisional restoration (Figure 4).

CONCLUSION

Over the last several years, research has provided much insight into the problem of residual ridge resorption. Today we know much more than we did in the past. It has become clear that ridge maintenance and preservation will dramatically improve the quality of restorative dentistry provided for the patient, in addition to lessening the complexity of the treatment plan for the doctor. With recent well-documented research advances, and after years of clinical experience, I routinely recommend extraction socket(s) be grafted with a synthetic resorbable hydroxylapatite bone substitute (*OsteoGraf*®/LD-300, CeraMed Dental, Lakewood, Colorado) to preserve the alveolar ridge for future prosthodontic restoration. In the past, there was little or nothing that could be done about this situation. However, today there are options available to patients that will alleviate most of these problems. ☺

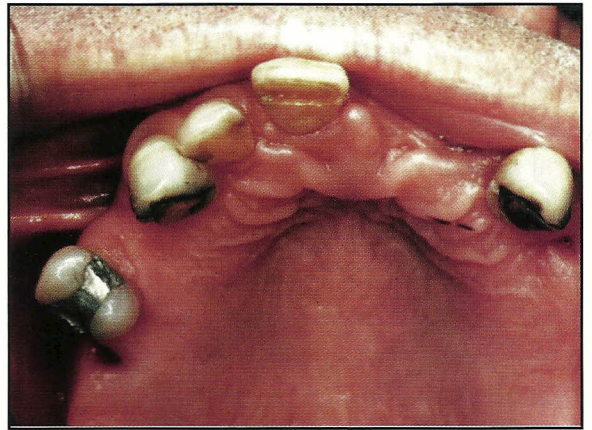


Figure 3. Residual Ridge Resorption (RRR).

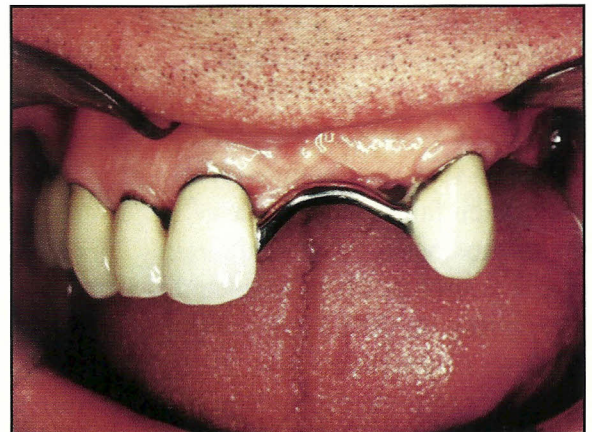


Figure 4. Final Fixed Prosthesis.

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