

FEATURES SECTION

European Board of Orthodontists: a professional challenge

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Abstract

The background to the formation of the European Board is given and the necessary procedures for obtaining certification of the European Board of Orthodontists (EBO) are described. An example case report is included to give the reader an indication of the type of detail required for each and every case presented. Recommendations are given for prospective candidates who might consider attempting EBO certification in the future.

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Introduction

The purpose of this article is to encourage participation in the EBO examination by providing information about the requirements and presenting an example of case report.

History

In the western world orthodontic treatment was available on a very limited scale in the first part of the last century, and then only to a select part of the population. During the second part of that century orthodontics developed into a thriving branch of the health industry and is now provided on mass scale. The number of orthodontists and the amount of orthodontic treatment provided has grown immensely.

Originally issues to check and improve the quality of care did come to the fore. Latterly and certainly over the past decade or so, self-audit, clinical governance, and peer review have become major issues in all branches of the health industry. Fundamental to these issues is the assessment of quality by peer review.

In orthodontics several systems have developed and have been adapted for specific purposes. On a population scale, where statistical procedures are essential, standards, and indices were designed and applied to measure quality. In the last decade the need, effectiveness, and efficiency of orthodontic treatments provided

by various groups of care providers became a popular field of research.^{1–4} Recently, in the Netherlands, structured, systematic visitation of orthodontic practices by peers has been implemented.

Certification by Board examination is another way of promoting high standards of care. The aim is to improve the professional performance of the individual clinician by careful and extensive evaluation of all aspects of actual patient treatments.

In the United States of America such a system was formulated in 1929 when the American Board of Orthodontics (ABO) was set up. The ABO introduced a voluntary examination and standards of excellence were gradually established by consensus of the chosen experts of the day. There are, to date, almost 2000 American Board certified orthodontists. To be a diplomat of the ABO became an important career asset for academics and leading clinicians in the United States of America.⁵ James Vaden, past President of the ABO has listed the reasons for putting oneself forward for Board exams as:⁶

- personal growth as a practising clinician;
- increased self-confidence;
- an invaluable learning experience;
- improved standards of practice;
- establishes standards and parameters for the profession.

In Europe, the development of orthodontic specialties was rather more haphazard throughout the 20 century.

Although orthodontics is now recognized as a specialty of dentistry in most countries of Western Europe, large differences still exist between the various public health systems in these countries. This has had a major impact on the way orthodontics is provided and practised, and also on what portion of the population has access to the service.

Orthodontic specialist education, mostly at academic institutions, is provided in most European countries. A standard curriculum was designed and has been adopted by many European universities.⁷ In view of the developments indicated above, the European Orthodontic Society, in 1996, initiated the European Board of Orthodontists.

Objectives

The objectives of the European Board of Orthodontists are described in the constitution of the EOS (Table 1).

The first Examination Board was nominated in 1997 and its task was to set the standards, organize, and execute the examinations. Since the first examination in 1997, at the European Orthodontic Society Congress in Valencia, 48 clinicians have been awarded Board membership and received the certificate of excellence (Table 2). During this time national boards have also been set up. Though many similarities exist, all the examinations (American, European, Italian, French, etc.) differ in various aspects as regards content, requirements, organization and judgement systems.

The European Board is also different from the other boards in the sense that it is an international board and that its certification cannot be gradually gained over time. Certification is awarded when clinical excellence is identified after demonstration of the required number of treated cases and performance with two unseen clinical

Table 1 Objectives of the European Board of Orthodontists

- To enhance the standards of orthodontic treatment throughout Europe by providing a standard against which the orthodontists who so desire can be judged independently of national examinations and barriers.
- The EBO would encourage the spirit of self-improvement among colleagues who are recognized specialists in orthodontics within countries in Europe.
- The standards of orthodontic treatment would be judged by an expert panel of European orthodontists nominated by the Council of the European Orthodontic Society (The Examination Board).

From: Constitution of the European Orthodontic Society; adopted June 5 2000.

Table 2 EBO membership in 2001

| Country | EBO MEMBERS in 2001 |
|-------------|---------------------|
| Brazil | 1 |
| Switzerland | 5 |
| Monaco | 1 |
| Sweden | 1 |
| Italy | 15 |
| Germany | 5 |
| Netherlands | 2 |
| Austria | 7 |
| France | 2 |
| Portugal | 1 |
| Spain | 5 |
| UK | 1 |
| Ireland | 1 |
| Greece | 1 |
| Total | 48 |

cases all at one occasion. A deferred candidate, however, has the opportunity to re-sit the examination on two separate occasions.

