

Non-surgical approach to advanced chronic periodontitis: A 17.5-year case report

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Abstract

This 17.5-year longitudinal case report details the treatment of advanced chronic periodontitis in a female patient commencing at 34 years of age. The woman was provided with periodontal care comprising of temporary fixation, scaling and root planing, intra-pocket irrigation using a root canal syringe and regular supervised maintenance. The patient presented with a 10-year history of bleeding gums. Therapy conducted in general practice had included simple curettage and irrigation. However, these treatments proved unsuccessful and the patient often changed dentists seeking better treatment. She presented to the University Dental Hospital, for diagnosis and treatment of her periodontal conditions after her mandibular lateral incisor had exfoliated. On presentation a purulent exudate could be expressed from all of the pockets. All anterior teeth, excluding the maxillary canines, demonstrated +2 to +3 mobility. The patient did not want any surgical treatment or her teeth extracted. It was decided to treat the patient conservatively without surgery. By postponing extraction, the authors were in a better position to determine the prognosis of the remaining teeth after the infection was under control. Although six teeth were extracted during the 17.5 years, this case report suggests that a non-surgical approach is a viable option while maintaining regular visits for periodontal care.

Key words: Periodontitis, non-surgical approach, scaling, root planing, root canal syringe, hydrogen peroxide.

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are not quantifiable initially. Yuodelis and Faucher¹ stated that removal of unsalvageable teeth, followed by the placement of provisional restorations, is an essential step in managing the mutilated dentition. However, there is continuing controversy regarding the appropriate time to extract teeth that have received long-term periodontal care.^{2,3} This fundamental problem is one of patient motivation and personal skill development to perform an extremely high standard of plaque control. Various treatment modalities have been used for the treatment of all forms of periodontitis with various degrees of success. Some 3-5 year follow-up studies have found no differences in degree of success between surgical and non-surgical treatment.^{4,5} Other studies have found benefit in the case of antibiotics to assist the healing of lesions after scaling and root planing (S/RP) and/or surgery.^{6,7} The question appears to be not whether one technique should be used instead of the other, but if a particular technique is more suitable for a particular individual. Cohen⁸ reported a case with a regimen of therapy that included the removal of all deposits, and a good personal oral hygiene programme. Demonstrated patterns of mobility in teeth that have compromised alveolar support do not necessarily suggest the need for extraction.

The case presented is a longitudinal evaluation of non-surgical treatment of a Japanese woman with severe periodontitis, which involved temporary fixation, S/RP, and intra-pocket irrigation using a root canal syringe along with supervised maintenance for 17.5 years.

CASE REPORT

A 34-year-old Japanese woman first presented to Hiroshima University Hospital on the advice of her brother, for diagnosis and treatment of her periodontal condition in February, 1982 (time zero). The patient complained of intermittent swelling of the gums, bleeding on brushing, and a sensation of looseness of the maxillary and mandibular anterior teeth. Her mandibular left lateral incisor exfoliated spontaneously two months before her initial visit. The space closed between the anterior teeth with the abutting teeth aligning in good position (Fig 1).

INTRODUCTION

Preservation of the natural dentition is the ultimate goal of dental therapy. However, the biological response of the hard and soft tissues to complex therapy and the psychological motivation of the patient

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Fig 1. Labial view of the oral cavity of the patient at the age of 34 years (1982).

The clinical examination revealed the following: 1) the patient's oral hygiene was poor and plaque deposits were abundant in both arches; 2) the greatest amount of calculus was noted on the lingual surfaces of the mandibular incisors and subgingivally in all quadrants; 3) gingival recession and attachment loss were present around the maxillary and mandibular incisors; 4) gingival bleeding and pus discharge were noted in the gingival sulci of all teeth; 5) all anterior teeth, except the maxillary canines, demonstrated +2 to +3 mobility and tested vital; and 6) halitosis was noted. Radiographs showed extensive bone loss around the mandibular incisors depicted in Fig 2.

Initial treatment (12 times for three months) consisted of tooth brushing instruction by the Charters' method⁹ with GUM #311 (Butler, Chicago, Illinois, USA) and temporary fixation of loose teeth from the mandibular right first premolar to the left canine. All teeth were scaled both supra- and subgingivally during



Fig 3. Subgingival irrigation with one percent hydrogen peroxide delivered through a root canal syringe.

a one-hour appointment, using a YB #3 scaler (Waidemu Yamaura Co, Tokyo, Japan). Deep pockets were irrigated with one percent hydrogen peroxide (5ml) using a root canal syringe (Neo Seiyaku, Tokyo, Japan) (Fig 3). The patient was instructed in the technique of inserting the syringe into deep pockets. Professional tooth cleaning was carried out at every recall visit. By June 1982, the periodontal condition appeared to have improved. Treatment was not performed for the recession as the patient successfully maintained oral hygiene and no hypersensitivity problem was noted. The possibility of provisional restorative treatment was considered and referral to a restorative dentist for fixation of the patient's maxillary and mandibular anterior teeth was made following successful improvements in oral hygiene. Careful observation continued throughout this time and provisional restorative treatment was completed in one month. In April 1983, the patient moved from the city and appointments lapsed until August 1984.

