From Our Office to Yours...

Determining the prognosis of periodontally-involved teeth is crucial to the development of an appropriate treatment plan.

While there are many clinically sound approaches to determining prognosis, an objective, evidence-based scoring index similar to the quantitative methods used in medicine would help clinicians determine a more scientifically-accurate prognosis for periodontally involved teeth.

The PerioDontaletter in this issue examines an evidence-based scoring index developed by Miller and McEntire to calculate the periodontal prognosis of teeth diagnosed with moderate to severe periodontitis.

As always, we welcome your comments and suggestions on this new approach to determining prognosis.

Evidence Based Prognosis

The prognosis for teeth with moderate to severe periodontal involvement can be thought of as having two aspects: tangible and intangible.

Tangible aspects can be measured and include: the remaining amount of periodontal attachment, the rate of loss of attachment, tooth mobility, the degree to which local factors (calculus and plaque) account for the disease, occlusal habits and smoking.

Intangible aspects include: the patient's home care, age and immune system; the presence of systemic disease and the patient's heredity.

Miller et al placed the many factors which cause and affect the development and progress of periodontal disease into two classifications.

- Risk factors -- factors which cause the disease
- Prognostic factors -- factors which affect the progression and ultimate outcome of the disease.

Risk factors for periodontal disease include:

1. Biologic risk factors -- systemic diseases and genetics
2. Behavioral risk factors -- poor oral hygiene, smoking and stress

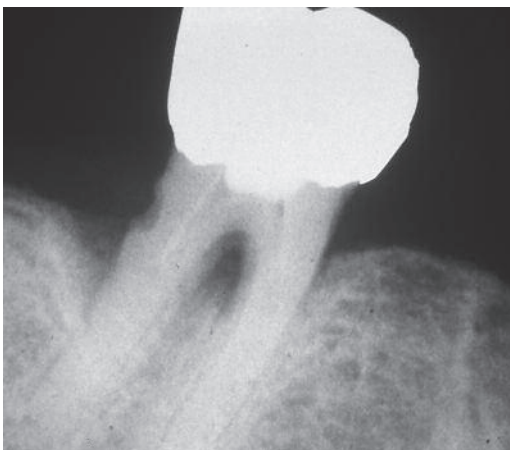Prognostic factors were categorized as follows:

Figure 1. Root caries and furcation bone loss under most circumstances would necessitate the removal of this tooth.

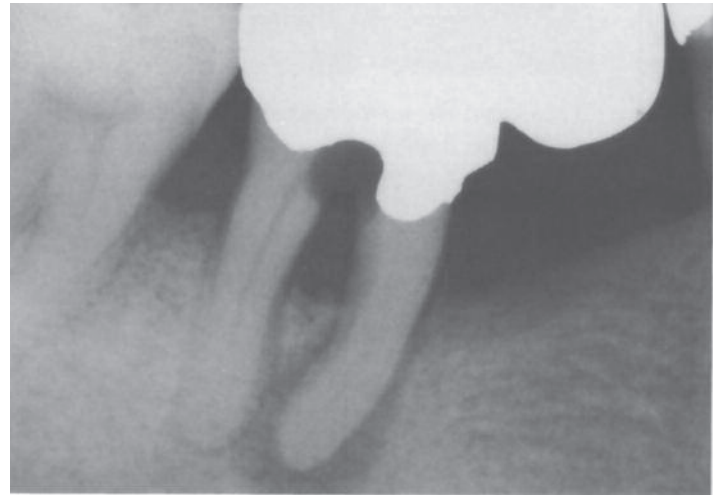Figure 2. Probe placed in a through and through class III furcation.

Figure 3. This tooth cannot be saved because of caries in the furcation, severe bone loss and endodontic involvement.

1. Factors which can be controlled by the patient -- daily plaque removal, smoking, wearing occlusal guards and compliance with recommended preventive maintenance.
2. Factors affected by periodontal treatment -- probing depth, mobility, furcation involvement, occlusal trauma, bruxism and other parafunctional habits.
3. Factors associated with systemic disease -- diabetes, immunologic disorders and hypothyroidism.
4. Factors which are uncontrollable-- poor root form, poor crown/root ratio, tooth type, age and genetics.

