A 12-year retrospective audit study of tooth loss in a general dental practice

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Objectives To determine the incidence of periodontal disease in a general dental practice, and to evaluate the effectiveness of treatment in preventing tooth loss over a period of 12 years.
Design This was a single centre retrospective analysis.
Setting A general dental practice in Bournemouth.
Subjects and methods Over a 6-month period from February 1997 to August 1997 records were made of all patients attending at the practice who had presented for dental examination between September 1985 and September 1986. A database was constructed to record the number of teeth present at the beginning of the study, those which at their initial exam had probing depths of between 5 and 6 mm, and those with 7 mm and greater. If teeth were lost, the date of the extraction was recorded.
Interventions All patients were treated by conventional dental therapy.
Main outcome measures Tooth loss was chosen as the endpoint.
Results 13% of the patients presenting initially had periodontal problems, and conventional treatment resulted in very few teeth being lost over the study period.
Conclusions Periodontal disease affected only a small number of the patients in the general dental practice. Those patients affected responded well to conventional therapy, resulting in very few teeth being lost during the period of study.

Retrospective studies have shown that conventional treatments are effective in controlling periodontal disease in most individuals.[1–3] Previous studies have mainly been carried out in specialist periodontal practices, or in hospital environments. The purpose of this study was: to determine the incidence of patients with mild to moderate periodontitis, and those with advanced periodontitis, in a general dental practice; and to evaluate the success of treatment over a period of 12 years by using tooth loss as the endpoint.

As discussed in Hujoel and deRouen's paper,[4] endpoints are conditions or events that are associated with individual study subjects and are used to assess treatment efficacy. They can be described as either true or surrogate.

True endpoints reflect unequivocal evidence of tangible benefit to the patient. In periodontal disease the true endpoint is number of teeth lost as a result of the disease.

A clinical surrogate endpoint is usually a measure of disease process, and again in periodontal disease examples also would be an increase or decrease of probing depth and a gain or loss of periodontal attachment.

All the patients in the previous studies were described as having moderate to severe periodontitis, whereas in this study they only make up a small proportion of the total patients that were followed. The patients also received conventional dental care, including root canal therapy where required, and restoration of the teeth.

This paper is a simple clinical audit in a general dental practice in Bournemouth. All teeth that were extracted during the study were recorded, including those lost during initial therapy. Therefore it was felt that for the purposes of this report, tooth loss (the true endpoint) would be used.

Study population

In the 6 months between February and August 1997, a record was made of all patients who had attended the practice from between September 1985 and September 1986. This period was chosen as it was the first year of the practice. A few of the patients included had a longer history, having originally been seen at other practices before September 1985.

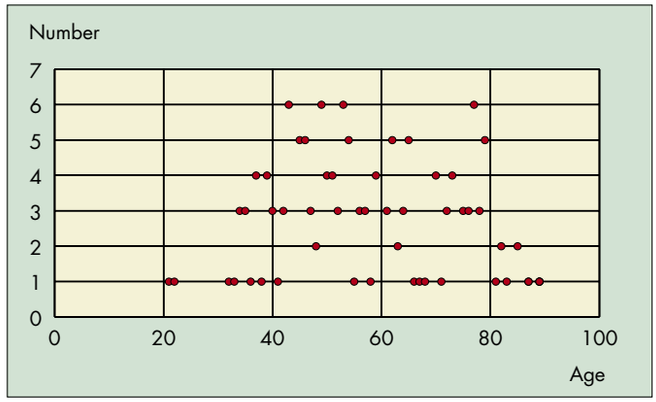

Fig. 1 Age at the end of the study

The 157 patients were all Caucasian, and mainly from a middle economic group. They were generally well motivated in their personal and professional care. There were 91 females and 66 males. There were six children who at initial exam had few permanent teeth, and one adult who was already edentulous at the initial exam.

At the time of the final examination the average age was 47. The distribution of patients according to age at the end of the study can be seen in Figure 1, ranging from 21 to 89 years of age.

Method

The practice is a general dental practice, employing two part-time hygienists.

At initial presentation patients were given a full examination, including a 6-point periodontal probing chart of each standing permanent tooth. Any depth of 5 mm or greater was recorded.