Eligibility

To be eligible to participate in the examination the candidate must be a recognized specialist in their own country. Cases to be presented must be diagnosed and treated solely by, and under the full responsibility of the candidate. Cases treated during basic training as a specialist or cases treated by different clinicians in a group practice are therefore unacceptable for submission as EBO cases. An examination fee must be paid well in advance of the examination and the candidate must sign an agreement that decisions of the Examination Board will be accepted as final.

Examination regulations

Categories of cases

The comprehensive instructions to candidates are provided on disc, and they describe explicitly and specifically the eight categories of malocclusions that have to be presented in prescribed format (Table 3). No doubt whatsoever exists as to what type of cases and what clinical records are required. The extent of 'write up' of the case is also dictated by the sizes of the boxes on the forms, again enormously helpful to the aspiring candidate.

Table 3 Type of cases*1. Early treatment malocclusion*

Either a one- or two-stage treatment started in the primary or mixed dentition and completed in the permanent dentition. Initial records (a) taken prior to the start of phase one are required. If treatment is in two stages (b), interim records are required following the completion of stage 1 or prior to the start of stage 2. The final records (C) must be taken within one year after the end of treatment.

2. Adult malocclusion

An adult malocclusion not requiring orthognathic surgery but requiring comprehensive therapy and significant diagnostic and biomechanical skills, which may also include interdisciplinary co-operation.

3. Class I malocclusion

A malocclusion with either a dento-alveolar protrusion, open bite, deep overbite, or a significant arch length deficiency, or eruption problem requiring orthodontic treatment.

4. Class II division 2 malocclusion

Exhibiting an anterior deep overbite with at least two retroclined incisors and a Class II canine relationship.

5. Class II division 1 malocclusion

A malocclusion with a high Frankfort mandibular plane angle, minimum FM angle of 30 degrees and/or SN to Go–Gn angle of 37 degrees.

6. Class II division 1 malocclusion

A malocclusion with a significant mandibular arch length deficiency. In at least one of the two Class I cases the treatment should involve extractions in both dental arches.

7. A severe skeletal discrepancy

A malocclusion with a severe anteroposterior and/or vertical discrepancy including comprehensive orthodontic therapy.

8. A significant transverse discrepancy

A posterior crossbite that requires full appliance treatment.

In only one case should orthognathic surgery or extensive restorative treatment be part of the treatment performed. If a candidate is unable to produce a case that fits one of the categories they may substitute another case from another category, but must give an explanation why it has been substituted and may only do this for one case.

Presentation of cases

All cases are presented anonymously thus examiners are unaware of who is presenting themselves for the examination. Requirements for case presentations are precisely prescribed and are mandatory. The written explanation within the case presentations must be in English. The main reason for these measures is to facilitate objective judgement of case reports by the examiners. If some of the mandatory material is incomplete, the examination of that candidate is postponed until the required material is collected.

Case presentations require initial pre-treatment records. These include a written explanation of the clinical examination, as well as colour facial and intra-oral photographs, dental casts, radiographs (dental tomogram and cephalogram), cephalometric tracings and accompanying assessment, a written treatment plan and explanation justifying that particular plan. Similar requirements apply to the second set of records after completion of treatment, with a description of the progress of treatment and its result. The third set of records

(at least 1 year after completion of retention) does not include radiographs. The final text is a description of the findings, and a final evaluation of the treatment result and the long-term prognosis.

Superimposition of cephalometric tracings is not mandatory; however, it is recommended as a great deal of information can be gained about growth and treatment from relevant superimpositions. Additional records are encouraged if they enhance the overall case presentation and can be added as appendices.

Oral examination

The language for the oral examination is usually English; however, other major European languages can be used provided the candidate has indicated this at application. The reason for this is to make sure that examiners speak and understand that language to ensure the examinee has a fair chance.

Candidates are confronted with two unseen cases, often cases treated by the examiners and after having

spent 1 hour examining the clinical records, they have 30 minutes to present, explain, and discuss their diagnoses and treatment plans.

