

Point of Care

The Point of Care section of JCDA answers everyday clinical questions by providing practical information that aims to be useful at the point of patient care. The responses reflect the opinions of the contributors and do not purport to set forth standards of care or clinical practice guidelines. Readers are encouraged to do more reading on the topics covered. This month's responses were provided by members of the Canadian Academy of Periodontology. If you would like to submit or answer a question, contact editor-in-chief Dr. John O'Keefe at jokeefe@cda-adc.ca.

Question 1 What is the ideal recall interval for supportive periodontal treatment?

Background to the Problem

The short answer is that there is no ideal recall interval for supportive periodontal treatment (SPT). Recall intervals should be adjusted to the needs of the individual patient. Clinical studies conducted in Sweden in the late 1970s¹ showed that if patients were seen for SPT every 2 weeks, they remained disease-free, whereas patients seen only once a year continued to show attachment loss, particularly if their oral hygiene was inadequate. A number of studies subsequently showed that a 3-month interval for SPT is sufficient for most periodontal patients.^{2,3} However, some patients need less frequent visits.⁴ In these cases, it is in the best interest of both the patient and the health care system to avoid overtreatment. The patient should be seen as often as the individual case requires.

Evaluating the Need for SPT

Important factors that influence the recall interval for SPT are:

- patient compliance with personal oral hygiene
- tobacco use
- systemic conditions (e.g., diabetes)
- number and depth of pockets
- amount of recession
- level of disease activity
- number of teeth with, and extent of, furcation involvement.

Most of these factors have to be assessed and updated on an ongoing basis according to a regular schedule. Some factors must be evaluated at each maintenance visit, others at least annually at a re-evaluation appointment. The SPT interval can then be reset as necessary. Other factors to be considered at re-evaluation include:

- amount and location of supragingival and subgingival calculus

- bleeding and exudates (their absence is a sign of periodontal health)
- tissue characteristics (colour, form, contour, tone). Tissue tone can be determined by how easy it is to probe and is often a guide to the health of the underlying connective tissue.

When establishing the SPT schedule, the general practitioner also needs to evaluate whether he or she can provide SPT or if the patient should be referred to a periodontist.

The goal of periodontics is to retain the natural dentition in a state of health and function. Active periodontal treatment tries to create a stable environment that both the patient and the dental professional can maintain through SPT. Unfortunately, it is not possible to easily identify patients who will experience further attachment loss. However, since we do know that bacterial plaque is the main causative factor in the progression of periodontal disease, control of plaque supragingivally by the patient and subgingivally by the dental professional is the main critical factor in treatment success. ♦

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Further Reading

American Academy of Periodontology. Position paper on supportive periodontal therapy (SPT), available at URL: <http://www.perio.org/resources-products/pdf/spt.pdf>.

Question 2

What factors should I consider before proposing surgical crown lengthening to a patient with a subgingival tooth fracture?

The first consideration when evaluating a fractured tooth for surgical crown lengthening is location of the fracture in relation to the existing bone and gingiva. If the fracture line is too deep, removal of bone might not be possible without compromising the fractured tooth and the adjacent teeth (Figs. 1 to 3).

So what is “too deep”? It is imperative that biologic width be re-established.¹ Alveolar bone loss would develop as a result of impingement on biologic width.² Crown lengthening surgery must provide a minimum of 3 mm of tooth structure coronal to the alveolar crest or chronic inflammation will likely occur. In addition to this requirement for biologic width, another 1 mm of tooth structure is required for the crown margin. Therefore, a total of 4 mm would be required from the fracture line to the new bone position. To determine if this is possible, the following needs to be considered:

- What would be the effect of bone removal on the prognosis of the tooth?
- What would be the remaining crown:root ratio following surgery?
- If it is a molar tooth, where is the furcation entrance and would it become exposed with bone removal?
- Has there been bone loss already due to periodontal disease?
- What is the current mobility of the fractured tooth and is that likely to increase with surgery?
- What effect would bone removal have on the adjacent root structures?
- Are there tori in the area that would limit the ability to create a favourable osseous contour?
- If the tooth is in the esthetic zone, would esthetics be compromised?
- Would the tooth be suitable for orthodontic extrusion?

In addition to bone considerations, gingival considerations must also be assessed. The type and thickness of gingival

tissues are important factors. Ideally, 5 mm of keratinized gingiva is required to place an intracrevicular restorative margin. This tissue must be composed of 3 mm attached gingival tissue and 2 mm free gingival tissue to prevent recession and inflammation following crown placement.³⁻⁵

The fractured tooth should also be assessed on a more comprehensive level. The prognosis of the adjacent and opposing teeth must be assessed for periodontal, restorative or other treatment requirements. Similarly, any endodontic considerations with respect to the fractured tooth and the adjacent teeth must be identified. Finally, the range of available options requires evaluation. Given the circumstances, it may be that a bridge or an implant would be a more practical choice than a crown, with a better long-term prognosis. Should extraction be the treatment of choice, a socket preservation procedure may be advisable to retain the alveolar bone.

