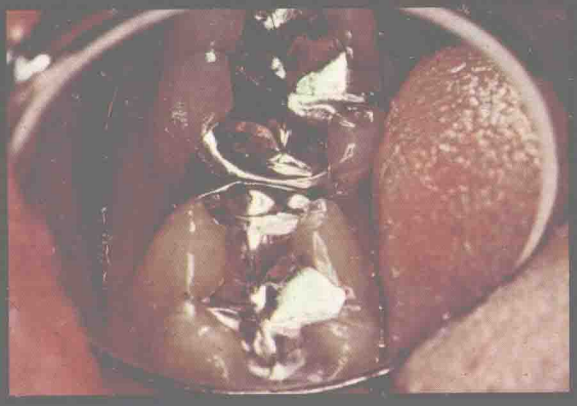
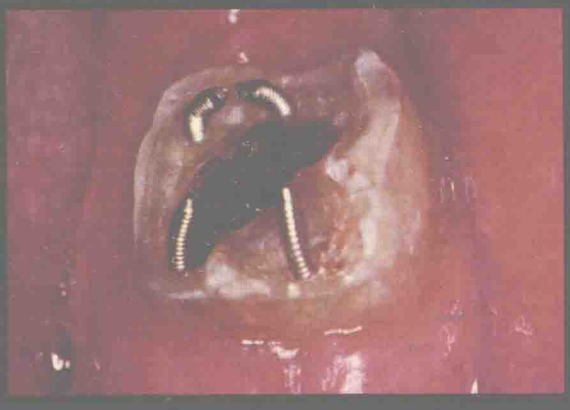
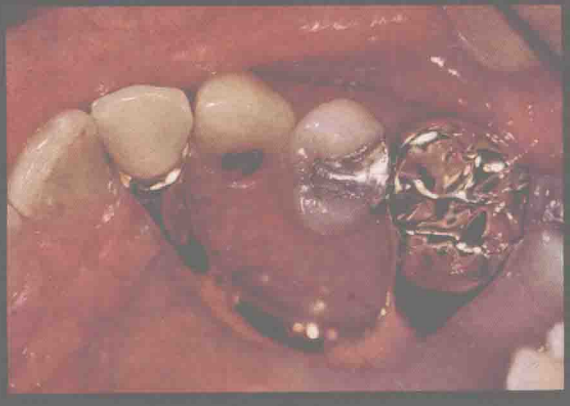
Color Atlas of Conservative Dentistry

J. R. Grundy







Color Atlas of

Conservative Dentistry

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Color Atlas of Oral Medicine
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Contents

Appendix

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Appendix

Preface

The title, *A Colour Atlas of Conservative Dentistry,* implies something more than Operative Dentistry but less than Restorative Dentistry. For instance, patient assessment, plaque control, crowns and bridges are included whereas periodontal surgery and the provision of dentures are not.

It is hoped that the Atlas will provide vivid graphic support for dental students embellishing their clinical experience and offer some fresh views and ideas for qualified practitioners. The latter might use some of the pictures to explain certain forms of treatment to their patients. It is not claimed, however, that this Atlas is in any way a testimonial to the dental paragon; indeed a number of less than satisfactory outcomes to treatment are included to stress that all practitioners of this most exacting art, Conservative Dentistry, experience difficulty, on occasion, in achieving perfection!

Although some aspects of the author's philosophy on his specialty are included by way of introduction, the Atlas is designed predominantly to be complementary to the many excellent textbooks on conservative dentistry and not a complete text in its own right. Pictures in this Atlas have been chosen where they might illustrate points better than black and white pictures found in the standard textbooks. Where appropriate, references are made to some of these textbooks and to the dental literature so that when read in conjunction with the Atlas, a full description of each topic may be obtained.

Acknowledgements

The author wishes to express his gratitude to many colleagues for their contribution of photographs for inclusion in the atlas, in particular to Mr A S Britton, Professor R M Browne, Dr J C Davenport, Dr F J Fisher, Dr A R Grieve, Mrs M C Grundy, Mr N Hall, Mr P S Hull, Dr J C Glyn Jones, Dr M A Mansfield, Mr D K Partington, Dr W P Rock and Professor D S Shovelton and to the staffs of the Clinical Illustration Department of the Birmingham Dental Hospital and the Photographic section of the Oral Pathology Department of the Birmingham Dental School who produced them; to Mr M Sharland of the Oral Pathology Department for taking many of the non-clinical photographs; to Mr T C Rowbotham of Manchester Dental School for permission to reproduce figure **145**, and to the publishers, John Wright & Sons, Bristol, for permission to use figures **408** and **410** which appear in *Inlays, Crowns and Bridges,* edited by G F Kantorowicz.