Some prognostic factors can be altered by treatment. Others cannot.

Prognosis of periodontally-involved teeth has traditionally been evaluated using the terms "good," "fair," "poor," "guarded" and "hopeless." The future survival of these teeth have been indicated by the terms "short-term" and "long-term."

This current concept of assigning periodontal prognosis is often based on clinical opinion and does not offer a reliable method for determining prog-nosis. Although clinical experience, therapeutic skill and patient compliance can influence prognosis, an objective way of determining prognosis is needed to accurately determine the future survival of periodontally-involved teeth.

The Miller/McEntire Prognosis Score

McGuire and Nunn concluded that this ability to predict tooth survival accurately is the ultimate test for any index devised to determine prognosis.

Miller and McEntire have developed an evidence-based, quantitative scoring system for increasing the accuracy of determining the long-term prognosis for periodontally-involved teeth.

The system was developed from evidence based on data collected from a complete periodontal examination and health history of patients with moderate to severe chronic periodontitis.

Miller and McEntire selected six prognostic factors that could be quantitatively evaluated:
• Age
• Probing Depth
• Mobility
• Furcation Involvement
• Molar Type -- maxillary or mandibular
• Smoking

A statistically-derived score using only surviving teeth was assigned to each factor The sum of these scores became the score for that tooth.

The scores can be used:
• To predict how long a tooth would survive following treatment
• As the criteria for determining whether to treat or extract a periodontally-involved tooth.
• As the criteria for the general dentist to decide whether to treat or refer.
• To involve the patient more fully in treatment planning.

The 639 teeth which survived the duration of the study had an average score of 4.32 and survived an average of 24.2 years. Scores for the 145 molars extracted during the preventive mainte-nance phase of treatment had an aver-age initial score of 6.54 and survived an average of 15.4 years. Scores for the 32 teeth extracted during active treatment had an average initial score of 8.68.

Of the 639 molars surviving the dura-tion of the study, 588 molars (92 per-

cent) survived in periodontal health and 512 of those molars (79.4 percent) had probing depths of less than 5mm.

The Miller/McEntire study showed prognosis was most influenced by smoking, followed by probing depth, mobility and furcation involvement. Age was the least significant prognostic factor. The study also found adherence to preventive maintenance therapy was a key factor not only in prognosis but also in maintaining the periodontal health of teeth.

Conclusion

Development of a reliable scoring index for more informed assessments of the prognosis for periodontally-compromised teeth could substantially improve treatment planning decisions and increase the number of patients accepting periodontal treatment.

Future studies are needed to test the reliability of the Miller/McEntire score while also considering differing subjective factors, including patient compliance and the clinician's philosophy.

In the final analysis, the longevity of teeth is most often affected by the care our patients give them.

Diagnosis Based on Score

1. Health or gingivitis
2. Health or gingivitis or early periodontitis
3. Health or gingivitis or early to moderate periodontitis
4. Moderate to severe periodontitis
5-10. Severe periodontitis

Treatment Based on Score

1. Scale and polish
2. Scale and polish -- root plane?
3. Scale and polish and root plane
4. Periodontal surgery
5. Consider regenerative periodontal surgery
6. Regenerative surgery
7. Regenerative surgery
8. Regenerative surgery -- consider extraction
9. Regenerative surgery or extraction
10. Extraction

Referral Based on Score

1-3. Treatment by general dentist
4. Consider referral to a periodontist
5-8. Refer to a periodontist
9-10. Refer to a periodontist or extraction by general dentist

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Figure 4. The prognosis for this distal bridge abutment is extremely poor due to bone loss with subsequent gingival recession, furcation involvement and lack of attached gingiva.
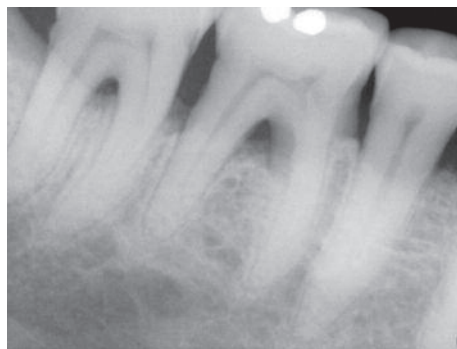

Figure 5. These right mandibular molars have a very poor long-term prognosis as a result of bone loss in the furcations making the teeth especially susceptible to caries.