Evaluation and judgement

The Council of the European Orthodontic Society nominates examiners. The examiners do not know the identity of any of the candidates prior to meeting them during the viva examinations.

For all parts of the examination a score of at least 65% is required for a pass. A case evaluation form is used with a sequence of marks for each case (see Table 4). No more than 10 per cent of the marks can be gained from the quality of the records. There is little possibility for compensation of marks within a case, or between cases and the oral examination. The difficulty of a case is given due consideration when assessing the marks. The use of the case evaluation form helps the examiners to calibrate, to be systematic and objective. It also allows the possibility to give balanced weighting to all aspects of the case and not just single out, for instance, purely the post-treatment occlusion. The texts, therefore, play a major role in the evaluation, as this is where the candidate can explain the rationale for clinical decisions and actions, or describe difficulties encountered during treatment or may express doubts or self-criticism on particularly controversial aspects of the treatment provided.

Table 4 EBO case evaluation form

| | Score | Minimum | Maximum |
|--|-------|---------|---------|
| Photographs | | | 2.5 |
| Dental casts | | | 2.5 |
| Radiographs | | | 2.5 |
| Ceph. tracing | | | 2.5 |
| Total records | | 6.5 | 10 |
| Observations | | | 5 |
| Diagnosis | | | 5 |
| Treatment plan | | | 10 |
| Explanation of plan | | | 10 |
| Total clinic | | 19.5 | 30 |
| Improvement of dentofacial aesthetics | | | 10 |
| Efficiency therapy/ difficulty of case | | | 30 |
| Finishing of occlusion | | | 10 |
| Stability of treatment result | | | 10 |
| Total therapeutics | | 39 | 60 |
| Total of case | | 65 | 100 |

Recommendations

Candidates are usually established orthodontic specialists with at least 5 years of independent clinical experience. To select the most suitable cases for each category, together with the required documentation, requires systematic and organized collection of clinical records. Therefore, the time needed to select and prepare the suitable cases should not be underestimated. The time needed to produce the case presentation binders and the dental casts is estimated at about 12–15 hours per case. The use of computers is recommended as it improves the quality of the presentation and is a real time-saver. As the texts are to be in English, extra time may be needed for the preparation. The use of an editor or other helper with a good working knowledge of written English is highly recommended.

Example of successful case report

In this section a successful case report is presented and this is illustrated in Figures 1–3. The purpose of it is to demonstrate specific aspects of the case presentation. It is to indicate the type and quality of records that should lead to successful presentation of cases.

When one applies to the European Orthodontic Society to take the European Board of Orthodontists examination a very helpful package arrives through the post. Within the examination pack is a floppy disk containing templates for the entire presentation for each of the cases. It is merely a matter of printing out the templates and then filling in the required boxes.

The first clinical page comprises a resume of the entire case and the following page gives all the diagnostic information in specific categories with a maximum amount of information specified by virtue of the size of the boxes and the font size specified. It is therefore essential to be as brief and concise as possible, but still to include the salient point.

Routine records are taken for every patient at three stages: pre- and post-treatment, and at least 1 year out of treatment. The routine records comprise dental casts, colour facial photographs, colour intra-oral photographs, a dental tomogram, and a lateral cephalogram with tracing and a table including numerical values of the cephalometric assessment.

A page is then devoted to the treatment plan outlining the objectives of treatment and breaking down the treatment in stages to aid easy comprehension of the clinical approach of that particular patient. The following pages

includes a resume of all treatment, concisely listing what was performed each stage, perhaps giving details of arch-wire changes or particular mechanics used.

Following treatment a standard set of records is included once again, which is almost identical to the pre-treatment records. If possible it is useful to place the facial and intra-oral shots in similar positions to those contained in the pre-treatment records, to allow the examiners to make direct comparisons between the two. A second table is included in the post-treatment records listing the pre- and post-treatment cephalometric values side by side to enable changes to be quickly assessed.

The candidate is then given the opportunity to describe the results achieved, perhaps highlighting any problems in treatment and describing any particularly interesting aspects of the treatment. A post-treatment evaluation is also required, as well as some justification of the retention regime chosen.

A further set of records is provided, at least 1 year post-treatment, although at this stage a dental tomogram is not required. If available, once again, the cephalometric morphological assessment is carried out to allow assessment of any dentoalveolar tipping and/or skeletal changes that may have occurred after the end of active treatment.

