his article is a critical appraisal of the periodontal health of a group of 44 patients 5 years after receiving extensive periodontal treatment and subsequently being returned to the care of their general dental practitioners. Successful treatment of chronic periodontitis may be considered as the elimination or resolution of pathological pocketsing, the restoration of health and function of the periodontium, and the long term maintenance of that health by the patient.

to achieve these ends requires considerable effort and skill on the part of the dental surgeon, but much more importantly, it requires a long term and sustained effort by the patient with their oral hygiene home care programme. Case management therefore should not only be concerned with restoring periodontal health, but should be geared towards helping the patient with this extremely difficult task of long term maintenance.

Patients and Method

The patients for this longitudinal study were selected from the total of those treated in the Dental Outpatient Department, Aberdeen Royal Infirmary, during the 5-year period January 1969 to January 1974, if they satisfied the following criteria:

1) they were referred for treatment by their general dental practitioner;
2) they were patients with an obvious desire to retain their dentition who agreed to co-operate in any periodontal treatment considered necessary;
3) they were patients who were medically fit but with advanced chronic periodontitis (approximately half the alveolar bone height lost), a reasonably complete dentition, and requiring flap surgery in all four quadrants.

The reasons for the selection of this particular group of patients in preference to the total number of periodontal patients seen during the 5-year period were:

1) This group required the largest financial outlay by the health services if they were to be successfully treated.
2) Because of the lengthy and extensive nature of the treatment it was felt that more influence could be exercised in making them more dentally conscious and thus achieving more lasting and effective home care and plaque control programmes.
3) Because of the more extensive nature of the treatment it was felt a better recall ratio would be achieved in this group.
4) Being regular attenders at their general dental practitioners, they therefore had access to reasonable post-treatment follow up facilities.

All patients were seen and treated by the author. Case management followed a similar pattern in all patients and could be divided into three phases:

Phase I—Diagnosis: discussion with the patient concerning the disease process, possible treatment and prognosis; plaque control programme; initial preparation; continuing motivation.

Phase II—Corrective phase.

Phase III—Maintenance phase.

Before allowing the patient to proceed to the corrective phase, they had to prove that they were capable of maintaining a high standard of oral hygiene. A plaque index (Slings and Löe, 1964), consistently below the 0·3 level was adopted as an arbitrary guideline.

The post-surgical routine was for initial 6-weekly visits to be gradually reduced to 3-monthly recalls. When it was evident that patients were able to maintain their own periodontal health and had achieved consistently low plaque index scores, they were returned to the care of their general dental practitioner. On average, this varied from 9 months to 1·5 years. 4 patients were never discharged to the care of their dental practitioners and after 5 years were still under review at the hospital at 4-monthly intervals. This resulted from a request from either the patient or the dental practitioner to be kept under continual periodontal review. All the patients were recalled for reassessment of the periodontal condition 5 years after the corrective phase of treatment had been completed.

Results

Of the 56 patients selected for the survey, 44 (78·6 per cent) responded to the recall. The parameters used to
assess success or failure of the treatment were the Plaque Index and the Periodontal Index of Russell (1956). It can be seen from the graph (Fig. 1) that there is the suggestion of a straight line scatter, thus supporting the view that there is a direct link between the amount of plaque present and the degree of periodontal deterioration that may be expected.

Further factors taken into consideration during the assessment of the patient were sex, age, the dental practice which referred the patient and the occupation of the patient. In addition, a note was made of the number of visits the patient had made to their dental practices during the intervening 1-year period.

The results of these inquiries confirmed the impression that older patients are likely to be more successful and maintain a higher standard of oral hygiene than younger patients. Females had a better prognosis than males and certain dental practices were more successful than others.

**Discussion**

It was considered that a Periodontal Index of more than 3 or a Plaque Index of over 0.5 was indicative of failure. The former is an indication of tissue breakdown and recurrence of pathological pocketing. The latter, although only a single assessment of the presence of plaque, is nevertheless a reasonable indication of the patient's ability in plaque control and level of motivation.

A score of over 0.1 in a patient who was supposedly educated in oral hygiene measures and plaque control could be regarded as poor and indicative of failure to comply with the high standards set.

It can be seen that out of 44 patients only 12 (27.7 per cent) can be regarded as successful patients using both the criteria of Plaque Index and Periodontal Index. However, using a Periodontal Index of less than 3 as an indicator of success, 26 patients (59.1 per cent) came within the category of successful treatment. This means that 45 per cent of patients selected by the periodontal specialist and by their oral hygiene practitioners as being worthy of extensive and expensive periodontal treatment, within 1 year, had reverted back to their old habits of oral hygiene and deterioration had set in. This was despite the fact that the patients were prepared to spend much of their own time on this treatment and undergoing extensive surgical procedures. They had cost the health services a great deal of time and money but the end result has been progressive failure.

Clearly this is a very unsatisfactory state of affairs and one must ask why this has occurred in approximately half the patients. In seeking an answer it seems reasonable to consider the dental treatment and management during the 4 or 5 years following surgery and discharge from specialist periodontal care. All patients insisted that they had received yearly check-ups from their dental practitioners since discharge, a few made recall appointments within a short period, but none at 6-month intervals or less. When asked what comments their dentists made regarding their gum condition or oral hygiene methods, few had received any practical advice or comment. However, all had received a scale and polish on each visit.

