

Strategic extractions: Periodontal and restorative considerations

Base your decisions on an accurate diagnosis and treatment plan.

Murray L. Arlin, D.D.S.

Extensive and costly dentistry is at times performed in a failing effort to save teeth that should have been extracted. It is extremely embarrassing to inform the patient "after the fact." An important decision such as extraction must be based on an accurate diagnosis and treatment plan. These in turn are derived after a complete examination and analysis of all pertinent diagnostic data that must be done *prior* to the actual treatment.

Once the decision has been made to remove one or more teeth, it is vital that the extractions be done at the appropriate point in the sequence of treatment. Hopeless teeth should be removed initially.

Following a sufficient healing period after initial therapy, further necessary extractions are done such that osseous healing is complete prior to periodontal surgery. We must always keep in mind that diagnosis and re-evaluation are continuous processes and the "strategic retreat" should also be included in the treatment plan. In summary, the sequence of treatment should generally follow in the order outlined below:

1. Initial therapy
 - oral hygiene instruction
 - basic restorative
 - endodontic therapy
 - sanitive periodontal therapy
 - occlusal therapy
 - removal of hopeless teeth
 - tooth movement
 - interim prosthesis (if necessary)
2. Re-evaluation (following a sufficient healing period, usually at least three months)
3. Further extractions (if deemed necessary from the re-evaluation)
4. Definitive periodontal therapy
5. Final prosthesis (following a sufficient healing period, two months

We are pleased to present the first publication of this article written by Dr. Arlin especially for *Oral Health*.

to one year or more depending on the case)

6. Maintenance

Only general guidelines concerning strategic extractions can be discussed because each patient case must be planned individually. Some of the considerations with respect to strategic extractions are: (1) medical history; (2) psychological factors; (3) cost; (4) esthetics; (5) orthodontic treatment; (6) third molars; (7) retained deciduous teeth; and (8) prognosis.

Prognosis itself is multifaceted. One must consider the status of teeth individually and their contribution to the case overall. Prognostic considerations include the patient's (a) systemic resistance; (b) motivation and dexterity; (c) recall frequency; (d) attachment loss; (e) tooth anatomy; (f) tooth position; (g) tooth mobility and occlusion; (h) mucogingival status; and (i) the clinician's ability.

Considerations: strategic extractions

1. Medical status

The medically compromised patient may modify the treatment plan. Anticipated extractions are contraindicated if they pose a threat to life. On the other hand, extractions are often indicated if long stressful appointments would otherwise be necessary to save certain teeth.

2. Psychological factors

It is difficult to predict the psychological sequelae of extractions. Certain patients equate tooth loss with growing old, and their natural dentition is symbolic of retaining youth. This factor alone can be a contra-indication to extraction even when the prognosis is poor.

3. Cost

The patient's financial situation should not prevent the dentist from presenting his ideal treatment plan. If this treatment is unaffordable, then alternative plans are discussed. Unfortunately, cost at times may be the decisive factor in deciding upon the retention or removal of one or more teeth.

4. Esthetics

Clinical cases arise (commonly in the maxillary anterior region) where teeth have severely drifted and/or where severe bone loss would result in long clinical crowns, post surgically. In such situations, better esthetics can be achieved by removal and prosthetic replacement of these teeth.

5. Orthodontic treatment

In many crowding situations, extractions are indicated, especially with a Class II malocclusion. Often the sacrificed teeth are the ones demonstrating advanced bone loss and/or poor positioning in the arch. Extraction of an expendable third molar is indicated if it interferes with the uprighting of the adjacent molar. This procedure is sometimes indicated in order that:

- (i) extensive periodontal osseous resection be avoided by modification of the mesial infrabony defect of the second molar;
- (ii) proper pontic space be established so as to facilitate home care;
- (iii) forces be directed along the long axis of the uprighted molar;
- (iv) tooth preparation be facilitated.

6. Third molars

Erupted third molars should be removed if they (i) periodontally compromise a healthier second molar; (ii) are non-cleansable and non-restorable; (iii) interfere with uprighting of a strategic second molar; (iv) are overerupted and inter-

ferre with the freeway space and/or occlusion. The prophylactic removal of completely unerupted third molars is not within the scope of this article. Interested readers are referred to *Dental Clinics of North America*, July 1979 issue.