A final half-page is then requested to allow the candidate to give a final assessment of the case and point out any aspects of treatment, tooth movement or skeletal change, which are of particular note. If there are any aspects of treatment that could be improved upon or, with the benefit of hindsight, may have been differently treated, it would be worth alluding to these at this stage.

Candidates have the opportunity to include appendices to their presentation and things worth including might be any in-treatment photographs taken at particular milestones in treatment, super-impositions of the cephalometric tracings or perhaps photo's showing a fully functional occlusion at the end of treatment. Often photographs will be taken of adjunctive appliances used to achieve the clinical result, such as functional appliances and is always of interest to see the occlusion at the end of the functional phase before fixed appliances are placed. In addition, photos will often have been taken up particular stages in treatment such as the change of arch-wires. Following the progress through various arch-wire changes can shed light on the efficiency with which the treatment progressed.

In addition to the cephalometric morphological assessment presented, pictorial representation of the

dentoalveolar and skeletal changes, by virtue of superimposition of post-treatment tracings on pre-treatment tracings, can offer an examiner a significant insight into the changes achieved during treatment. It is also of benefit to superimpose the final green tracings on the previous two tracings to monitor any dentoalveolar changes occurring after the end of active treatment.

Demonstration of a fully functional occlusion showing right lateral excursion with absence of non-working side contacts, left lateral excursion with absence of non-working side contacts and, finally, incisal guidance in protrusion with gentle posterior disclusion will all contribute to a positive assessment of the case by the examiners.

Discussion

The procedure, which has evolved over the past few years, is felt to work well. It is also felt that the examination is of very high standard, and the assessment and appraisal of the candidates, and their material, objective and fair. Despite this apparently satisfactory process it is appropriate that the current procedure is constantly reappraised for potential weaknesses and areas that lend themselves for improvement. The success of the EBO is totally dependant on the brightest and best clinicians putting themselves forward for and successfully passing the assessment.

To date there is insufficient scientific evidence to support inclusion of each and every section of the clinical requirements and some details of the judgement system might not withstand close scrutiny. Examples of difficulties faced is the use of end of treatment dental tomograms to judge the proper mesio-distal angulation of teeth⁸ or the impact of inherent method errors in cephalometric evaluations⁹ and possible limitations in record taking.¹⁰

A problem of different order is the uncertainty surrounding malocclusions prone to relapse such as closure of open bites.¹¹ Such situations are likely to prevent candidates including such a case in their presentation.

The examining Board regularly adapts requirements, regulations, and assessment systems due to changing circumstances, or scientific and clinical viewpoints. Some of the changes or adaptations appear to make the examination more easy, while others have the opposite effect. It is also apparent that striving for perfection is behind some of the requirements. However, also for that aspect actions should as much as possible be 'evidence

based'. Candidates should bear in mind that a relentless pursuit of such perfection, is not in the interest of all patients. An acknowledged balance between clinical excellence and the best overall interests of the patient is important. Recognition of when each patient has reached the goals appropriate to them is a desirable characteristic of the competent and mature clinician.

The recently released British Orthodontic Society guidelines on radiography state that radiographs are only justified when that particular patient will benefit from the results of that specific radiograph. As a result, lateral cephalograms are taken before debond when there is still some space to close. The EBO regulations state that a lateral skull radiograph at the end of treatment, whilst useful, is not mandatory. The same applies to the 'C' records taken at a later stage. Providing a full and complete explanation and justification of treatment is provided, accompanied by acceptable documentation, photographs, and radiographs, there should be no problems having these cases accepted.

Though the EBO examiners regularly calibrate their judgement to be as objective as possible, some subjectivity is unavoidable. On the other hand, clinical procedures, perfectly applied and accurately described, together with intelligent, elegant solutions to complex orthodontic problems effectively show abilities and treatment results that can be reliably identified as excellent. It is obvious that candidates select the very best available material, but it is unlikely that the presented cases would be unrepresentative of the professional standard of that clinician. It is therefore our opinion that the successful candidate is probably an excellent clinician. Candidates usually find the examination a tremendous professional challenge and for most of them, after many months of painstaking preparation, it is an enormously rewarding if somewhat stressful day. The successful candidates are quite rightly proud of their achievement and we have yet to meet a successful candidate who didn't think the EBO was a very worthwhile pursuit of clinical excellence.

