WORLD BOARD OF LINGUAL ORTHODONTISTS

GUIDELINES FOR CASE PRESENTATION

TO THE EXAMINATION

OF THE

WORLD BOARD OF LINGUAL ORTHODONTISTS

WORLD BOARD OF LINGUAL ORTHODONTISTS (WBLO)

0. INTRODUCTION

Since WSLO was founded in 2004 we had had in mind, and discussed, the creation of a way to certify and control a high standard of lingual treatment throughout the world. Now the time has come to found WBLO (World Board of Lingual Orthodontists). Respecting the initial aim of the WSLO which means in agreement and involving all lingual orthodontic societies, the WSLO promotes the founding of the World Board of Lingual Orthodontists (WBLO), in order to recognize the efforts made by all lingual orthodontists in realizing the highest standards of treatment quality.
The WBLO will certify lingual orthodontists with a worldwide standard of clinical excellence.

WBLO presentation and organization

WBLO is an independent organization that has their own trademark and an independent website (www.wblo.net).
WBLO website is linked with WSLO , ESLO and could also be linked to all the lingual orthodontic societies website.

The purpose of the Board is to enhance the standards of lingual orthodontic treatment throughout the world by providing a unified standard against which Orthodontists who desire can be judged, independently of national examinations.

All the national lingual orthodontic societies could apply WBLO case presentation requirements to their national Model Display Active Membership. This will help their affiliates to enhance their case presentations, when they apply to join their own national lingual orthodontic societies. These presentations could also be used at a later time in their application to the WBLO.

WBLO membership is only an honorific title, and would indicate that the orthodontist has demonstrated clinical excellence in lingual orthodontic treatment. WBLO does not have any legal value.

All WBLO members will have the right to use on cards, letterheads, directories and announcements the designation "Member of the World Board of Lingual Orthodontists".

WBLO examination sessions will be held at all WSLO meetings.
Examination sessions can also be held during ESLO meetings and any International Lingual Orthodontic Meeting.
In this case, the WBLO Examination Committee should be invited to attend the meeting and organize the examination session.

Each organizing group will be responsible for covering expenses of the WBLO examining members invited to take part.

The Board Examination Committee will be composed of the President and at least 3 examiners . The examination committee will be in charge for 4 (four) years from the date of election. If necessary, additional examiners will be named, in relation to the number of participants for any specific session. The Board Examination Committee will be named collegially by the WBLO assembly, that will be held during the WSLO meeting. All the examiners must have already submitted their cases to the WBLO and passed the examination (certified).
At the 3rd WSLO Congress held in Buenos Aires (2009) the founding of the WBLO was discussed. 9 Candidates to be the founding members of the WBLO were chosen. They will present the 8 cases required by the WBLO bylaws before next year's ESLO Congress in London. The WBLO will be founded after the ESLO Congress by all candidates whose case studies have been found to be of a sufficiently high standard. This initial evaluation will be carried out by Dr. Lorenzo Moser, former president of the EBO.

The first regular examination for WBLO membership will be held at the fourth WSLO Congress which will be held in Osaka in April 2010.

All orthodontist who become WBLO certified members are eligible to become part of the board examination committee.
The case presentation standard requested by WBLO is the same as any international orthodontic board (European Board and / or American Board) in order to keep a high standard and to be recognized internationally by WFO (Word Federation of Orthodontics).

The guide to prepare for the examination of the WBLO was inspired from the: "European Board Of Orthodontists. An illustrated guide to prepare for the examination of the European Board of Orthodontists" by H.S. Duterloo, P. Palanché.

1. OBJECTIVES

1 .l To enhance the standards of lingual orthodontic treatment throughout the world by providing a standard against which the orthodontists who so desire can be judged independently of national examinations.

1.2 The WBLO will encourage the spirit of self-improvement among colleagues who are specialists in lingual orthodontics in the world.

1.3 The standards of orthodontic treatment will be judged by the Board Examination Committee named collegially by WBLO assembly. All the examiners must have already submitted their cases to WBLO and passed the examination (certified).

1.4 WBLO membership is only an honorific title, and would indicate that the orthodontist has demonstrate clinical excellence in lingual orthodontic treatment. Membership of the WBLO does not have any legal value.

2. ELIGIBILITY

The candidate presenting for WBLO must fulfill the following educational and professional requirements:-

2.1 The candidate must have undertaken a period of full-time training in orthodontics of at least three years duration or its equivalent, approved by the National Specialist Committee in Orthodontics or the appropriate body in the country in which the orthodontist resides. The candidate shall submit to WBLO a full curriculum vitae since of his/her orthodontic training, the acceptability of which will be considered by the Board.

2.2 The candidate shall confirm that the cases presented pursuant to these regulations have been diagnosed and treated under the sole responsibility of the candidate and that all such cases were diagnosed and treated after he/she had satisfied the training period required by regulation 2.1.

2.3 The examination fee as applicable must be paid before the date of the examination. If a candidate withdraws from the examination less than 3 months before the date of the examination a portion of the fee paid will be forfeited. All such withdrawals must be in writing.

2.4 The candidate must sign an agreement which declares that decisions of the Board will be accepted as final.

3. THE EXAMINATION

3.1 The examination shall consist of:

3.1.1 the presentation of the number of cases required covering a spectrum of malocclusions as specified. Marks will be allocated for the complexity of the cases, the excellence of the treatment results and the presentation.

3.1.2 the oral examination will focus on the candidate's knowledge, understanding and ability to carry out orthodontic treatment to a high standard and to understand the theoretical principles underlying the treatment. The language used shall be English.

3.2 The result of the examination could be "accepted” or "deferred". When a candidate is deferred, the Board will advise the candidate on re-examination. The candidate can only re-sit the examination twice and the time interval between such re-examinations shall be advised by the Examination Board.