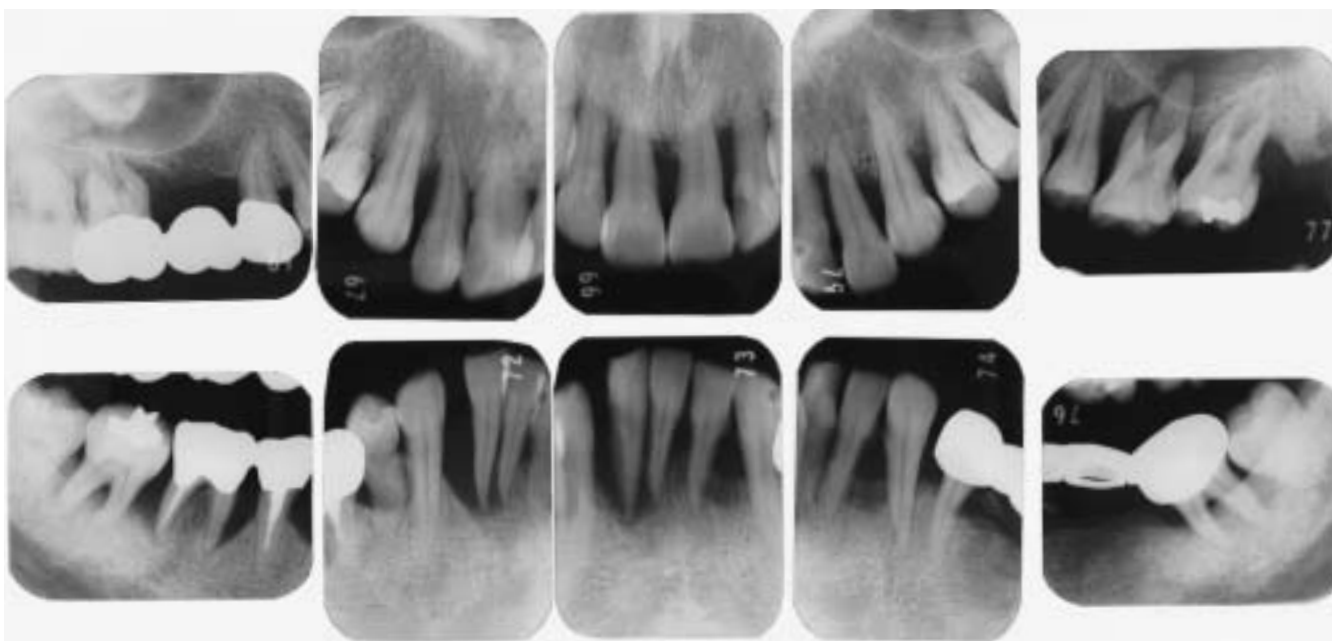


Fig 2. Radiographic series taken at her first visit (1982). Note the extensive furcation involvements and complete loss of bone around the mandibular incisors. These teeth seemed to be no longer salvageable.



Fig 4. Radiographic series taken in 1984 (2.5 years later). The mandibular right second incisor was extracted.

In August 1984, the mandibular right second incisor was extracted because it had detached from the splint and exhibited severe mobility (Fig 4). The lower splint (right first premolar to left canine) had to be repaired on a number of occasions in contrast to the success of the upper one (right to left incisors). Prosthodontic treatment was completed approximately three years after her initial visit. Probing depths had remained unchanged since 1983. However, the mobility had greatly decreased. The patient then reported improved occlusion, and healing progressed normally. In June 1988, the patient sustained a bruise to her maxillary right incisors due to a fall from her bicycle. She was then treated with endodontic therapy followed by temporary splinting with photo-cured composite resin. Endodontic treatment was re-done with tooth whitening using 30 per cent hydrogen peroxide and sodium perborate. In March 1989, following dull pain from the maxillary right second molar region, the patient was seen in the oral surgery clinic, where the

tooth was extracted. At the beginning of 1993, endodontic treatment was performed on the maxillary left second molar because of acute pulpitis. Root resection was performed to remove the disto-buccal and mesio-buccal roots, and then a fixed partial denture was placed. In 1996, the mandibular left second molar was extracted due to the chronic periodontal abscessing and severe mobility.

