Sequelae of Partial Edentulism

Steven E. Eckert, DDS, MS
Professor of Dentistry, Division of Prosthodontics
Mayo Medical School, Rochester, Minnesota
E-mail: seeckert@mayo.edu

The loss of teeth causes a number of concerns related to loss of masticatory function, esthetic deficiencies, and the effect of increased demands on the residual dentition. Both objective and subjective factors may affect the patient's desire to consider tooth replacement. The advantages and disadvantages of any intervention must be weighed carefully. This article will discuss many of the issues faced by clinicians and patients when teeth are lost.

Anticipation of a functional deficit is often the first concern expressed by patients and clinicians when teeth are lost. There is a loose correlation between the number of missing teeth and loss of function. Since patients generally experience a preferred chewing side, loss of occluding contacts on the contralateral side will have little effect on function. Conversely, loss of one tooth on the preferred chewing side effectively eliminates an occluding pair of teeth, and this may cause a functional impairment. As more teeth are lost, the patient's ability to triturate the food bolus diminishes. In addition, loss of occluding surfaces may interfere with the patient's ability to control the food bolus.

Dental literature often concentrates on the patient's ability to comminute food. The interpretation is that quantitative assessment of masticatory efficiency translates directly into a qualitative improvement in patient satisfaction. This conventional wisdom may be true if the patient's chief complaint is loss of function, but may be of little importance to the patient concerned primarily with appearance, preservation, and comfort.

Loss of a tooth generally affects the adjacent and opposing teeth. Loss of an antagonist tooth allows the extrusion of unopposed teeth, while loss of an adjacent tooth allows drifting and tipping of the surrounding teeth. Left unchecked, extrusion, drifting, and tipping may result in loss of normal arch form and alteration of the occlusal plane. As arch integrity is compromised, the potential for abnormal wear on the remaining dentition is increased, resulting in more rapid attrition and abrasion.

When the opposing arch supports a removable mucosal-borne prosthesis, there is a distinct possibility that force concentration from the natural teeth could cause acceleration of residual ridge resorption in the opposing arch. Kelly[1] described 5 pathognomonic signs of "combination syndrome" as follows: *(1)* maxillary residual ridge resorption resulting in fibrous hyperplasia of the anterior maxilla, *(2)* extrusion of the mandibular anterior teeth, *(3)* lack of posterior support for a distal extension denture base in the mandibular arch, *(4)* downgrowth of the maxillary tuberosity, and *(5)* papillary hyperplasia of the palatal tissue. The suggestion is that this syndrome is caused by a specific pattern of tooth loss resulting in a series of unfavorable consequences. Although combination syndrome is thought to be a particularly unfavorable response, it may be suggested that it actually represents an accumulation of the outcomes most frequently associated with tooth loss.

In addition to the aforementioned deficiencies, it is also possible that the loss of posterior occlusal support could combine with other factors to create instability of the temporomandibular joint. Although great individual variability exists, loss of posterior support must be considered as an adverse factor regarding the health of the joint. Esthetic concerns associated with tooth loss take many forms. From the obvious loss of a tooth within the esthetic zone to the loss of posterior support resulting in reduction of the vertical dimension of occlusion, facial appearance can be significantly impacted by tooth loss. Beyond the objective concerns of loss of function and diminished comfort, patients also describe subjective responses to alteration of a previously normal appearance. Given society's increasing emphasis on appearance, it is distinctly possible that these concerns will provide the impetus for patients to seek tooth replacement when esthetic concerns are present.

Tooth loss carries a number of consequences. From simple loss of function to long-term deleterious effects on the remaining teeth, temporomandibular joints, and facial appearance, it is clear that clinicians and patients must be aware that tooth loss is more than an inconvenience. In addition, it is important that everyone involved in the replacement process understand the risks and benefits associated with such a procedure. Through informed consent, all will benefit.

Reference

1. Kelly E. Changes caused by a mandibular removable partial denture opposing a maxillary complete denture. J Prosthet Dent 1972;27:140–150.