What did you learn in dental school about occlusion? It is likely that the overfilled dental curriculum in your school did not allow much time to be devoted to occlusion. It is also probable that if you were instructed on occlusion that you received very little instruction about the pragmatic applications of occlusal concepts.

Is occlusion a necessary aspect of dentistry? Is occlusion really that mysterious? Is occlusal therapy more difficult to accomplish than other dental procedures? Can accomplishing occlusal procedures generate income? Why does occlusion not receive more emphasis in both education and practice? These are a few of the questions that are clearly present in this area of dentistry. Occlusion is a part of most clinical areas of dentistry, and that is one reason schools have had difficulty obtaining a consensus on what should be taught in this subject. After observing and participating in the occlusion area for many years, I may have the answer to some of these questions.

This article states my personal beliefs about the importance of occlusion, discusses the various conditions of occlusion, and provides information about clinical occlusal procedures that I feel most dentists should accomplish on a routine basis.

ABNORMAL CONDITIONS OF OCCLUSION

Dentists see occlusal disease or abnormalities during every day of practice. Occlusal problems are one of the three major areas of oral disease treated by dentists, which include dental caries, periodontal disease, and occlusal disease. I am confident that most abnormal occlusal conditions go untreated. Although practitioners treat the slightest hint of dental caries, they often let gross abnormal conditions of occlusion go untreated. Patients may or may not be advised about the ongoing occlusal disease, resulting in many oral maladies and loss of teeth.

Although numerous textbooks have described the abnormal conditions of occlusion, I have made my own classification of occlusal conditions based on many years of practice and observation of thousands of patients. The following are the conditions that are evident every day in practice, most of which require treatment, or at least education of the patient about preventing the continuation of tooth destruction.

BRUXISM In my opinion, this condition, described to be evident in as many as one-third of patients, is the most difficult to treat of all occlusal conditions. Bruxism is eccentric grinding of teeth, which eliminates canine rise and incisal guidance. By age 40, patients with bruxism may reduce their teeth to a condition that is esthetically unacceptable, sensitive, and functionally inefficient. All dentists have seen bruxism start at an early age causing tooth structure loss as soon as teeth erupt into the mouth. However, treatment of bruxism on permanent dentition usually starts in the late teen-age years.

TREATMENT OF BRUXISM As soon as bruxism is noticed in the adult dentition, patients should be advised that they have the condition. If excessive tooth bruxing continues, an occlusal splint should be made to be worn at night, and during times of significant mental stress. I have observed that hard resin occlusal splints can usually be worn by patients for up to 10 years before they need to be remade. Wearing the splint usually eliminates the tooth excessive wear, or at least reduces it significantly.

For initial bruxing patients, slight occlusal equilibration should be accomplished to reduce the tendency to brux.

Unfortunately, untreated persons who continue their bruxing habit for many years, destroy the coronal portions of their teeth. Alternatives for treatment of these patients are few, and include: esthetically constructed hard resin occlusal splints, crowns and fixed prostheses, or tooth extraction and removable prostheses.

Failure of practitioners to advise patients about their bruxism problem can become a legal problem.

CLENCHING This condition is similar to bruxism in that the teeth wear abnormally, but it produces a very different clinical condition. While bruxers eliminate incisal guidance and canine rise by moving their teeth left and right and forward and back, clenchers close their mouths and place force on their teeth while in the centric occlusion position. This abnormal tooth wear accentuates the steepness of canine rise and incisal guidance by closing the vertical dimension of occlusion.

TREATMENT FOR CLENCHING Patient education, occlusal splints, and occlusal equilibration are indicated as treatment. Patients with long-standing clenching destroy their teeth and require palliative esthetically acceptable splints or occlusal rehabilitation.

PRIMARY AND SECONDARY OCCLUSAL TRAUMA Frequently, restorative dentists produce primary occlusal trauma (excessive force on specific teeth) when restorations are placed. Primary occlusal trauma is also caused by malocclusion, accidents, or orthodontic treatment, all of which move teeth and apply force to the dentition.

Secondary occlusal trauma is extra force placed on teeth due to periodontal collapse. Perhaps it is the least adequately treated condition in dentistry. Almost all adults have some form of periodontal disease, with its subsequent reduction in tooth support and resulting tooth migration into conditions of malocclusion.

TREATMENT OF PRIMARY AND SECONDARY OCCLUSAL TRAUMA Carefully grinding the affected tooth or teeth and reducing the

continued on page 52
forces on the teeth easily treats primary occlusal trauma. Of course, occlusal forces must be equalized on the affected teeth as well as the remainder of the dentition. Secondary occlusal trauma requires periodontal therapy and occlusal equilibration.