Particular thanks are due to Dr J C Davenport for his skilful interpretation and reproduction of the author's scribbled line drawings.

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To Margaret

1 Patient assessment and treatment planning

Before starting any restorative work, it is sound policy to assess the patient first as a whole person. This is because identical clinical conditions are not necessarily treated in identical ways. A multitude of factors may influence the treatment plan of the dentist, not least of which are the patient's wishes, availability for treatment, age and general health. The mouth should also be regarded as a whole before work is started on a single unit within it. Diseased teeth may be treated in a variety of ways, the choice being influenced for instance by the condition of the other teeth and the supporting structures.

In order to consider quickly and efficiently the multiplicity of factors involved in a thorough dental assessment, it is advisable to have a set procedure of HISTORY and EXAMINATION to follow (see Appendix 1).

Full information obtained from a comprehensive scheme of enquiry will allow the formulation of a TREATMENT PLAN and this may vary considerably for superficially similar patients. It should not be assumed that there is a standard form of treatment for each manifestation of dental disease. For example, for a patient with extensive caries, the treatment plan may be to remove the caries and restore the teeth with the best filling materials available. On the other hand, for a patient who has ineffective or poorly motivated oral hygiene, it may be necessary to make a two-stage treatment plan, the first part of which is to aim for good oral hygiene. The second part would be dependent on the outcome of the first – success leading to advanced restorative work and failure leading to basic minimal restorations or even extractions. Thus, the patient's motivation is a critical factor in determining a treatment plan. In this context it is useful to employ a Plaque Index or a Gingival Index, which can give numerical value to progress made in oral hygiene improvement. This can be of help in improving the patient's motivation, especially when associated with a disclosing solution which enables the patient to monitor his or her progress at home.

Age is another moderating factor in treatment planning. One example of this relates to the occlusal fissure which is found to be sticky on probing. This would probably be filled without hesitation when found in a first permanent molar of a child aged seven, having probably become carious after being at risk for only one year. Finding exactly the same clinical evidence in a patient of say 46 would lead one to keep the tooth under review rather than filling a tooth which in 40 years had produced only a sticky fissure!

Although this Atlas deals mainly with the conservation of the teeth, this subject must never be considered in isolation to the neglect of other specialties. Simply because it is technically possible to restore a tooth does not mean that the tooth must be restored. In the concept of treating the mouth as a whole, reference to the patient's needs of orthodontic or prosthetic treatment for instance may lead to the decision of extracting a tooth which was capable of being restored. Inter-relationships between specialties must also be borne in mind for instance in the design of a partial denture, which may in turn influence the design of a restoration if rest seats and retentive undercuts are involved.

Many personal factors can modify a treatment plan as, for example, the availability of a patient to attend for a lengthy series of appointments. The ideal treatment plan might include the provision of crowns, bridges and inlays but the patient may be unable to find the time for this advanced work to be done. The time involvement could then be reduced by restoring the smaller lesions with amalgam or composite, extracting the teeth needing more complex restorative work and providing partial dentures to replace these. The possible permutations of Treatment Plans are far too numerous to list here but a few general principles are given as a guide to priorities.

1. The treatment of pain must take precedence over all else.
2. Teeth of doubtful vitality or with extensive carious lesions should be thoroughly investigated before a definitive treatment plan is made. Large lesions should be stabilised at an early stage with zinc oxide/eugenol dressings so that the lesions do not progress whilst waiting their turn for treatment.
3. Scaling, polishing and plaque control should precede all other treatment, except that for pain and stabilisation, for the following reasons
   a. It gives the opportunity for the patient's motivation and effectiveness in plaque control to be monitored at succeeding visits.
   b. The patient's response to plaque control may have a bearing on the rest of the treatment plan.
   c. Being comparatively pleasant and painless, scaling and polishing is a good introduction to a course of dental treatment and helps to establish a good operator/patient relationship.
   d. The improvement in appearance and freshness of the mouth following scaling and polishing can raise the patient's interest in, and appreciation of, dentistry.
   e. It often results in a pleasanter mouth for the operator to work in.
   f. It should remove certain impediments to operative dentistry – for instance, the likelihood of gingival haemorrhage should be reduced, the true shade of the teeth can be seen for accurate colour matching, the true gingival margin will be established before teeth are prepared for crowns, calculus will be removed to allow the proper application of a matrix band.
   g. The need for periodontal surgery can be decided.
4. Where a partial denture and restorative work are both required, the denture should be designed before restorative work is started but the restorative work should be completed before impressions are taken for the denture.

