

- It appears that edentulous patients prefer minimally invasive fixed implant treatment options as opposed to removable implant therapy. However, more patients appear to encounter speech and oral health maintenance problems when wearing fixed as opposed to removable implant-supported prostheses.

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On Parafunction, Degenerative Arthritis, and the Edentulous Patient

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- Nonfunctional or parafunctional habits involving repeated or sustained occlusal contacts can be harmful to the teeth or their replacements, including other components of the masticatory system. The profession lacks compelling epidemiologic studies of the incidence of parafunctional occlusal stress in populations with both natural and artificial dentitions. Nevertheless, clinical experience indicates that tooth clenching is common.
- Parafunctional habits in the denture wearer may cause additional loading on the denture-bearing tissues with consequent complaints of soreness and perhaps even an increased vulnerability to residual ridge reduction.
- Parafunctional mandibular activity may be either a nocturnal or awake behavioral condition and may occur with other forms of parafunction. It is closely associated with stress when it occurs during the day or a central nervous pathway if at night. Bruxism and teeth attrition are also closely related. Attrition is the wear of teeth resulting from tooth-to-tooth contact and may be associated with a bruxing habit. The link between both conditions can cause confusion over their respective definitions.
- Whenever bruxism is clinically associated with tooth wear, the teeth have flat or faceting areas on the occlusal or incisal surfaces. Bruxing can lead to extreme pressures on the teeth and often manifests as fractured or perforated restorations. It is difficult to control, although nocturnal occlusal splints can

reduce the impact of clenching; however, diurnal control is more difficult.

- Studies focused on bruxism show it is relatively common, but data varies, probably because of the variety of methods used to assess it and the difficulty in identifying the condition. The impact on teeth is easier to establish, but it is almost impossible to assess whether wear is associated singularly with bruxism or other wear mechanisms.
- The neurophysiologic basis underlying bruxism has been studied experimentally in animals and in human beings, and part of its mechanism can be explained by an increase in the tonic activity in the jaw muscles. It is a very complex area of research, since it has been shown to result from psychosocial factors (such as stress or anxiety) or to be a reaction to strong emotions (eg, anger, frustration). It may also be associated with specific medical conditions (eg, oral tardive dyskinesia, Parkinson's disease), sleep parasomnias, or sleep disorders (apnea).
- There are very few robust studies reporting the effect of bruxism on dentures and their supporting tissues. However, the presence of time-dependent and severely worn prosthetic teeth may suggest a contributory role to compromised occlusal and face height integrity, together with adverse morphologic changes in supporting tissues.
- Edentulism leads to a reduced capacity to apply pressure between denture teeth; therefore, the impact of bruxism on dentures is almost impossible to assess when the other well-established principles of denture construction are considered.
- The situation is easier to assess when implants are used to replace teeth as the pressure applied between the jaws increases. Numerous case reports and collective professional experiences suggest that bruxism continues in these situations and can result in an increased risk of damage to prosthetic and implant components.

- In summary, pure bruxism appears to be a relatively uncommon finding but presents considerable clinical challenges that are not easily overcome.

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On Coping with Inherent Edentulous Management Shortcomings

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- Edentulism, coupled with increasing life expectancy, has already created a patient population that is coping for a longer time with the adverse consequences of alveolar bone loss—residual ridge resorption (RRR). Dentists developed several therapies to address this challenging reality and prolong the useful life of the complete denture service. They introduced specific, routine, well-proven clinical and laboratory protocols—relines, rebases, and repairs—the so-called 3Rs of removable prosthodontics, which have proven their efficacy and effectiveness over many decades of service. When combined with subsequent refinements such as soft liners and functional impression materials, improved wear resistant tooth materials, denture adhesives, and the more recent digital denture assessments and impressions, dentists have demonstrated impressive ingenuity and sustained ability to provide excellent traditional removable prosthodontic services.
- Moreover, in the 1970s, the dental overdenture concept of retention of selected and strategically located tooth roots to improve a complete denture's stability and function was introduced as an alternative to outright edentulism. Clinical experience and documented research underscored the merits of retaining natural teeth to serve as abutments under complete dentures, or else under extensive or distal extension areas of removable partial dentures. The premise was that occlusal forces of a functional and parafunctional nature that exert an adverse

influence on denture-supporting tissues need to be attenuated or reduced, and the applied protocol frequently facilitated an improved prosthetic experience for several quasi-edentulous patients. The retained teeth abutments could be few or numerous, coronally modified or restored, and frequently endodontically prepared. The objective was to distribute stress concentration between retained teeth abutments and denture-supporting tissues and enhance their retention.

- Prosthodontic educators around the world quickly recognized that the technique helped reduce the impact of some complete denture-wearing uncontrollable consequences: RRR, loss of occlusal stability, undermined esthetic appearance, and compromised masticatory function. The technique was also popularly regarded as a gentler transition to the completely edentulous state. The time-dependent favorable outcomes with the overdenture technique led to routine prescription of the technique. However, a mere decade later, dental implants were recognized as acceptable therapy, and the overdenture protocol of retaining a few but perhaps questionable tooth roots was quickly eclipsed by osseointegrated titanium teeth analogs that were not vulnerable to either caries or periodontal disease. The well-established and reliable protocols of traditional prosthodontic care rapidly blended into dental implant-based therapy with compellingly documented, time-dependent successful outcomes. The net result of the osseointegration technique's introduction was the possibility of converting patients with maladaptive prosthetic experiences into ones with adaptive overdentures when implants are used to stabilize “offending” prostheses. As a result, the twin techniques (traditional complete denture fabrication with natural teeth or implant abutments) now offer dentists and patients an enriched repertoire of prosthodontic therapy.

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