The dental profession has come far in terms of better materials, tools and techniques. For example, we have made great progress in decreasing dental caries and the periodontal diseases. Advances in both methodologies and therapeutic agents have been remarkable. The restoration of the completely edentulous patient’s dentition through the use of dental implants, for example, has turned patients’ lives around. Newer restorative materials and technologies are driving newer, more efficient and successful clinical treatment—and yet there is still so much left to do.

This article discusses some of the current trends in removable prosthodontics.

**PATIENT DEMOGRAPHICS**

Current dental demographics indicate the existence of a large population of patients who are fully edentulous and in need of treatment. For example, in the United States, approximately 47 million people wear some type of removable prosthesis. A recent patient study indicated that 58 percent of denture wearers expect their dentures to last 20 years or more. The study found that the average complete denture is 17.6 years old (R. Zentz, D.D.S., unpublished data, 1999). It is no wonder that nearly 20 million people—10 percent of the U.S. adult population (> 35 years of age)—struggle with an unstable denture. Yet they neglect to seek professional care. Fifty-seven percent of denture wearers seldom or never receive a denture checkup. This may be due in part to the fact that only 19 percent remember their dentist’s telling them to come back after denture placement and to the misconception that they have “no problems.”

According to a report released by the Health Care Financing Administration, or HCFA, Americans are expected to spend an estimated $56.6 billion on dental care during 1999, a 5.7% increase from the previous year.
percent increase from 1998. HCFA estimates that spending for oral care will continue to increase by 5 to 6 percent to $93.1 billion through the year 2008. Accordingly, a 6.4 percent increase in dental care spending is expected for the year 2000. The HCFA’s report—The Next Decade of Health Spending: A New Outlook—also reports that an estimated $26.8 billion is paid out-of-pocket by patients, with most of the remainder paid by private insurance companies. Yet, spending by denture wearers on professional denture services is disproportionately low and trending lower even though the need is great.

**TRENDS IN COMPLETE DENTURE PROSTHODONTICS**

Current clinical techniques for removable prosthodontics are really only traditional techniques using newer materials and processing technologies. Most private practitioners have continued to use the denture fabrication methods they learned in dental school, although often they modify their impression techniques to reflect the use of newer, more efficient materials.

Those clinicians who have found satisfaction in fabricating complete dentures have generally done so by mastering the classic “five-appointment method” taught to them in school and modified as needed or required for specific patients. The “branching technique,” taught first by Pound and later by Turbyfill and others, allows for extended treatment and management of more complex patient problems.

The accelerated techniques taught by Frush and Smudde allow for clinical efficiency while still managing difficult prosthodontic cases.

Results of recent surveys indicate that improved efficiency in the denture fabrication process is important to most clinicians (R. Zentz, D.D.S., unpublished data, 1999).

All three methods—the traditional five-appointment method, the branching technique and the accelerated technique—require attention to detail and the ability to efficiently fulfill patient expectations. Alternatively, we must prepare them to accept less when more is not possible. Ultimate success in treatment appears to be attributable to a combination of excellent esthetics, fit and skill in patient management.

As patients become more active and demand more dental care in shorter time periods, new products are being developed to improve clinical efficiency by combining two or more steps into one. For example, TrayByte (Dentsply Trubyte) combines the edentulous custom tray with a prepositioned occlusion rim that allows for impression-making and recording centric and vertical relationships during the same appointment. This technique can shorten clinical fabrication steps from five appointments to as few as three. The product can be used in either maxillary or mandibular arches as single dentures or in both arches simultaneously for a set of complete dentures. Other “three-visit denture systems” may not use occlusal rims (the so-called “mush-bite”) or they may skip the final wax try-in.

The art of impression-making still requires skill, practice and understanding of the oral anatomy being impressed. Newer materials and products such as the “quadrafunctional”...
addition reaction silicone materials (Aquasil, Dentsply Caulk) make impression-making easier but in no way compensate for a lack of knowledge or attention to detail.

Another device, the Trubyte Alma Gauge (Dentsply Trubyte) allows the clinician to quickly record central incisor tooth position and/or vertical dimension of occlusion in existing dentures for easy and rapid replication or alteration in fabricating new dentures (Figure 1).

**SMILE DESIGN: NOT A NEW CONCEPT**

Esthetic restorative dentistry has broadened the awareness of smile design; however, dentists and technicians have long replaced missing anterior teeth with a focus on esthetics. Tooth size, shape, color, position, arrangement and display have been classically taught to dental and laboratory technician students for decades. Clinicians and technicians both seem to forget that the process of selecting and arranging artificial teeth in space—as required in complete denture construction—is really the best venue for studying the esthetic ceramic and polymeric materials used for individual teeth or fixed partial dentures (Figure 2). An example is the “mock” or trial denture idealized for esthetics, phonetics and function, which should always precede implant placement for patients who require more rigid support of a prosthesis. This planning phase demonstrates proper tooth position and helps the surgeon determine the appropriate surgical treatment plan, improving results and patient satisfaction.