3.3 Anonymity

A candidate number will be given to each candidate in order to keep secret his/her identity secret from the examiners.

All case presentations have to be made fully anonymously.

The identity of candidates is only revealed at the end when the decision who is accepted or deferred has been taken.

TYPE OF CASES

The cases presented shall cover the following malocclusions:-

1. ADULT MALOCCLUSION

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

2. CLASS I MALOCCLUSION

A malocclusion with either a dentoalveolar protrusion, open bite, deep overbite or a significant arch length deficiency, or eruption problems requiring orthodontic treatment.

3. CLASS II DIVISION 2 MALOCCLUSION

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

4. CLASS II DIVISION 1 MALOCCLUSION

A malocclusion with a high Frankfort mandibular plants angle. Minimum FM angle of 30 degrees and/or SN to Go-Gn angle of 37 degrees

5. CLASS II DIVISION 1 MALOCCLUSION

A malocclusion with a significant mandibular arch length deficiency. In at least one of the two Class II:1 cases the treatment must involve extractions in both dental arches (excluding extraction of third molars).

6. CLASS III MALOCCLUSION

A class III malocclusion requiring orthodontic treatment but not requiring orthognatic surgery therapy.

7. A SEVERE SKELETAL DISCREPANCY

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

8. A SIGNIFICANT TRANSVERSE DISCREPANCY

A posterior crossbite that requires full appliance treatment.

9. REPLACEMENT CASE

If a candidate is unable to produce a case for categories 1, 2, 4, 6 or 8 they may substitute with another case from another category but must give an explanation why it has been substituted and may only do this for one case.

ADDITIONAL INFORMATION TO THE LIST OF TYPES OF CASES

In only one case should orthognathic surgery. If a candidate is unable to produce a case for categories 1, 2, 4, 6 or 8 they may substitute with another case from another category but must give an explanation why it has been substituted and may only do this for one case. Categories 3, 5 and 7 are mandatory.

Also note the requirement in case 5 where it is stated that at least either in case 4 or case 5 treatment must involve extractions in both arches (excluding extraction of third molar).

Note the description of case 3. The requirements state that an anterior deep overbite, at least two retroclined incisors and a Class II canine relationship is required, but not a Class II molar relationship! So a suitable case may have either a Class I or a Class II molar relationship. Both are acceptable.

PRESENTATION OF CASES

Each case to be presented shall have the following records in English.

1. (a) A diagnostic description of the malocclusion and the Functional status.
   (b) Treatment plan including the reasons for it.
   (c) A resume of the actual treatment carried out including any difficulties encountered.

2. Dental casts taken **immediately before** the treatment, at the **end of the treatment** and at least **one year after** the end of the treatment.

3. An initial and final lateral skull radiograph with the teeth in habitual occlusion is mandatory **(original film, not printed)**.

4. Such other skull radiographs as may be necessary for subsequent monitoring.

5. Tracings of the lateral skull radiograph(s), initial and final are mandatory. Tracing superimpositions are not mandatory. See tracing requirements.

6. Periapical or panoramic radiographs of adequate diagnostic quality before and at the end of treatment (original film, not printed).

7. Frontal full face (smiling and not smiling), profile full face, and intra-oral color photographs (5 X 8cms) of the occlusion from frontal, right, and left side taken at the beginning, end and at least one year after the treatment. **In addition intraoral color photograph with occlusal view (upper and lower) with lingual appliance are mandatory at the beginning, during and at the end of the treatment. See photograph requirements.**

IDENTIFICATION OF RECORDS

Each item in the case presentation, including each upper and each lower cast, cephalometric film, tracing, radiograph and color photographs, must be clearly marked with the following information:

- Candidate's number.
- Case number or patient's name.
- Date on which the record was made.
- Patient's age to the nearest month, e.g. "1 1-8"
- Stage of treatment:
    - Beginning of the treatment. (Black color label)
    - End of the treatment. (Red colored label)
    - Follow up records at least one year after the treatment. (Green colored label)

Adhesive labels should be used to identify study cast models; adhesive **colored** labels should be used to identify stage of treatment of cast models.

EXAMINATION PROCEDURE

The Candidate would lay out the models a required time before the examination. The Examiners would then examine the cases and the oral examination of the Candidate would take place later.
The Board of Examiners will decide which Candidates have satisfied the Examiners. The Candidates shall be informed by letter of the results of the examination. The names of the successful Candidates would be presented to the Council and then the Business Meeting of the Society.

MEMBERSHIP

Membership of the WBLO shall be granted to the candidates who have demonstrated a theoretical standard which is in accordance with the requirements of the Board, but this would not grant the right of practice in any country.
All WBLO certified members will be listed on WBLO website.

The use of the designation "Member of the World Board of Lingual Orthodontists" (in English or in the national language) on cards, letterheads, directories and announcements can only be used if so permitted by national laws and regulations. In case of ethical misconduct or a Member acting unprofessionally, membership may be revoked by and at the absolute discretion of the Council of the WBLO.

THE CASE PRESENTATION

4.1 GENERAL SET-UP OF CASE PRESENTATIONS

In order to examine a large number of cases fairly and accurately, it is important that case presentations are standardized as this helps the work of the Examination Committee and provides an objective means to compare with the set standards.

In this Chapter detailed instructions and recommendations are given on how to produce the case presentations. The time needed to produce the case presentation binders and the dental casts is estimated at 12-15 hours per case. **The use of computer for Board case presentation is not accepted.**

Paper size is A-4. Each page should be placed in a transparent protective cover and the pages placed in a suitable binder or file. Be sure that material can not fall out of the folder as it may get lost.