Bearing these priorities in mind, the majority of treatment plans for restorative dentistry resolve themselves into straightforward periodontal treatment, the filling or restoring of teeth and the occasional extraction, bridge and partial denture.

However, certain conditions can make treatment planning a little more complex, as for instance, where there is unusual or gross tissue loss involving several teeth or where there is mal-formation, mal-position or congenital absence of teeth.

Tooth notation

Throughout this Atlas, teeth are designated by Palmer's Notation. The four quadrants are indicated viewing the patient from in front, thus ⌊Q is the upper left quadrant. The permanent teeth are numbered from 1 to 8, from central incisor to third molar and the primary teeth from A to E, from central incisor to second molar. Thus the upper left first permanent molar is shown as ⌊6. Palmer's Notation and that of the Fédération Dentaire International (FDI) are given below for comparison.

Patient's Right								Patient's Left							
8	7	6	5	4	3	2	1	1	2	3	4	5	6	7	8
18	17	16	15	14	13	12	11	21	22	23	24	25	26	27	28
48	47	46	45	44	43	42	41	31	32	33	34	35	36	37	38
8	7	6	5	4	3	2	1	1	2	3	4	5	6	7	8

2 Plaque

For any particular patient, the amount of plaque retained on the teeth can vary considerably according to the inter-relationship between dietary intake, and the frequency and effectiveness of the plaque removal methods employed. Whilst it is not intended that this Atlas should act in any way as a text on Preventive Dentistry or Periodontics, nevertheless it must be emphasised that effective plaque control should be the precursor of the restoration of teeth. In this endeavour, it is important for the dentist to be able to monitor the plaque state of the mouth. Such monitoring is more meaningful to the dentist and dramatic for the patient if it can be measured, and there are several plaque and gingival indices that can be used for this purpose. One such plaque index (Appendix 2) is the Patient Hygiene Performance (PHP index) of Podshadley and Haley (1968). The significance of this index will of course be influenced by the time interval since the patient last cleaned his or her teeth, and this must be borne in mind when discussing it with the patient. A similar sampling technique is used in the plaque index of Silness and Löe (1964). Areas of gingivitis based on numerical values of degrees of inflammation can also be counted, although Silness and Löe stated that the presence and amount of plaque alone gives adequate expression of the state of oral hygiene.

1 The gingivae seen here are as nearly perfect as can be achieved with the conscientious use of plaque control methods. The gingivae meet the teeth in a 'knife-edge' margin, the contour of which follows the amelo-cemental junction around all teeth. The interdental spaces are well filled and the gums are light pink and show stippling.

1

2 Most surfaces of the teeth of this patient are free of plaque but a disclosing solution reveals very light deposits which might otherwise have gone undetected, particularly inter-proximally in the upper right quadrant and lower incisor region.

2

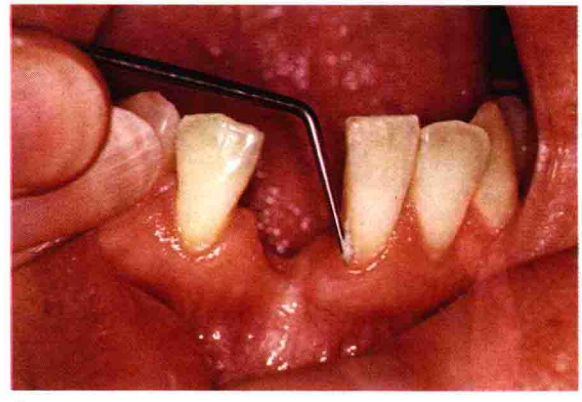
3 & 4 Without the aid of a disclosing solution, the plaque deposits on these teeth are barely detectable. Occasional slight signs of gingival inflammation indicate where deposits might be (**3**). After the use of a disclosing solution, widespread plaque deposits against the gingival margins are revealed (**4**).