**CONSIDERATIONS FOR PROSTHODONTIC EXCELLENCE**

The denture base as gingival matrix. An often-used metaphor compares the “characterized” denture and tooth arrangement to a framed piece of art. The artwork is framed and matted to focus attention on the art and to create a feeling of space surrounding it. The mat must demonstrate harmony with the art, since it defines what the art is and also becomes a part of the art. The matting is an art form in itself.

Likewise, the denture base material that retains the artificial teeth and replaces lost hard and soft tissues serves the same purpose as the mat. The lips usually are considered the “frame.” The artistic simulation of vital gingival tissues for the edentulous patient requires the same scrutiny as in tooth arrangement or smile design. The “dental artist” may simulate or “characterize” the denture to reflect health, disease, relative age and even racial variation with the proper materials and attention to detail.
Accurate processing and finishing of the restoration. The processed denture base serves not only as part of the patient esthetic but also is the connection to the patient. Therefore, processing accuracy is critical and the selection of materials and techniques plays a major role in the success of the prosthesis.

The density of material after processing is likewise important to the strength and longevity of the restoration, as well as to the prevention of dental plaque accumulation and acquisition of “denture odor.”

Color stability is not only dependent upon the processing method but upon use of quality materials. Research has demonstrated that certain denture injection systems (such as Success, Dentsply Trubyte) can provide improved accuracy and consistent quality (Figure 3).

Implant restoration and the edentulous patient. Implant dentistry is “everyday dentistry” in many practices today and could be incorporated into virtually any adult restorative or surgical practice. The success rates of today’s implant protocols are impressive and support the integration of dental implants into the mainstream of dental treatment.

Restoration of the edentulous mandible with implants and bar-retained overdentures or fixed partial dentures, in particular, enjoy great success from the patient’s perspective; failure in the edentulous mandibular arch is rare. Restoration of the edentulous maxilla, however, is more involved and is somewhat more difficult to treat both surgically and prosthodontically. Because of bone loss patterns in the maxilla, pneumatization of the maxillary sinuses and generally poor quality of bone, treatment can be more difficult and success rates are usually lower than for the mandible. One to two years may be required to complete the restoration, especially if bone-grafting procedures are indicated.

Implants do fail to integrate occasionally. One recent study documents an early failure rate (failure during the healing phase) of 0.55 percent. However, many times the patient perceives a failure due to unfulfilled or unrealistic functional or esthetic expectations. Thus, patient communication is an important component of the implant treatment planning process.

Patients assign value to a prosthodontic product when it is perceived not as a commodity but as part of a personalized service.

DENTAL PRACTICE MODELS AND FEES

The business of dentistry in the year 2000. In any field of endeavor there are more ways than one to excel. In dentistry today, there are some practices that direct their energies to being the lowest-cost provider in their area. Tight profit margins or low cost of services to patients requires perhaps more organizational skill and closer management than may be needed in the higher-fee practice. Clinical efficiencies and economics of scale become important to providing adequate patient care while maintaining adequate profitability. It is not the desire of most clinicians to emulate this practice model, which may most resemble a managed care medical model. It is a difficult way to practice, clinically and financially.

Another model espoused by some is the development of the “boutique practice,” generally offering “high-tech, high-end care” directed toward the financial top 10 percent of the public. This is also a difficult practice model and may be “feast or famine,” dependent on a constant flow of “high-end” new patients.

The model that seems to be enjoyed by most practitioners might best be described as a restorative practice that offers its patients the best total solution to their dental needs. This type of practice generally has a high percentage of fee-for-service patients. It attempts to offer the best care the practitioner can provide, while maintaining a moderate fee structure. Those services not offered by the practitioner are generally referred to specialists, with the patient returning to the general dentist when specialty treatment is completed.

Regardless of the practice model chosen, the dollar cost for materials and laboratory services from the high-end complete denture to the lowest-end commodity denture is only a few dollars. The value added by the clinician is really the main difference in cost and value to patients. The clinical steps and the time required to complete them vary little from both ends of the treatment spectrum.

What is a fair fee to charge the patient? Prosthesis fabrica-
tion and fitting is a custom service that deserves a custom fee. Base your fee on two considerations: office overhead and necessary hourly production to meet overhead and create profit, and value created in the mind of the patient. Patients perceive quality of fit, function and phonetics as a given for all dentures, regardless of their cost. Patients assign value to a prosthodontic product when it is perceived not as a commodity but as part of a personalized service, unique and artistically correct for each patient. Dental practices that employ a team approach using various charside aids appear to be most successful in communicating this value.

SUMMARY

This article has discussed some of the current trends in prosthodontics. Education, clinical efficiency and skill, as well as patient management, are the keys to increased patient acceptance of our work, financial rewards and professional satisfaction. These keys are especially important for successful management of the patient with complete dentures.

Complete dentures will continue to be an important service well into the new millennium.¹ New materials and processes that help clinicians and dental technicians provide quality care while improving patient convenience and access will continue to be successful. Our challenge is to drive the industry toward further improvements and to address compassionately the needs of our edentulous patients.

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