Candidates must write all texts in English (pages in the Index of Pages marked by *)

Candidates must limit texts, to the text boxes provided.

The size of the type can be changed, but the spacing should remain constant.

Tracings should be made in the prescribed colors - black, red and green, on transparent material and placed inside the protective covers. White background paper should not be included, as the tracings will be removed for checking and comparison. Each of the cases presented must follow the index of pages. Each page is, unless otherwise stated, mandatory.

It is in the spirit of the WBLO that records are as close to the real anatomy, morphology and pathology as possible. Reasonable digital cropping, resizing or rotation is permissible.

4.2 CASE PRESENTATION INDEX OF PAGES

Index of pages

Number Title of page
WBLO - 01 COVER
WBLO - 02.1* RÉSUMÉ OF CASE 1
WBLO - 02.2* RÉSUMÉ OF CASE 2
WBLO - 02.3* RÉSUMÉ OF CASE 3
WBLO - 02.4* RÉSUMÉ OF CASE 4
WBLO - 02.5* RÉSUMÉ OF CASE 5
WBLO - 02.6* RÉSUMÉ OF CASE 6
WBLO - 02.7* RÉSUMÉ OF CASE 7
WBLO - 02.8* RÉSUMÉ OF CASE 8
WBLO - 02.9* RÉSUMÉ OF CASE 9
WBLO - 03* DIAGNOSTIC DESCRIPTION OF THE MALOCCLUSION
WBLO - 04 FACIAL PHOTOGRAPHS BEFORE TREATMENT
WBLO - 05 INTRA-ORAL COLOUR PHOTOGRAPHS OF THE OCCLUSION INCLUDING INTRA-ORAL OCCLUSAL VIEW BEFORE TREATMENT
WBLO - 06 LATERAL SKULL RADIOGRAPH BEFORE TREATMENT
WBLO - 07 TRACING OF LATERAL SKULL RADIOGRAPH BEFORE TREATMENT
WBLO - 08 CEPHALOMETRIC MORPHOLOGICAL ASSESSMENT I
WBLO - 09 PERIAPICAL OR PANORAMIC RADIOGRAPHS BEFORE TREATMENT
WBLO - 10 ANY OTHER RADIOGRAPHS BEFORE TREATMENT
WBLO - 11* RADIOGRAPHIC ANALYSIS BEFORE TREATMENT
WBLO - 12* TREATMENT PLAN AND THE REASON FOR IT
WBLO - 12(1)* INTRA-ORAL OCCLUSAL COLOUR PHOTOGRAPHS OF THE TREATMENT STEPS (UPPER ARCH)
WBLO - 12(2)* INTRA-ORAL OCCLUSAL COLOUR PHOTOGRAPHS OF THE TREATMENT STEPS (LOWER ARCH)
WBLO - 13* RÉSUMÉ OF THE TREATMENT CARRIED OUT INCLUDING ANY DIFFICULTIES ENCOUNTERED
WBLO - 14 FACIAL PHOTOGRAPHS AT COMPLETION OF TREATMENT
WBLO - 15 INTRA-ORAL COLOUR PHOTOGRAPHS OF THE OCCLUSION INCLUDING INTRA-ORAL OCCLUSAL VIEW BEFORE TREATMENT AT COMPLETION OF TREATMENT
WBLO - 16 LATERAL SKULL RADIOGRAPH AT COMPLETION OF TREATMENT
WBLO - 17 TRACING OF LATERAL SKULL RADIOGRAPH AT COMPLETION OF TREATMENT
WBLO - 18 CEPHALOMETRIC MORPHOLOGICAL ASSESSMENT II
WBLO - 19 PERIAPICAL OR PANORAMIC RADIOGRAPHS AT COMPLETION OF TREATMENT
WBLO - 20* RADIOGRAPHIC ANALYSIS AT COMPLETION OF TREATMENT
WBLO - 21* DESCRIPTION OF THE TREATMENT RESULT
WBLO - 22 FACIAL PHOTOGRAPHS AT RETENTION/ POST-RETENTION
WBLO - 23 INTRA-ORAL COLOUR PHOTOGRAPHS INCLUDING INTRA-ORAL OCCLUSAL VIEW BEFORE TREATMENT AT RETENTION / POST-RETENTION
WBLO - 24 LATERAL SKULL RADIOGRAPH AT RETENTION/ POST-RETENTION
WBLO - 25 TRACING OF LATERAL SKULL RADIOGRAPH AT RETENTION/ POST-RETENTION
WBLO - 26 CEPHALOMETRIC MORPHOLOGICAL ASSESSMENT III
WBLO - 27* DESCRIPTION OF RETENTION/ POST-RETENTION FINDINGS

red: mandatory pages

If available, superimpositions may be placed in the back of the folder.
Any other records in the case presentation may be presented to illustrate the case and these should be included on subsequent pages. Analyses and methods of superposition should be clearly defined in writing in English. Pages marked with an asterisk (*) contain text boxes for text written in English. See also 44 and 45 (paragraphs 4.16, 4.17) for additional information.

4.3 IDENTIFICATION AND LABELLING MARKS

Each item in the case presentation, including each upper and lower cast, cephalometric tracings, radiographs and photographs must be clearly marked with the following information:
Candidate's number
Case number
The date on which the record was made
The patient's age
Stage of treatment
I. Start of treatment (**BLACK**)
II. Completion of treatment (**RED**)
III. Follow up records at least one year after completion of treatment (**GREEN**)
If you present **intermediate records**, such as in the early treatment case or a surgical case the colour code is **BLUE**
All case presentations have to be made fully anonymously, which means that the name and/or address, university or office of the candidate has to be removed or masked from each item and/or page of all case presentation books.
All cases should give clear evidence of the ability of the candidate to:
1. Formulate an exact and complete orthodontic diagnosis and treatment plan, including the reasons for it;
2. Make correct, weighted clinical judgment in difficult orthodontic situations;
3. Handle the biomechanics of complicated orthodontic conditions;
4. Write a fair and correct evaluation of the treatment provided and its prospects.
The candidate will be asked to put out the models and records required before the examination and the records will be examined in order to ascertain that all mandatory records are presented. A photographic record of each of the cases will be taken and preserved by the Board.