3

4

5 & 6 A thin film of plaque near the gingival margin – Silness and Löe Grade 1 – is detectable by running a probe across the tooth surface (**5**). The plaque is however better seen by the more sensitive method of applying a disclosing solution (**6**).

5



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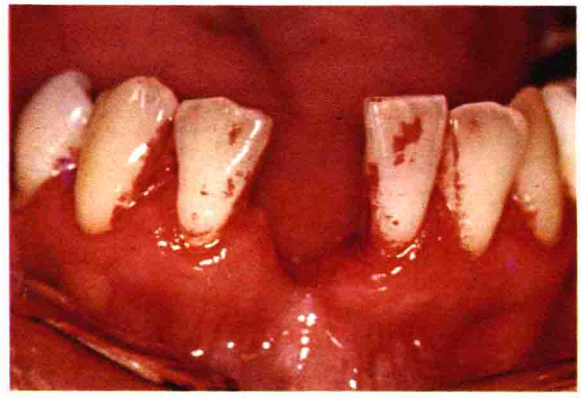


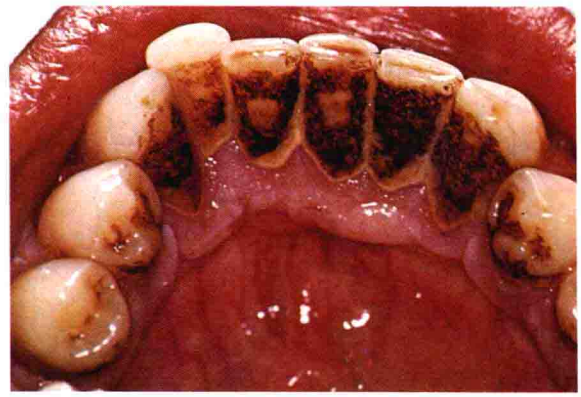
7 & 8 These gross plaque deposits near the gingival margin are obvious to the naked eye – Silness and Löe Grade 3 – resulting in universal marginal gingivitis. This is recognised by the 'rolled' gingival margins, the swollen interdental papillae due to the oedema and the reddening of the free gingivae due to hyperaemia. The use of Neutral Red as a disclosing solution is recommended more to shock the patient than to inform the dentist (**8**).

7

8

9 Heavy deposits of calculus are usually seen without recourse to disclosing solutions as on the lingual surfaces of $\overline{321}|\overline{123}$. The heavy staining, possibly by tobacco, tea or coffee, indicate that the deposits are longstanding ones. It is necessary for the dentist to remove this calculus to allow the patient to get access to the teeth to keep them free of plaque deposits by home care. Smaller deposits of unstained calculus which match the colour of the teeth are readily revealed with the air spray. This reflects the gingivae to give a good view into the pocket, and by drying the calculus turns it to a chalky appearance which contrasts clearly with the enamel.

9



10 The complete absence of any oral hygiene in this mouth is emphasised by the layers of desquamated epithelium, which have been left undisturbed on the attached gingivae.

10

11 This patient has exceptionally heavy deposits of calculus on both upper and lower teeth on the right and no obvious deposits elsewhere. This condition is brought about by the avoidance of chewing on the right side and should warn the dentist to look for some underlying cause for this.

11

Plaque control

12–16 Following removal of all deposits from the teeth, it is essential to guide the patient in methods of plaque control if rapid re-deposition is to be prevented. Ideally, before any course of conservative treatment is started, the patient should demonstrate his toothbrushing technique (**12**) and this should be improved by the dentist where it is found to be inefficient and checked at subsequent visits throughout the course of treatment.

Interproximally, the teeth are not usually accessible to the toothbrush. Where there is evidence that plaque is causing inflammation of a papilla, the proximal tooth surfaces can be cleaned by dental floss (**13**) which wipes off the plaque deposits from each tooth in turn. Where there is difficulty in introducing dental floss, for instance between the abutment teeth of the bridge seen here (**14**), it may be assisted by a floss threader. The floss threader (a) is passed from the buccal to the lingual side of the space, after which the floss (b) is fed through the loop of the threader and is pulled through in the manner of threading a needle.

12

13

14