Nyman et al. (1973) conducted a survey to assess the importance of professional tooth cleaning, after periodontal surgery. Post-surgically they carried out professional tooth cleaning and motivation on patients every 2 weeks for 2 years. They compared these patients with another post-surgical control group, who were recalled only every 6 months for scaling and polishing. Their results indicated that in the group seen fortnightly the Plaque Index remained consistently below the 0.3 level, there was no loss of attachment, Gingival Index scores were minimal and pathological pocketing did not recur.

In the control group, which were only seen every 6 months post-surgically, plaque scores remained around the pre-treatment level of 1-3, approximately 1 mm loss of attachment occurred per year, gingival inflammation was present, and pathological pocketing occurred. They concluded, and it is now generally accepted, that strict plaque control programs will prevent any further progression of periodontal breakdown, even in patients with severely reduced periodontal support. They suggested recall appointments ought to be less than 6 monthly.

Lindhe and Nyman (1973) published results of 75 patients treated with advanced chronic periodontal patients who had recall appointments for professional advice, cleaning and motivation, at 3 to 6-monthly intervals. They state that there was little or no periodontal deterioration in these patients.

The findings in this paper seem to be somewhat in conflict with the control group in the study commented on above where a 6-monthly recall was found to encourage deterioration. Clavild (1977) pointed out the importance of recall visits to reinforce the motivation of the patient. He concluded that motivation was of equal importance to any professional polishing and cleaning that might be carried out at the time.

**Conclusions**

The results of this present survey indicates that periodontal treatment and post-operative care carried out in the manner described shows a 1-year success rate of about 59.1 per cent, a failure rate of 40.9 per cent and 0.5 per cent. Clearly this is unsatisfactory. Treatment of this nature represents a large expenditure in time, effort and money, on the part of the health services and the results reveal very little return in overall improvement in dental health for the expenditure involved. Patients have been returned to their dental practitioners, treated, and educated in the importance of plaque control, but apparently this motivation has not been reinforced.

The question posed is, how can more effective follow-up care be effected? By the specialist periodontal service or by the general dental practitioner? Clearly, unless it is accompanied then the management of advanced chronic periodontitis in the manner carried out on these 44 patients (which seems consistent with what has been done and still is being done in the rest of the country) will continue to show an abnormally high failure rate and could therefore be considered a waste of time, effort and money, for the majority of patients and for the Health Service. Within a 5-year period approximately half the patients show signs of serious periodontal deterioration. It is of interest to note that the 4 patients seen at intervals of 4 months by the periodontal specialist were amongst the most successful half dozen of the patients over the 5-year period.

The conclusions must surely be that the present system...
of periodontal post-surgical management is inadequate and unsatisfactory. The evidence from this survey, linked with the findings from other workers in the field, seems to indicate that a periodontal patient must be reviewed at intervals of 3 to 4 months, certainly not more than 6 months, if periodontal health is to be maintained. It appears that some 27 per cent of patients could be reviewed at longer intervals and probably be expected to maintain gingival health. There is however, no way of identifying this group in the short term although the further results of this survey suggest the older age group females (40 years and over), consistently produced the best results over the 5-year period.

REFERENCES


Casebook

Cracked Tooth Syndrome

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Pain in the upper molar area due to the cracking of a tooth is described and the difficulty in arriving at a correct diagnosis is noted.

PAIN due to a tooth cracking has only been recognised recently (Mumford, 1973) and even whilst the crack is still in the enamel it may cause severe pain. Stanley (1969) says a diagnostic point is that sharp pain occurs on releasing pressure but there is no doubt it may be difficult to decide the cause of the pain, particularly in an older patient with many fillings.

Case Report

A male, aged 36, presented with an inlay that had just been lost from 17. On examination the buccal cusps of the tooth were moveable from the palatal ones and it was evident that the tooth had split vertically allowing the inlay to fall out (fig. 1). The history was interesting as there had been difficulty in accounting for the pain experienced intermittently in this apparently normal tooth over a period of 5 years.

In 1974 an attack of pain in this area simulating maxillary sinusitis had been present for several days and was so acute that it had been treated by antibiotics. It then resolved and there was moderate pain occasionally during the next few years. However, in April 1978 a swelling arose suddenly around the tooth. On examination pockets were present, mesially 6 mm and distally 8 mm and the diagnosis was made of a periodontal abscess. For a patient of this age no abnormal bone loss was seen on the radiograph (fig. 2) and the tooth settled down, the pockets reducing to 4 mm in depth.

Previously, in January 1979, the inlay of this tooth, which had been present for nearly 40 years, came out and on examination the tooth had been found to be slightly carious and a mesio-distal crack noted in the dentine. The caries could not be completely removed but a finished

Fig. 1.—Longitudinal view of crack in maxillary second molar from mesially towards bifurcation.

Fig. 2.—Radiograph of maxillary second molar with inlay present.