Figure 5 shows labial view of the oral cavity of the patient at the age of 50 years. Clinical investigation revealed a periodontally stable situation with no bleeding on probing, but gingival recession was obvious at all defect sites, especially within interproximal areas. In 1999, the authors investigated the presence of *Actinobacillus actinomycetemcomitans* and *Porphyromonas gingivalis* in the patient's subgingival plaque and saliva. *Porphyromonas gingivalis* was detected from the pockets of the maxillary left second molar (#27), the mandibular left third molar (#38), and saliva sample. *Actinobacillus actinomycetemcomitans* was not detected at all. Radiographic evaluation (17.5 years later) revealed that there had been no further bone loss in either of the defect sites or in other regions (Fig 6). The patient was on a two-month recall schedule for prophylaxis, S/RP and continuing a plaque control regimen at the time of writing.



Fig 5. Labial view of the oral cavity of the patient at the age of 50 years (1998).

DISCUSSION

This case report is of a patient who was worried about her bleeding gums for more than 10 years and had often changed dentists seeking a remedy for the problem. Although her 'doctor shopping' behaviour may be considered a major problem, such behaviour is partly hidden due to a lack of data on regular utilization patterns of dental services. 'Doctor



Fig 6. Radiographic series taken in 1999 (17.5 years later).

shopping' usually occurs because of a dentist's failure to gain the trust and respect of the patient and not necessarily because of a low dental awareness, or lack of motivation by the patient. The patient did not want any surgical treatment or her teeth extracted. The authors in the present case chose to treat the patient conservatively.

In conventional treatment planning, periodontal surgery or extraction of the teeth might have been performed much earlier in the process. However, comprehensive treatment plans at the onset do not provide for flexibility and continuous monitoring of the clinical conditions with objectivity, but justify a rigidly conceived treatment protocol to maintain credibility with the patient. The patient's oral health beliefs were that: 1) fillings should not be brushed as frequently as natural teeth because they are liable to fall out; 2) it was better to stop brushing for a while when her gums bled; and 3) proper tooth cleaning requires the use of a toothpaste. Although initial conditions warranted periodontal surgery or extraction, careful brushing and scaling were used to establish a baseline of the patient's level of achievement and motivation. Charters' method recommended by Gottlieb¹⁰ was useful for the removal of dental plaque from proximal surfaces of the teeth. By postponing extraction, the authors were in a better position to determine the prognosis of the remaining teeth after the infection was under control.

Hill *et al.*¹¹ suggested that none of the surgical modalities of treatment had any greater effect than S/RP alone in the maintenance of periodontal support at any pocket depth, indicating that a thorough cleaning of root surfaces exposed in periodontal pockets is more important than various manipulations of the surrounding tissues. The present case suggests that since the first visit, the patient had *Porphyromonas*

gingivalis which would be considered as a risk factor for periodontal disease. Although putative organisms might have survived for a long time, the oral condition of the patient has been maintained well. By using a combination of the YB #3 scaler to remove sub-gingival micro-organisms and a root canal syringe to slow re-growth in deep pockets a conservative approach was most useful.

The dentition in this case report seemed at first not to be salvageable, except for some canines and premolars. Vire¹² studied the causes for extraction in 116 endodontically treated teeth and concluded that periodontic failures resulted in 32 per cent and endodontic failures only 8.6 per cent of extractions. This may suggest that the more critical determinant in successful treatment of this case was the periodontal treatment. Some long-term studies have even found that the degree of improvement was similar in the surgically and non-surgically treated sites.^{5,13,14} Worsh and Listgarten¹⁵ suggested in their case report, that premature surgical therapy is likely to result in a diminished gain of clinical attachment, loss of some teeth, and a much greater cost to the patient. Although six teeth were extracted during the 17.5 years, the present case suggests that a non-surgical approach is a viable option maintaining regular visits for periodontal care. There is good evidence for the safety of hydrogen peroxide when used at low concentrations on a daily basis over extended periods of time, in self-administered oral health care products such as dentifrices and mouth rinses.¹⁶ The modified use of a root canal syringe for one or two weeks was successful in treating gingival abscesses. The advantage of this is that the patient can continue treatment, if needed to adequately irrigate intra-pockets without additional office visits. A temporary wire fixation was also useful

to stabilize the teeth and allow the patient to brush more easily. Mechanical débridement induces profound shifts in the composition of the subgingival micro flora, resolves inflammation, and arrests disease progression. The results in this case were consistent with those of previous reports.^{13,17-19}

The patient has visited the University Dental Hospital 198 times since 1982. Undoubtedly, there may be other viable treatment alternatives than the plan carried out for this patient, and future treatments may better target specific organisms as part of the manageable regimen. However, maintenance of periodontal health following therapy at this time includes lifelong supportive care, consisting of daily removal of the microbial plaque by the patient, supplemented by professional care in an individually designed programme.

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