4.4 INCOMPLETE RECORDS

If any case presented has inadequate records the candidate will not be accepted for the examination. In such circumstances if the candidate wishes to re-apply to be examined at the next WBLO session he/she will be obliged to pay fees again.

4.5 THE SYNOPSIS

What is the synopsis? What to fill in? What is its purpose?

The synopsis is a form to be filled by the candidate summarizing the essential data of each category of the eight cases. It gives an easy overview for the examiners to check if all necessary cases are present. The synopsis is saved as a record of the examination. Two completed copies of the synopsis need to be present. An example of the synopsis is seen on the next page. Appendix 1 contains synopsis forms

SYNOPSIS OF CASE REPORTS

CANDIDATE NUMBER:

CATEGORY AND NAME	TREATMENT SUMMARY	AGE & DATE A-RECORDS	AGE & DATE B-RECORDS	AGE & DATE C-RECORDS
1.Adult malocclusion Name:				
2.Class 1 malocclusion Name:				
3.Class II Div. 2 malocclusion* Name:				
4.Class II Div. 1 malocclusion** Name:				
5.Class II Div. 1 malocclusion*** Name:				
6.Class III malocclusion Name:				
7.Severe Skeletal Discr. Surgical Name:				
8.Transversal discrepancy Name:				
9. Replacement Case Name:				

*The Class II division 2 case should exhibit an anterior deep bite with at least two retroclined incisors and a Class II canine and molar relationship.

** A malocclusion with a high Frankfort mandibular plane angle, minimum FM angle of 30° and/or S-N to Go-Gn angle of 37°.

*** A malocclusion with a significant mandibular arch length deficiency.

Either in case 2 or 5 the treatment **must** involve extractions in both dental arches.

4.6 THE “CASE RÉSUMÉ” PAGE

The case résumé page is (after the cover-page) page 2 in the case presentation book.
It contains a summary of all pertinent data of the case. This makes it easy for the examiners to check if all requirements regarding timing, extractions etc., are available. It is a quick way to make one familiar with the case, before going into detailed evaluation.
Fill in these forms completely and check carefully if they are compatible with the rest of the information in the case presentation book. Do not leave information incomplete as this leaves questions and is not to your advantage.
The next page shows an example of the résumé page.
Appendix 1 contains one résumé page for each of the 8 types of cases, also for the “replacement case” in case you need to present one.

WHAT SHOULD I FILL IN ON THE CASE RÉSUMÉ PAGE?

Where “DATE” is asked fill in the actual date (dd/mm/yyyy) at which the event occurred.
“AGE” age is filled as number of years and months. Thus: if the patient is 20 years and 5 months: 20.5 years.
“TEETH MISSING BEFORE TREATMENT”: These are teeth not present in the jaws (on intra-oral examination, casts and radiographs) before treatment. For instance: agenesis 35, 45.
Teeth you have extracted in relation to the orthodontic treatment are mentioned under treatment plan.
If retention has not ended, write: continued.
To indicate the type of tooth the FDI Two Digit System is used. For instance: 23 is the upper left canine.

RÉSUMÉ OF CASE N° …

CASE CATEGORY:

……

NAME :

BORN :

SEX :

PRETREATMENT RECORDS : AGE: DATE:

CLASSIFICATION :

TEETH MISSING BEFORE TREATMENT :

TREATMENT PLAN :

APPLIANCE :

TREATMENT STARTED : AGE: DATE:

TREATMENT ENDED : AGE: DATE:

ACTIVE TREATMENT TIME :

POSTTREATMENT RECORDS : AGE: DATE:

RETAINERS : a) upper:

b) lower:

RETENTION ENDED : a) upper: DATE:

b) lower: DATE:

RETENTION TIME :

(POST-)RETENTION RECORDS : AGE: DATE:

TIME OUT OF RETENTION :

CANDIDATE NUMBER:

4.7 ABOUT THE TEXT BOXES

The text must be in English in the text boxes.
{See pages marked with asterisk (*) in the Case Presentation Index of Pages; pages 26/27].
The text boxes provide limited space for you to fill in with text. The purpose of using text boxes is to encourage the candidate to be short, clear and precise in their statements. It is recommended to carefully check the texts and have them read and edited by someone who is familiar with producing condensed texts in English, as in abstracts or summaries.
Base your description of the malocclusion as much as possible on findings from the records and the examination of the patient. Your treatment plan should be logically based upon these findings.
When describing treatment plans make a distinction between “strategic” and “tactical“ aspects. Strategic aspects are, for instance, if you extract permanent teeth and why. Tactical aspects are planning the types of mechanics. There is an advantage in describing evidence based clinical decisions. Be critical and avoid illogical reasoning such as: “four premolars were extracted, because this is an extraction case”, “clinical judgment of the existing crowding led to the decision to treat non-extraction”, or questionable statements such as ”the patient was given 3 treatment options… to choose from”; the patient selected option…”
Be realistic about the description of the treatment result. If there are details where one could have improved if circumstances where better or where there is need for future surveillance for other reasons, be open. Do not let the examiners guess if you have noticed such details or not.
On page WBLO-13 (A Résumé of the actual treatment carried out, including any difficulties encountered) list the treatment sessions with the actual dates and brief indication what was undertaken, the progress, etc. Describe specific events and findings, etc.