7. Retained deciduous teeth

The retained deciduous root tip may contribute to periodontal breakdown by acting as a potentiating factor in the pathogenesis of periodontitis. The roots of deciduous molars are narrower and diverge to a greater degree than permanent molar roots. The distal or distobuccal roots of the second deciduous molar exhibits the greatest degree of root divergence. This may lead to incomplete resorption of the root by the erupting second bicuspid. In the event that the periodontal pocket communicates with the root fragment, rapid loss of attachment in the area will occur. The root tip might then be exfoliated leaving the osseous defect behind. With the ecological factor exfoliated, the therapist would find it difficult to explain the cause of the defect. It is thus important to make sure that deciduous root fragments are removed when not totally resorbed.

8. Prognosis

Prognosis can be defined as the prediction and course of disease and its response to treatment. The overall dental prognosis is a reflection of the prognosis of the individual teeth collectively. Each tooth, therefore, must be individually considered in light of its relative risk and contribution to the overall treatment plan. A strategic extraction or root resection may be indicated if the overall prognosis will be enhanced as a result. This is often the case in extensive restorative situations, where the number, location, prognosis and strategic value of each of the remaining abutments must be carefully considered. Prognosis is associated with many influential factors.

Prognostic considerations

A. Systematic resistance

Patients seem to demonstrate a variable immunological capacity to prevent periodontitis. There are those occasional patients whose oral

hygiene is extremely poor yet demonstrate little or no disease. Other patients may exhibit extensive bone loss which at times continues in spite of good home care and professional treatment. The efficacy of the patient's immunity is a reflection of the attachment loss as it relates to the degree of periodontal care. For example, when one compares two patients with similar attachment levels (all else being equal) it is the older patient that has the better prognosis. This is because the older patient has demonstrated a slower rate of attachment loss up to that point in time.

B. Motivation and dexterity

Patient motivation, co-operation and manual dexterity can be management problems because good oral hygiene is of primary importance to periodontal health. Extensive prosthetic treatment should be delayed until patients demonstrate proper home care because prosthetic devices generally make oral hygiene procedures more difficult. In problem cases of this type, especially where the prognosis is guarded to poor, extraction is sometimes a more predictable course of treatment.

C. Recall frequency

Periodontal prognosis improves with increased frequency of recalls (for root planing and prophylaxis) the frequency of the recall appointment should be tailored to the individual's needs which is based upon the factors discussed in this article.

D. Attachment loss

The quantity and pattern of attachment loss, as well as the residual pocket depth are critical factors in determining the prognosis. Pocket depth is a function of the attachment loss and corresponding gingival recession. Whether the recession occurs naturally or is surgically induced, the net effect is shallower pockets that are more easily maintained by both patient and dentist. Pocket elimination is not, however, always possible or even desirable. The pattern of attachment loss may dictate extraction or conservative maintenance of certain deeper pockets. The tooth exhibiting isolated severe bone loss adjacent to perio-

dontally sound teeth will often be better off to be removed and prosthetically replaced. In this type of situation, pocket elimination would necessitate excessive bone removal that would jeopardize the support of the adjacent teeth.

Extraction of doubtful and poorly supported teeth is also indicated where a sufficient number of abutments remain in the arch to provide adequate support for the complex restorative case. Advanced attachment loss often involves furcations which are difficult to maintain and at times extraction or selected root resections are indicated in these situations as well. If root resection is anticipated, it is important that the patient be forewarned that in addition to the surgical resection procedure, endodontic treatment (and usually a protective casting) is necessary.

After all this treatment, the molar is still compromised but even so, salvaging portions of teeth is indicated in certain situations. For example, when (i) the residual abutment enhances the stability of the overall case by its retention; (ii) the amputated molar is restorable such that splinting is not necessary; (iii) the tooth is the terminal one in the arch and an undesired removable prosthesis can be avoided by its maintenance.

E. Tooth anatomy

The significance of the anatomy of the tooth and in particular the root, is intimately related to the quantity and pattern of attachment loss. Mobility and furcation invasion are dependant on root shape, length and degree of divergence, and attachment levels.