In summary, the evaluation of a fractured tooth entails a number of considerations. The practitioner must weigh all of the factors and decide from a balance of probabilities which option would provide the best long-term prognosis. ♦

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Figure 1: Tooth 46 with buccal cusp fracture extending subgingivally.



Figure 2: Mirror view of tooth 46.

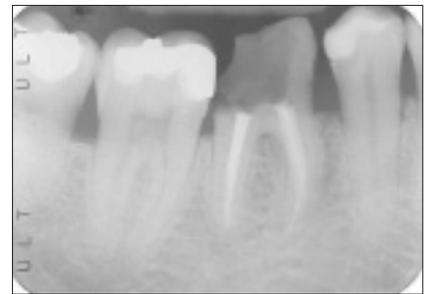


Figure 3: Radiograph of tooth 46 showing furcation exposure, relative position of fracture to bone and previous endodontic treatment.

Question 3 What are the critical factors for achieving optimal peri-implant esthetics?

Background to the Problem

The osseointegration of titanium implants is now a highly predictable event. Today, we face 2 major challenges in placing dental implants: achieving optimal peri-implant esthetics and implant longevity.

Optimal peri-implant esthetics will be influenced by the following factors:

- The width of the buccolingual ridge will naturally decrease (on average 40%) following tooth extraction and create the buccal concavity often associated with a longer clinical crown and ridge shadow (Fig. 1).
- The 3-dimensional implant position within the ridge and its relation to the anticipated prosthetic crown position (Figs. 2 and 3).
- Interdental bone height will determine the presence or absence of a papilla. This is especially true when the implant is adjacent to a natural tooth or between adjacent implants (Figs. 3 to 5).
- Soft tissue condition, such as thickness and the contour of the pre-existing gingiva, will greatly influence the stability of the post-implant soft tissue. Thick gingival tissue will be more forgiving than scalloped and thin gingiva, which tends to recede and be unstable (Fig. 1).

To obtain a prosthetically desirable implant position and peri-implant esthetics:

- The implant has to be submerged enough to allow proper emergence of the prosthetic crown, but not so deep as to create a peri-implantitis problem (Fig. 3).
- There must be sufficient distance between the natural tooth and the implant or between the 2 implants for proper contouring of the prosthesis and to allow bone support of the interdental papilla (Figs. 2 and 3).
- The position of the implant has to be slightly lingual/palatal of the anticipated crown contour. If the implant is placed too labially, the clinician might subsequently overcontour the crown, which will negatively affect the clinical tooth length (apical migration of the gingival margin) (Figs. 2 and 5).

How to Achieve Optimal Esthetics

The best approach for having an optimal bone ridge is not to lose it following the extraction (Fig. 1). This is best achieved by preventing the prolonged retention of an infected root by performing an atraumatic root extraction and preserving the socket with an appropriate graft material (e.g., mineralized freeze-dried bone allograft, bio-active glass or bovine bone xenograft). A properly adjusted



Figure 1: Preoperative view showing average ridge defect following extraction and thick gingival type.



Figure 2: Anterior-posterior position of implant in place (slightly palatal placement).



Figure 3: Radiograph showing apicocoronaral position of implant, crown contour and interdental bone height.



Figure 4: The papillae are not fully formed when the crown is initially inserted. Crown contour allows for papilla reformation.



Figure 5: Two years after final crown placement, the papillae are fully formed. Gingival contour is stable, there is good symmetry and excellent esthetics.

temporary prosthesis will also influence preservation of the ridge by minimizing ridge pressure.

Rebuilding a depleted ridge often involves a combination of hard and soft tissue grafting before or at the time of implant placement. ♦

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Further Reading

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Question 4 How much root coverage can I expect with soft tissue grafting?

Background to the Problem

Most surgical procedures used to treat mucogingival defects focus on functional repair of the gingival complex. Historically, the main goal of soft tissue grafting (e.g., a free gingival graft has been the augmentation of keratinized tissue to stabilize the attachment apparatus. However, most patients who present with a mucogingival problem (e.g., gingival recession with exposed root surface) wish to have treatment for root exposure. With the advent of newer procedures designed to specifically address root coverage, the practitioner needs to be prepared to discuss individual patient expectations regarding root coverage.

Root Coverage Procedures

Several root coverage procedures exist, including:

- free gingival graft
- connective (subepithelial) tissue graft
- coronally positioned flap (as a primary or secondary procedure)
- lateral or sliding pedicle graft
- guided tissue regeneration
- soft tissue allograft.

Each of these procedures has its own specific merits and limitations. An experienced practitioner can decide which procedure is best indicated for each individual patient.