NOMENCLATURE: It is to your advantage use correct nomenclature in the descriptions. The use of an orthodontic dictionary is recommended. To name teeth use the FDI Two Digit System.

Reference: Daskalogiannakis J. Glossary of Orthodontic Terms
Quintessence Publishing Co Ltd, New Malden Surrey
UK Price £65; ISBN: 3-87652-760-0

4.8 DENTAL TOMOGRAM/PANORAMIC RADIOGRAPH

The panoramic radiograph (dental tomogram) is the universally used radiograph for orthodontic patients. However, in many patients with complex dental developmental disturbances and those with skeletal or functional abnormalities, additional radiographs may be necessary, apart from the initial cephalograms. Such radiographs might be essential for a complete understanding the clinical problem at hand and thus need to be included.

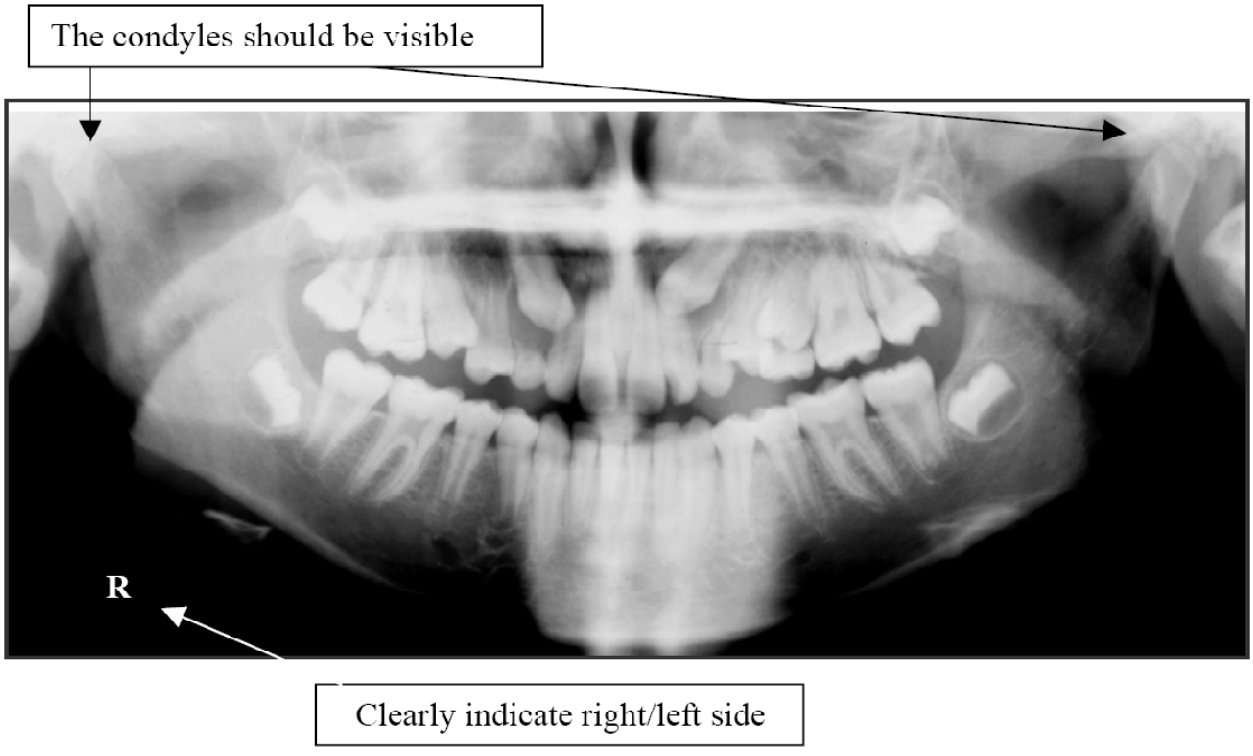
Panoramic radiographs should be of sufficient quality to permit interpretation for diagnosis; **original film radiographs are preferable but printed radiographs are acceptable on condition that high quality paper for photo printing is used.**

The literature is replete with articles emphasizing the advantages and disadvantages of panoramic radiographs. In addition to this, different types of machines produce different images each with specific characteristics.

Panoramic radiographs are also used for evaluation of possible root position and mesiodistal tooth angulations, third molar position and other conditions towards the end or after treatment. Recent studies indicate that interpretations of mesiodistal root angulations should be performed very carefully and cautiously (Mckee *et al.*, 2001).

