Treatment of the Edentulous Patient

George Shelby White, DDS

KEYWORDS

• Edentulism • Overdentures • Implants • Edentulous population • Quality of life

KEY POINTS

- The edentulous population has been acknowledged as being neglected and denied the opportunity to function at a higher level for decades.
- When considering the quality-of-life issues, the dentally crippled have been hindered from having a more productive life.
- The McGill consensus statement has been the driving force in developing an attitude in dentistry that takes advantage of today's technology.

Edentulism is a chronic debilitating condition that affects millions of peoples' ability to function from a physical and psychological standpoint. No definitive cure exists and, if left unaddressed, the condition will progress. Developing a strategy for treating the edentulous population is essential.[1] The first thing that must be acknowledged is that the edentulous population exists and will continue to increase (**Fig. 1**).

One might conclude that with dental prevention and the advances in dental technology, a decrease in edentulism would occur. According to the statistics of Douglass and colleagues,[2] 33.6 million people needed 1 or 2 dentures in the United States in 1991, and this was predicted to increase to 37.9 million in 2020. The increased longevity of the aged population supports this prediction.

Understanding the role that teeth and alveolar bone play in providing support for a prosthesis to function effectively is important in minimizing the disruptive effects of edentulism. The more effective specialists are in managing these disruptive effects, the more psychologically stable the patient will be. All branches of medicine are addressing quality-of-life issues.[1]

The quality and quantity of supporting anatomic structures contribute to the ultimate success. The results of Tallgren's[3] 7-year studies compare the resorption rate of a complete denture with that of a removable partial denture supported by canines. The studies showed that 6.6 mm of the mandibular process resorbed in patients with complete dentures compared with 0.8 mm in those with removable partial dentures.

The 5-year studies of Crum and Rooney[4] had similar results in their comparison of alveolar bone resorption in patients with complete mandibular dentures versus those with mandibular overdentures supported by canines. They found bone loss to be 5.0 mm in patients with complete dentures compared with 0.6 mm in those with overdentures.

For a denture to meet acceptable functional standards, it must provide support, stability, and retention. With an adequate volume of bone, support and stability can be established. Retention becomes more of a concern with the complete mandibular denture than with the complete maxillary denture.

The American College of Prosthodontists (ACP) developed a diagnostic classification system of complete edentulism based on several factors[5]:

- Bone height of the mandible
- Maxillomandibular relationship

Division of Prosthodontics, Columbia University College of Dental Medicine, 630 West 168th Street, PH 7 East 115, New York, NY 10032, USA
E-mail address: gsw3@cumc.columbia.edu

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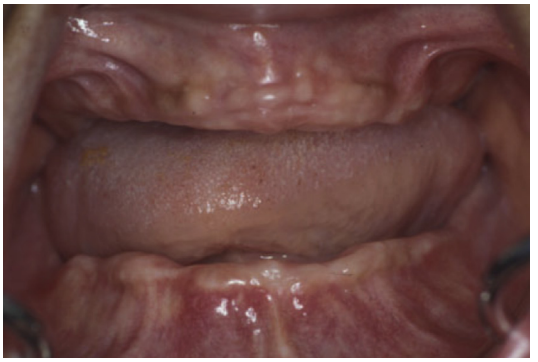

Fig. 1. The forgotten patient with edentulism.

- Residual ridge morphology of the maxilla
- Muscle attachment

Class IV edentulism represents a severely compromised arch that may make treatment extremely difficult. In class IV edentulism, the mandible has a vertical residual ridge height of less than 10 mm (**Figs. 2** and **3**). The maxilla type D is characterized by loss buccal vestibules, hyperplastic or redundant tissue, a palatal vault that does not resist lateral movement, and a prominent nasal spine (**Fig. 4**). These factors indicate a poor prognosis and the need to develop a treatment strategy.[6] The treatment strategy should address both anatomic deficiencies and quality-of-life issues.

Even if the anatomic condition is favorable, it may not meet the expectations or tolerance of the patient with edentulism.

IMPLANT RATIONALE

Patients with edentulism have long been ignored. However, the advent of implants and their acceptance among mainstream treatment options could affect the manner in which patients with edentulism are treated.[7]

Fig. 2. Occlusal view of the mandibular arch.

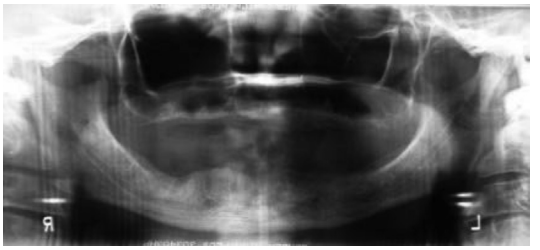

Fig. 3. Pantographic radiograph.

Treatment strategies are multifaceted. A survey was conducted among the faculty of the Columbia University College of Dental Medicine. One question asked was when would the respondent decide to use a 2-implant–supported overdenture; would the respondent fabricate a conventional denture and let the patient decide whether the support of implants was needed, or would the respondent immediately fabricate the 2-implant–supported overdenture? Of the faculty surveyed, 40% elected to wait and let the patient decide whether an overdenture was needed. However, the main consideration one must take into account is complete denture wearers who do not have their dentures remade for at least 6 years; the dentures are not maintained and resorption occurs. The patient with ACP class II edentulism could become ACP class IV, making implant placement more of an issue.[8] Implant placement could have preserved bone for optimum results (**Fig. 5**).

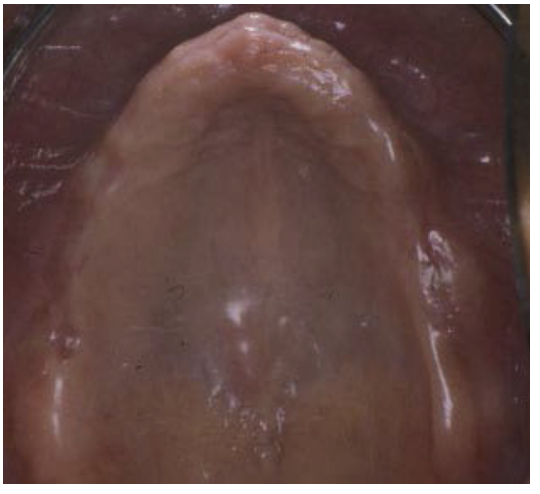

Fig. 4. Occlusal view of the maxillary arch.