**TEMPOROMANDIBULAR DYSFUNCTION (TMD)** Continued debate is present on the etiology of TMD and its relationship to occlusion. One of the theories concerning the relationship of TMD and occlusion claims that premature occlusal tooth contacts can cause muscle splinting and resultant pain and discomfort. However, others claim that there is not a relationship between occlusion and temporomandibular dysfunction.

After many years of treating TMD and working with all aspects of occlusion, I have the strong opinion that occlusion plays a significant role in TMD. Most experienced practitioners treating TMD use occlusal splints to disclude the patient’s teeth and avoid the jaw-positioning influence of malocclusion or prematurities. In my experience treating simple muscular TMD, the signs and symptoms of TMD disappear within a few days after placing the splint.

**TREATMENT OF MUSCULAR TEMPOROMANDIBULAR JOINT DYSFUNCTION**

In my experience, about 80% of the TMD patients who present themselves have only muscular TMD involvement. These patients do not have clicking or crepitus in their temporomandibular joints, and the TMD has been present for only days or a few months. Treatment is simple. I prefer a full-arch (maxillary or mandibular) splint worn full-time for at least 2 weeks, followed by adjustment of the splint occlusion, and another 2 weeks wearing the splint full-time. A simple occlusal equilibration is accomplished when the pain has been reduced or eliminated. The patient continues to wear the splint at night for at least another two weeks after the occlusal equilibration. Usually the muscle pain is gone, and the splint can be worn only in times of relapse or occasional pain.

**MALOCCLUSION** These occlusal conditions are well known to all dentists. Both specialists and generalists treat malocclusion. Unfortunately, straightening teeth without constant observation and adjustment of occlusal contacts can create occlusal disharmonies and dysfunction.

**ABFRACTIONS** These frustrating notches found on the facial and sometimes lingual surfaces of teeth have been related to excessive occlusal loads on the affected teeth. Abfractions have always been observed, but the etiology for abfractions has been described only in recent years.

**TREATMENT OF ABFRACTIONS**

Standard class five restorations are used for most abfractions. However, when the tendency for abfractions is observed at an early stage, simple occlusal equilibration and/or occlusal splints should be used.

**FINANCIAL CONSIDERATIONS**

Some practitioners have not included occlusal treatment in their practices, because they feel that they cannot make enough profit to justify occlusal therapy as a routine part of practice. Additionally, they feel that occlusal therapy is too unpredictable to include as a routine procedure.

My suggestions on these allegations have proven to be viable in my own practice. Limit your occlusal therapy to the simple to moderate occlusal needs of your patients. Do not treat the extreme cases. Somebody in your geographic area wants to treat the complex cases. Refer the complex cases to him or her. Describe to your staff the level of therapy you will accomplish, and refer the others. I feel that typical general practitioners should be accomplishing the following occlusal therapy as a routine part of practice to treat the diseases or conditions previously described:

- Diagnosis and treatment planning for occlusal diseases or conditions
- Occlusal splints
- Occlusal equilibration
- Physical therapy
- Transcutaneous neuro stimulation (TENS)
- Medication – muscle relaxants, tranquilizers
- Abfraction restoration
- Abfraction prevention

All of these conditions have fees that are moderate, and if patient selection is limited to exclude extreme cases, the financial aspects of treating occlusal conditions are attractive.

**CONCLUSIONS** When practitioners become aware of the potential for service available to their patients by incorporating occlusal therapy into their practices, their entire vision of practice changes. Occlusal procedures become commonplace. Patients receive treatment not offered before, the dental staff is motivated and rewarded by learning the new procedures, and the practice generates more income. DT

Dr. Gordon Christensen, a Prosthodontist, in Provo, Utah, is Co-founder and Senior Consultant of Clinical Research Associates (CRA). Dr. Christensen is also the Director of Practical Clinical Courses, a continuing education career development program for the dental profession initiated in 1981. He is currently an Adjunct Professor at Brigham Young University and the University of Utah. You can contact Dr. Christensen at: Practical Clinical Courses, 3707 North Canyon Rd., Suite 3D, Provo, Utah 84604-4587. FAX (801) 226-8637. Visit his website at gordonchristensen-pcc.com.

Practical Clinical Courses (PCC) has an EXCELLENT occlusion video package of four presentations that includes diagnosis, treatment planning, and treatment for the conditions described in this article. Included is simple, easily understood information on the following topics:

- V3114 Occlusal Equilibration
- V3127 Occlusal Splints
- V3146 Temporomandibular Dysfunction
- V300A Occlusal Splints

CONTACT PCC AT (800) 223-6569 or FAX (801) 226-8637 or visit the website at www.pccdental.com