Considerations for Clinical Decision-Making and Expected Outcomes

The main indications for root coverage procedures are esthetic demands, root sensitivity and shallow root caries.

Although root coverage following soft tissue grafting may be one of the goals of therapy, the clinician should be aware that anatomical and architectural features, disease and patient factors can affect treatment results, regardless of the procedure used or the experience of the clinician.

Recession defects can be described according to Miller’s classification:

- Class I — marginal recession does not extend to the mucogingival junction (MGJ); no loss of interdental bone (Figs. 1a, 1b and 1c).
- Class II — marginal recession extends to or beyond the MGJ; no loss of interdental bone (Fig. 2).
- Class III — marginal tissue extends beyond the MGJ; loss of interdental bone or soft tissue apical to the cementoenamel junction, but coronal to the apical extent of the marginal tissue recession (Fig. 3).



Figure 1a: Class I defects on teeth 23 and 24.



Figure 1b: Soft tissue grafting was performed.



Figure 1c: Root coverage has been obtained.

- Class IV — marginal tissue recession extends beyond the MGJ; loss of interdental hard and soft tissue apical to the extent of marginal recession.

Although this classification provides an anatomical description of recession defects, it is, in practical terms, an indication of potential blood supply available to the grafted tissue in the recipient site. The critical clinical variable is the level of the periodontal tissue at the *proximal* surfaces of the teeth. Class III and Class IV defects are generally associated with teeth that have undergone destructive bacteria-mediated periodontal disease, which will dramatically reduce the probability of any root coverage following mucogingival procedures.

Root coverage procedures can also be affected by root prominence (Figs. 4a and 4b), the quality and availability of donor tissue and tooth mobility patterns. Successful grafting procedures can help to decrease the mobility of the treated teeth, but both primary and secondary occlusal trauma can limit the extent of root coverage.

As with most, if not all, periodontal procedures, patient factors play a significant role. These factors include smoking, oral hygiene practices and oral habits such as nail biting.

Conclusion

The literature suggests that root coverage can be expected in shallow recession defects with good patient compliance and favourable clinical situations. The literature also suggests that no single treatment modality is superior to all others. A phenomenon known as creeping attachment can occur in patients with excellent oral hygiene habits. Creeping attachment is described as an increase of 1 mm of coverage of gingival tissue in a coronal direction over a period of one year or more. ♦



Figure 2: Significant root coverage can be anticipated for this Class II defect.



Figure 3: Partial root coverage can be anticipated for this Class III defect.



Figure 4a: Tooth with root prominence and interproximal bone loss.



Figure 4b: Minimal root coverage was obtained after soft tissue grafting.

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Web Site Gets to the Root of Dental Health Risks

Canadian Periodontists Bridge the Gap Between Oral Fitness and Overall Health

OTTAWA, ON – **The Canadian Academy of Periodontology has launched a new Web site to help the public take control of their oral health.** The site features clear, simple answers to common questions about periodontists and the important service they provide. It's a subject of no small concern, considering that studies have now linked gum disease to such serious issues as heart disease, diabetes, respiratory problems and premature births.

The recently launched site (www.cap-acp.ca) is easy to navigate, and available in either English or French. It features a wealth of information on oral care; highlights exciting, new advances in cosmetic dentistry; and explains the major health risks involved in neglecting one's teeth and gums. For those who know very little about the specialty of periodontics, it offers simple definitions and even walks the reader through what he or she can expect at an initial visit. It also features an easy-to-use database search engine to help prospective patients locate periodontists in their area.

The Mouth Is a Window to Overall Health

The new Web site also explains why poor oral hygiene, particularly when it results in gum disease, is nothing to laugh at. Periodontal disease has been linked to major health concerns including heart disease, diabetes and low-birthweight babies. Specifically, evidence suggests that:

- People with gum disease are at greater risk of heart and respiratory disease, and have **twice the risk of having a fatal heart attack** than people without. It's believed that the bacteria that cause periodontal disease may form small blood clots, contributing to clogged arteries and the buildup of fatty deposits around the heart.
- Mothers with periodontal disease may be at a **7 times greater risk for having a premature or low-birthweight baby.**
- Periodontal disease is closely interrelated with diabetes. Bleeding gums, bone loss and an increase in pocket depths may be an early indicator of diabetes. **Diabetics are more susceptible to periodontal disease** and often require more periodontal care.
- **Smoking and periodontal disease are linked** as well. Smoking reduces the blood supply to the surrounding bone of the tooth. The intense heat and toxins produced during smoking can also affect the bacterial composition of the mouth and limit the body's immune response to periodontal bacteria.

Visit Today

With all the information available and so much at stake, everyone should visit the CAP's new Web site (www.cap-acp.ca) today. They can educate themselves on the subject of periodontology, get answers to their questions and locate a periodontist in their neighbourhood, all from the comfort of their own living room.