Conclusion

For the individual clinician, who wants to have their clinical work appraised and assessed alongside some of

the best clinical cases in Europe the EBO is for them. It affords the opportunity to scrutinize and then hopefully improve the quality of their own clinical practice from which all their future patients will benefit.

Further information about the EBO can be obtained from the European Orthodontic Society, Flat 20, 49 Hallam Street, London W1W6JN, UK. Tel/Fax: 44 (0) 207935 2795 (email: eoslondon@compuserve.com).

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RÉSUMÉ OF CASE 1

CASE CATEGORY
Early treatment malocclusion

NAME
BOB
SEX
Male
PRE-TREATMENT RECORDS
AGE 11.4 DATE 14.10.99
CLASSIFICATION
Class II Division 1 malocclusion + mild Class II deviation
WITH MISSING BEFORE TREATMENT
None
TREATMENT PLAN
Correction of the sagittal relationship
Reduction of the overjet
Reduction of the overbite
Establish class I buccal segment
Establish functional occlusion
Retention
APPLIANCE
Twin Block
Straight Wire appliance
TREATMENT STARTED
AGE 11.6 DATE February 1999
TREATMENT ENDED
AGE 11.8 DATE December 1999
ACTIVE TREATMENT TIME
20 months
POST-TREATMENT RECORDS
AGE 12.4 DATE December 1999
RETAINERS
Upper Hawley retainer
by lower Waterman retainer
RETENTION ENDED
Upper - December 1999
by lower - December 1999
RETENTION TIME
Upper - 11 months
by lower - 11 months
AT LEAST ONE YEAR AFTER THE COMPLETION OF TREATMENT
AGE 11.8 DATE December 1997
TIME OUT OF RETENTION
0 months

DIAGNOSTIC DESCRIPTION OF THE MALOCCLUSION

A. HISTORY
Initially, severe Class II Division 1 malocclusion in mild Class II deviation type malocclusion
Anchors: Normal maxillary-mandibular plane angle and normal lower facial height. Incomplete lip, fullness by the maxillary incisor and upper incisors. Both the upper and lower incisors have good contact for the full upper arches produced with lip opening. There was no cross bite and functional overbite complete the palatal malocclusion.

B. EXAMINATION OF HEAD AND FACE AND FACIAL PHOTOGRAPHS
The patient had moderate to mild dental malocclusion mandibular prognathism. The vertical proportion of the face was in slight mesofacial tendency. The lip was incompetent.

C. FUNCTIONAL EXAMINATION
The patient's right lower incisor was guided by maxillary incisor was proclined mesio-distally with an absence of over-erupting symptoms. Class II deviation malocclusion and they may contribute to mandibular plane angle symptoms.

D. INTRAVISUAL EXAMINATION AND PERIAPICAL PHOTOGRAPHS
There was evidence of severe mesial growth of the maxilla and the maxillary incisor's and upper arches. The patient had a cross bite with only one deciduous mandibular and maxillary the other one.

E. DENTAL CHECK

| | |
|-----------------|---|
| Maxillary arch | Slight proclination angulation, mild lower overbite |
| Mandibular arch | Mild buccal segment spacing, moderate lip |
| Overbite | Lower incisor proclined and spaced |
| Overjet | Small overjet |
| Overbite | Upper 11 mm, buccal segment is 10 mm post-axial |
| Overbite | Increased overbite complete palatal malocclusion |
| Overbite | Right-side long lower through lower incisor and mandibular line |