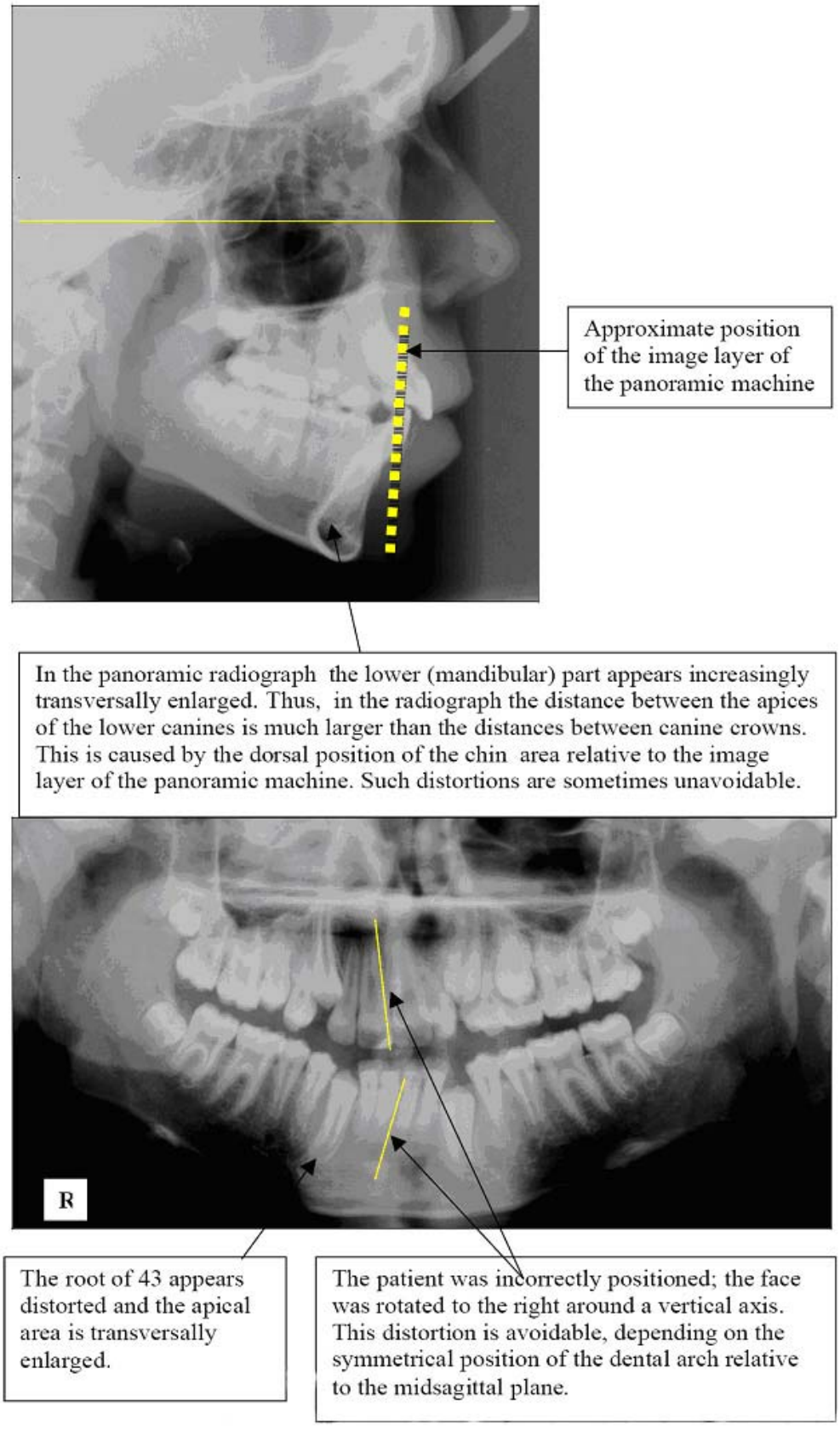
4.8.1 GENERAL RECOMMENDATIONS FOR PANORAMIC RADIOGRAPHS

Patient position is extremely important to obtain a useful panoramic radiograph. When the occlusal plane is approximately 7 degrees anterior downwards to the horizontal a slightly curved image results. In this way the double images of the palatal vault and the nasal floor are usually above the apices of maxillary teeth.



Thus in extreme cases, where the occlusal plane makes a larger than normal angle to the nasal floor, the head of the patient is positioned upward so that the angle of the occlusal plane approaches 7 degrees. However, in subjects with a severe mandibular backward position, even when the patient is asked to move the mandible forward it may not be possible to obtain an image of the lower jaw and teeth without considerable distortion. This is due to the position of the image layer of the machine and the oblique position of the (lower) anterior teeth.

The teeth appear twisted with blunted apices. The coronal part is within the range of the image layer with relatively little enlargement. The apical parts of the roots, however, are positioned backward and more or less outside the range of the image layer so that this part of the image is transversally enlarged. Similarly, the coronal part of a palatally impacted maxillary canine is imaged larger, because of its backward position relative to the image layer. In deep bite cases, have the patient bite either on a bitefork provided with the machine or a cotton role, so that the anterior teeth are not imaged in overlap.
The patient's head should also be placed as precisely as possible with the midsagittal plane in the same position as the midline of the machine. Some machines have light indicators to find the correct position. Incorrect placement may lead to unacceptable distortions and blurring. The asymmetrical patient obviously creates a problem; the position of the eyes and/or the bipupillar line might be of help, but distortion and blurring might be unavoidable. Measurements on panoramic radiographs are not so reliable to detect small asymmetries (Türp *et al* , 1995). However, when a group of morphological indications of (mandibular) asymmetry can be observed it is possible to make correct diagnostic conclusions.



Under the conditions mentioned above it might not always be necessary to take additional radiographs. It is recommended that the panoramic and cephalogram are first analysed together and then decide if additional radiographs are essential. Usually, conditions in the upper anterior region are reasons for extra radiographs.