Figure 6. This radiograph reveals extremely advanced peri-implantitis and bone loss making the prognosis for these implants hopeless.

Examining for Oral Cancer -- Preventing a Tragedy

More than 41,000 new cases of oral cancer will be diagnosed in 2014. Almost two-thirds will be diagnosed in the late stage. Nearly one-fifth of those patients diagnosed will die as a complication of oral cancer.

The routine oral cancer screenings now performed on all patients in most dental offices is the only thing preventing the number of deaths from oral cancer from becoming much higher.

Oral cancer is preventable and 90 percent of oral cancers can be cured if detected and treated early.

Most people visit their dentist regularly once or twice a year and their physicians rarely, and only when they have a problem. Consequently, dentists play a critical role in finding not only oral cancer but other health conditions throughout the body which may present themselves in the oral cavity.

Although each case of oral cancer is different, the disease occurs more commonly in patients with poor oral hygiene.

Smokers and heavy drinkers have the highest incidence of oral cancer.

Figure 7. Hyperkeratosis requires a surgical biopsy to make a definitive diagnosis.

Smokeless tobacco (snuff and chewing tobacco) users also have a significantly higher risk of developing oral cancer.

However, 25 percent of oral cancers occur in people who don't smoke or chew and have no other lifestyle risks.

One of the deadliest oral cancers, the human papillomavirus (HPV) oropharyngeal cancer accounted for a 225 percent increase in oropharyngeal cancers from 1988 to 2004.

The same viral strain, HPV-16, is responsible for 70 to 80 percent of all cervical cancer and is solely responsible for 85 to 95 percent of HPV-related oropharyngeal cancers.

Projections are that the number of HPV-positive oropharyngeal cancers will surpass the annual number of cervical cancers by the year 2020.

HPV-oropharyngeal cancer is also currently the fastest-growing sexually transmitted disease. HPV is associated with oral sex, but the virus may be passed on with kissing and may lay dormant for many years.

Like periodontal disease, many of the warning signs are painless and people tend to ignore them hoping they will go away.

New Screening Tests Help Save Lives

Much progress is being made in the development of screening tests which can be performed in the dental office to help detect oral cancer and save lives.

One of the newest screening tests, the Oral ID, uses fluorescent technology to help dentists to discover oral cancer and oral dysplasia that may lead to cancer at an earlier stage than previously was possible. Thus treatment becomes more predictable and less disfiguring.

Developed in conjunction with the MD Anderson Cancer Center in Houston, Texas, this breakthrough technology is applied in a simple test which takes less than two minutes. The clinician shines a special blue fluorescent light around the mouth and lips. Cancerous or precancerous tissues show up as dark areas and do not fluoresce. These tissues are then biopsied to confirm the diagnosis.

Two other specially-designed light technologies, ViziLite Plus and the VELscope® Vx Enhanced Oral Assessment System, allow dentists to identify, evaluate and monitor suspicious lesions which might otherwise have been overlooked.

After rinsing with a cleansing solution, the patient's mouth is examined with the ViziLite light stick to detect abnormal areas which are difficult to see under conventional lighting. Suspicious lesions are marked with a blue dye and documented. Biopsies are performed on lesions from which the stain cannot be removed.

The VELscope® Vx Handpiece emits a safe, visible blue light into the oral cavity which causes the oral tissue to fluoresce. This enhances the clinician's ability to quickly identify suspicious tissue which may require further investigation.

Since oral cancer is treatable and almost 100 percent preventable, this gives patients a vital, even potentially lifesaving reason to visit their dentist regularly for regular oral cancer screenings, and to keep their mouths healthy-- beyond just a pretty smile and comfortable chewing.

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