F. Tooth position

The number and position of the remaining abutments are important considerations in the overall prognosis. The strategic value of an abutment is in part dependant on its location and alignment in the arch.

G. Occlusion mobility

Persistent mobility of more than 1mm laterally (or depression in the socket) generally indicates a poor prognosis. A decision to extract however, must be postponed to await

the outcome of initial periodontal therapy which includes resolution of inflammation and splinting and/or occlusal adjustment if necessary. Splinting and/or occlusal adjustment is indicated when there is evidence of increasing mobility or with hypermobility that interferes with the patient's function and comfort.

H. Mucogingival status

It has not been proven that mucogingival surgery enhances tooth longevi-

ty. It has been shown however that at least 1 mm of attached gingiva is desirable for control of inflammation (Lange and Loe 1972).

I. Clinician's ability

The dentist's ability can be a factor in the prognosis, especially in technically difficult cases. At times, for this reason, the potential hazards involved in a complex treatment plan may indicate that a less complex, less costly, more predictable, and more

reversible, alternate course of treatment is indicated.

A clinical example is presented which demonstrates various forms of the principles discussed. This patient is a 30-year-old female presenting with the chief complaint of poor esthetics due to the widening diastemas in the maxillary anterior area.

Dr. Arlin, a Toronto periodontist, is a member of the Royal College of Dental Surgeons and a clinical demonstrator and lecturer, University of Toronto.



Figure 1. Pretreatment radiographs illustrate greater than 60% bone loss affecting the maxillary incisors. Definitive treatment would involve a multidisciplinary approach. In trying to maintain the incisors the final results would be unesthetic, with at best a guarded prognosis.

Figures 2 and 3. Pretreatment radiographs illustrate extensive bone loss and furcal invasion of non-strategic maxillary first molars.

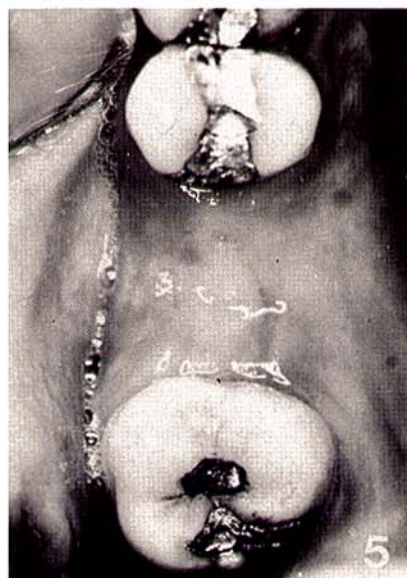
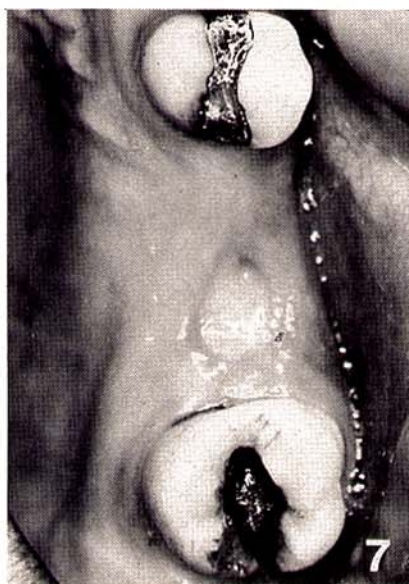
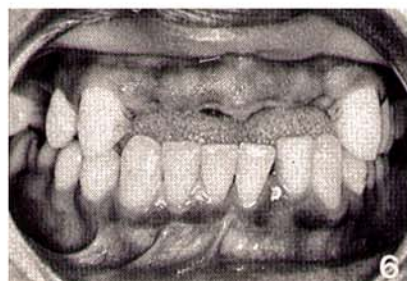


Figure 4. The treatment radiographs. Note the extensive bone loss, furcation and endodontic involvement affecting the mandibular first molars. The second molars have not as yet been compromised periodontally as a result of the proximity to the first molars.



Figures 5, 6, 7. Extraction of the maxillary incisors, first and third molars, as well as the mandibular first molars, resulted in a practical, predictable and esthetic result.

Figure 8. Maxillary cast removable partial denture. Note fixed bridges were fabricated in the mandible to replace the first molars.