CASE NUMBER 1 DATE October 1999 AGE 11.4 100 0004

CEPHALOMETRIC MORPHOLOGICAL ASSESSMENT

| | Pre-treatment | Post 90° |
|---|---------------|-------------|
| Sagittal Maxilla Relationship | | |
| Maxillary Position S-N-A | 71 | 82° ± 1.4° |
| Mandibular Position S-N-Pg | 54 | 80° ± 1.3° |
| Maxillary Inc. Relationship A-N-Pg | 1 | 7° ± 2.3° |
| Vertical Maxilla Relationship | | |
| Maxillary Inc. Position S-N-A-PNS | 4 | 8° ± 1.8° |
| Mandibular Inc. Position S-N-Pg-Ce | 14.0 | 20° ± 1.8° |
| Vertical Inc. Relationship A-N-Pg-S-N-Ce | 24.0 | 24° ± 4.8° |
| General Jaw Relationship | | |
| Maxillary Incisor Inclination +1-A-N-PNS | 113.5 | 119° ± 1.8° |
| Mandibular Incisor Inclination +1-Ce-Ce | 99 | 94° ± 1.8° |
| Mandibular Incisor Compensation +1-A-Pg(90°) | 0 | 3 ± 2.8 mm |
| General Relationship | | |
| Overjet (mm) | 9 | 15 ± 1.5 mm |
| Overbite (mm) | 4 | 2 ± 1.8 mm |
| Overjet angle | 100 | 132° ± 6.8° |

CASE NUMBER 1, DATE October 1999, AGE 11.4, 100 0004

TREATMENT PLAN AND THE REASONS FOR IT

Plan of Treatment
Forward development of the maxilla would allow correction of the buccal segment relationship as well as reduction of the increased overjet and overbite. Some increase in the transverse width of the maxillary arch would be required to accommodate the mandibular arch in corrected position.

Treatment Objectives
The aim here was to establish a normal Class I malocclusion with a fully corrected overjet and overbite. At the same time the facial aesthetics should be improved. Achievement of these objectives will ensure correction of the buccal segment relationship to Class I.

Treatment Stages

- Stage 1: Provision of Twin Blocks
- Stage 2: Retention of correction achieved with Twin Blocks
- Stage 3: Placement of upper and lower Straight Wire appliances for detailing of malocclusion
- Stage 4: Establish good buccal segment interdigitation
- Stage 5: Finishing techniques to maximize interdigitation and establish a fully functional occlusion
- Stage 6: Retention

Fig. 1 Pre-treatment records.



Fig. 1 (continued).

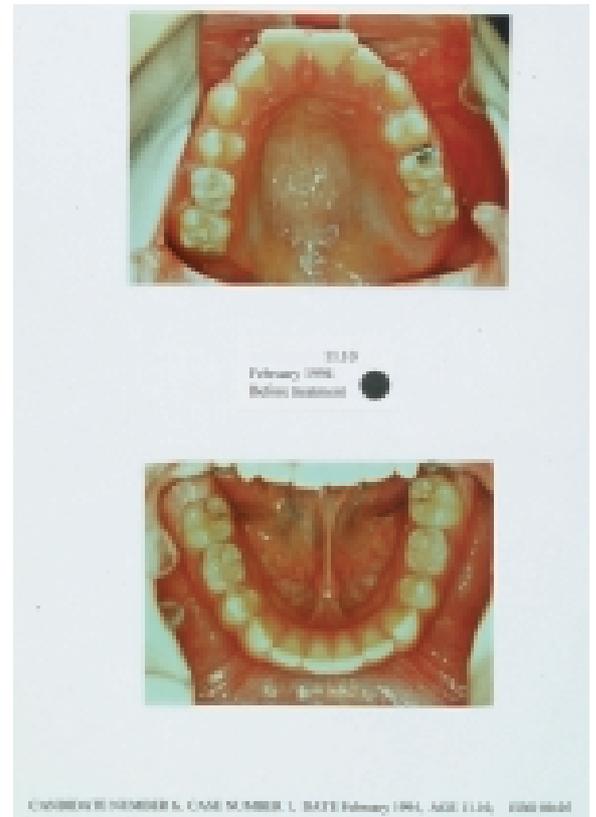


Fig. 1 (continued).



Fig. 2 (continued).