Most patients were seen regularly for dental review and general dental care, and also for routine hygiene care. Where indicated, patients with moderate to severe periodontal problems were prescribed visits to the hygienist, followed 2 months later with a periodontal review when a further 6-point probing depth examination

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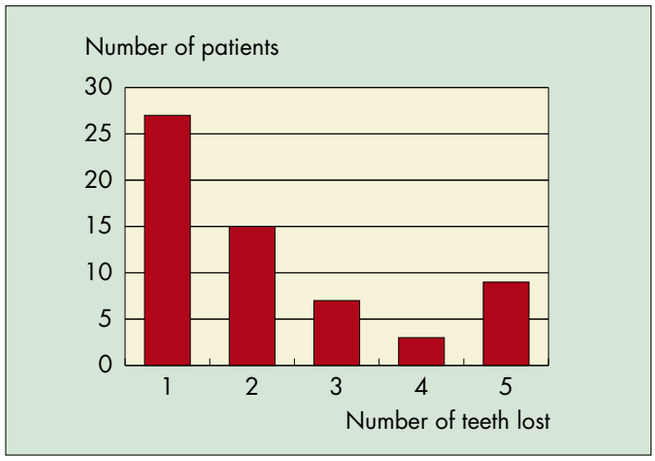

Fig. 2 Distribution of tooth loss by patient

of each standing tooth was carried out. In this way it was possible to evaluate the success of the initial therapy.

If probing depths were not improved and hygiene was at a high standard, patients were further treated by the dentist with either open or closed root planing. Over a 12-year period, the periodontal health was regularly monitored and conventional dental and hygiene treatment provided.

Results

Of the 157 patients in the study, the patient who had been treated the longest time was first seen on 9.11.82 and the patient who had been treated the shortest time from 12.2.86. The audit period for each patient was 12 years from their first examination. The patients had in total 3,778 teeth at the beginning, of which 151 (4%) were extracted for various reasons. Sixty-one patients lost teeth during the study period, and the distribution of tooth loss by patients can be seen in Figure 2. Twenty-nine of the 151 teeth were third molars. The rate of tooth loss is displayed in Figure 3.

Only 21 patients (13%) had probing depths of 5 mm or greater at initial examination. Five hundred and thirty-five of these teeth had probing depths of 5 and 6 mm, of which 57 teeth (11%) were lost. Ninety-three teeth had probing depths of 7 mm or more at initial examination, of which 24 were lost (26%).

Therefore, of the 151 extracted teeth, 81 had probing depths of 5 mm or more. The majority of patients lost only one tooth.

Discussion

In Hirschfeld and Wassermann's paper, 600 patients were maintained over an average of 22 years in a specialist periodontal practice.[1] After completion of 'initial treatment', 8.3% of teeth were lost. Teeth present when patient's were first examined, but removed during this initial treatment phase were unfortunately not recorded. Sadly the same is true of the Mcleod paper.[2]

All the patients in these studies were described as having moderate to severe periodontitis, whereas in this study they only make up a small proportion of the total patients that were followed. The patients in this study also received conventional dental care, including root canal therapy where required, and restoration of teeth.

One disadvantage of this paper's retrospective analysis is that it does not address what happened to the patients who did not attend 12 years later in the 6-month period between February and August 1997. Determining whether these patients had just delayed examination and not attended during the audited period, had moved from the area, become dissatisfied with the care they received from the practice or perhaps died, is beyond the scope of this audit. However, this does leave the method open to criticism in that the population may demonstrate bias towards patients satisfied with the care that they received.

This paper demonstrates a low rate of tooth loss in a general dental practice over a period of 12 years where patients received regular dental care and careful periodontal management. The prognosis for teeth with probing depths of 5 and 6 mm is good with only 10% being lost over the 12-year period. When probing depths are equal to or greater than 7 mm, it is likely that 21% of the teeth will be lost.

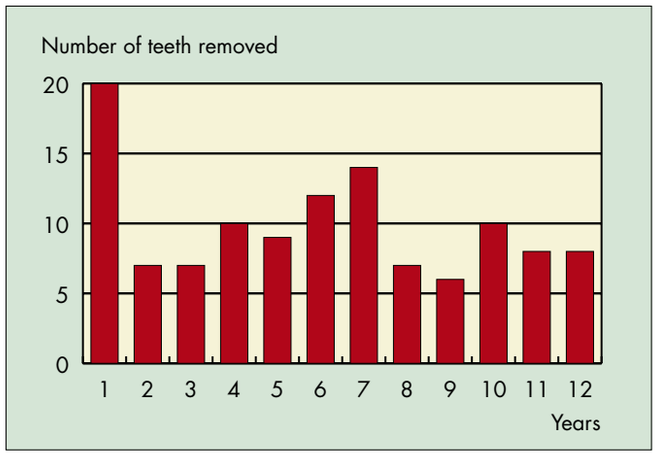

Fig. 3 Rate of tooth loss

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3 Nevins M. Long-term periodontal maintenance in private practice. *J Clin Periodontol* 1996; **23**: 273-277.
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