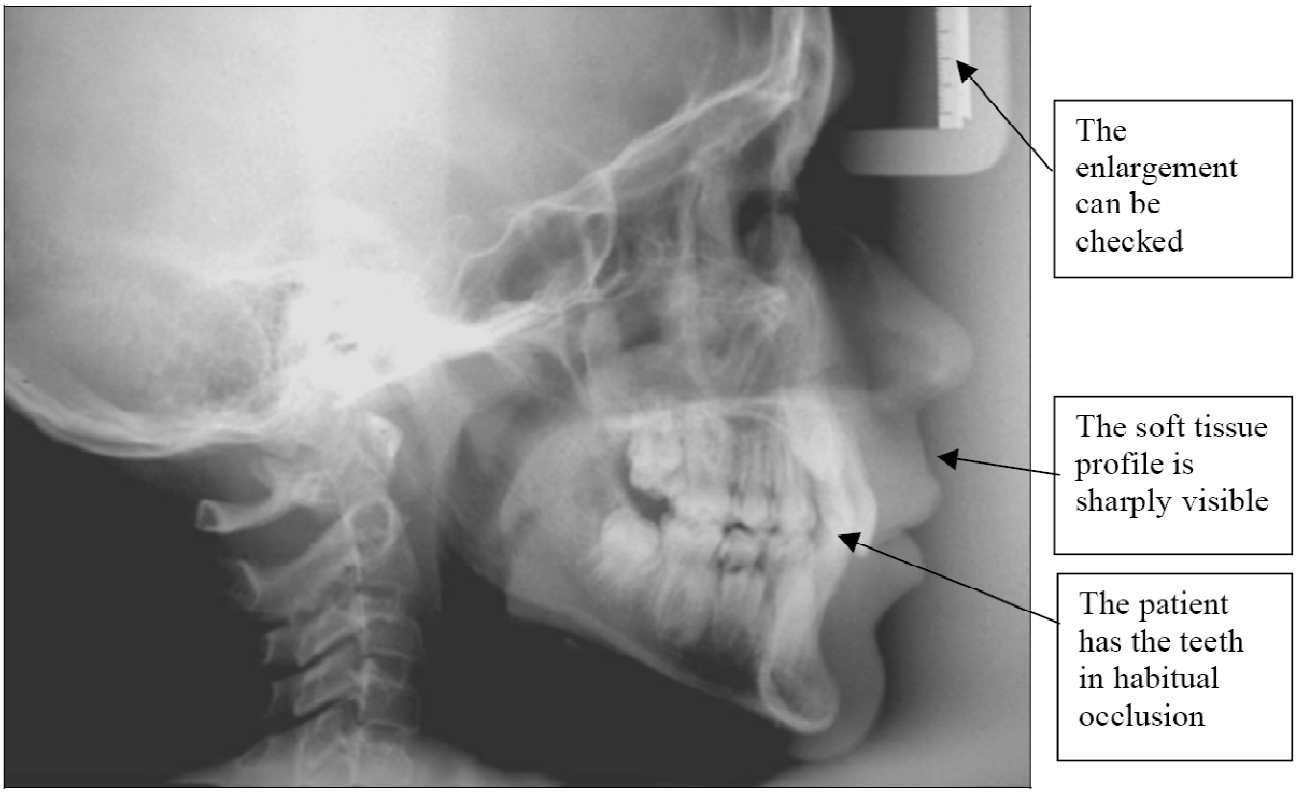
Do not crop the radiograph to just the teeth; important or additional information might be lost. For instance: images of the mandibular condyles might indicate a need for additional records. Panoramic radiographs from the same patient (e.g. before and after treatment) produced with different machines can only be compared with extreme caution. The reason is that the shape of the image layer is usually different in various types of machines. Measurements are very unreliable in such situations.

References:

Türp J C, W Vach, JR Strub, K Harbich, KW Alt 1995 Erkennung von mandibulären asymmetrien auf der Panoramaschichtaufnahme Schweiz MZ 105:755-759

McKee I W, Glover K E, Williamson P C, Lam E W, Heo G, Major P W 2001 The effect of vertical and horizontal positioning in panoramic radiography on mesiodistal tooth angulations. The Angle Orthodontist 71: 442-451.

4.9 CEPHALOMETRIC RADIOGRAPH



Quality cephalograms are usually produced if one follows the prescriptions provided by the manufacturer of the cephalometer and when the film is developed in a well-maintained development machine or digitally processed. Regularly check the earplugs of the machine to ensure that the patient is correctly positioned. Identical conditions for each cephalogram are a fundamental requirement for diagnosis and evaluation of growth/treatment changes.

Special software programs may include advanced image enhancement tools
that can significantly improve the clarity of the radiograph.
Original film radiographs are preferable but printed radiographs are acceptable on condition that reproduction ratio 1:1 is respected and high quality paper for photo printing is used.

4.10 WHAT SHOULD I EXPLAIN ABOUT RADIOGRAPHS?

Radiographs, such as panoramic or dental tomograms, periapicals and cephalograms, are not self-explanatory. This means that relevant findings from these radiographs must be mentioned in the texts on the pages in the case presentation book provided for that purpose (pages 11 and 20). The reason for this is that examiners should have no doubts that you have observed the relevant findings and from where you obtained the items mentioned in the text of your diagnosis, treatment plan or in the description of the treatment result. This makes the evaluation of the cases clear and logical to the examiners and is thus to your advantage. For example, when you mention items seen on the panoramic radiograph do not limit yourself to only the teeth and their immediate structures. There are may be other items visible that are of clinical significance: e.g. is there a difference in the images of the condyles or in the mandibular contours? In the end-of-treatment panoramic radiograph: what about position,

developmental stage and prospects of third molars? What was your advice to the patient on the basis of that radiograph?