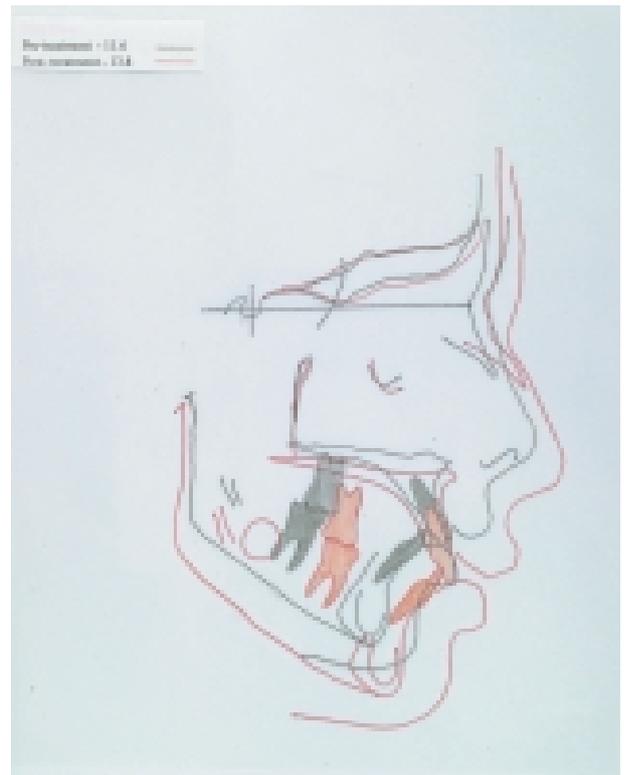


Fig. 2 (continued).

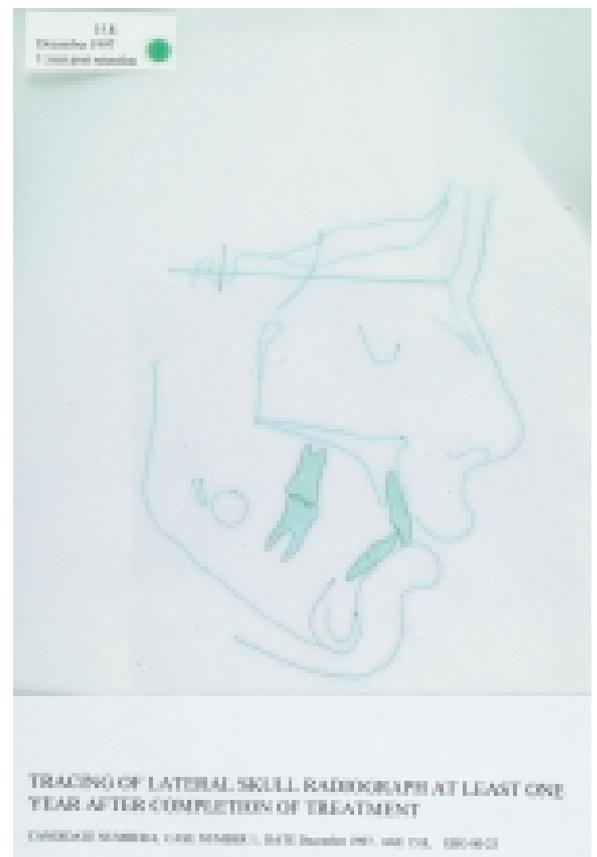
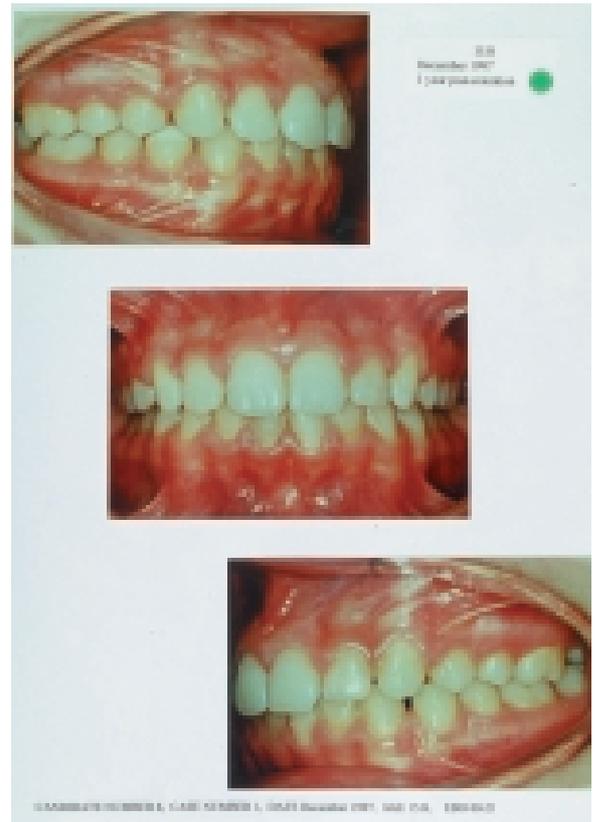


Fig. 3 Retention records.