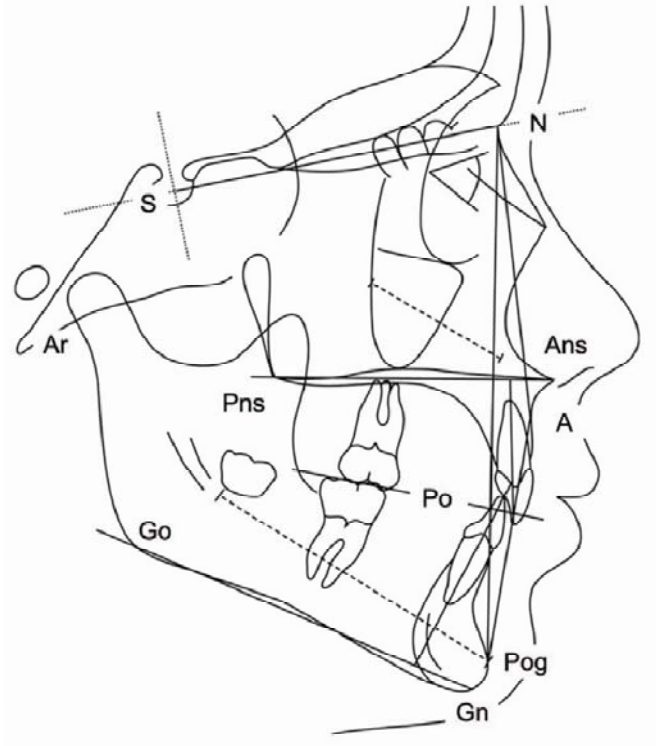
4.11 CAN I USE MY OWN CEPHALOMETRIC ANALYSIS?

Yes you can! However measurement of cephalograms according to the WBLO Morphological Assessment Form is mandatory. Other cephalometric procedures are acceptable, if they are clearly explained. Be aware that examiners might be unfamiliar with the analysis you use. Place that information in the back of the folder in the section “Additional records”.
If you want to use your own cephalometric analysis, indicate the additional landmarks as well on the tracing, or include an extra copy of the tracing with the data of your analysis.

4.12 WHAT DO I HAVE TO DO WITH MY MEASUREMENTS?

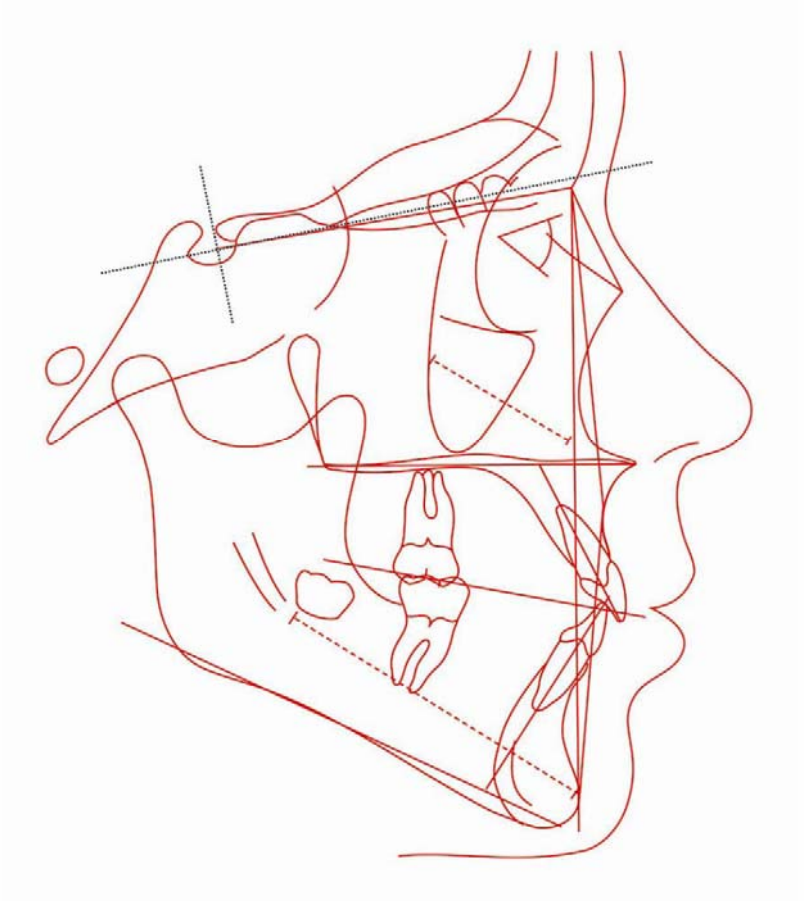
As is the case with radiographs, the measurements of a cephalometric assessment or analysis are not self-explanatory. It is insufficient to only present the numbers and leave the interpretation to the examiners. The conclusion of your observations and measurements are described in words on the pages provided for that purpose (pages 11 and 20). For example: “on the basis of the cephalometrics it is concluded that the face is retrognathic, but the sagittal jaw relationship is normal”. Or: “the cephalometric data reveal that growth and treatment changes have normalised the sagittal jaw relationship”.
All the above advice is aimed at making the presentation of your diagnosis and treatment plan as clear and logical as possible, based on the described observations and analysis.

4.13 CEPHALOMETRICS: TRACINGS, LANDMARKS, LINES



Example tracing of the before treatment cephalogram (colour: black)

Hand tracings are mandatory and must be produced using a 0.5 mm lead pencil **on thin transparent acetate** tracing paper so that the accuracy of the tracing can be checked. Do not use a felt pen: it is usually much too thick. The landmarks used for the WBLO Morphological Assessment should be indicated on the tracing. If you also want to use your own cephalometric analysis then indicate the necessary landmarks as well on the tracing. Computerized production of tracings is not acceptable, however computerized preparation and printing of tracings (and superimpositions) is acceptable to enhance presentation. The original must be available for checking the accuracy of the tracing. Place them with the additional material in the back of the folder. **Pre-treatment tracing in black (mandatory), post-treatment tracing in red (mandatory)**, follow-up record tracings in green are not mandatory, but desirable, if available.



Example of the end of active treatment tracing in red

Place the tracings in the cover sheets and remove the indicated part of the page, so that it is easy for the examiners to check the tracing and compare with the cephalogram.
When interpreting and describing changes in the measurements you observe be aware of the *error of the method*, before you make definite statements about changes due to growth/treatment when evaluating your case.

Reference:
Kamoen A, Dermaut L, Verbeeck R 2001 The clinical significance of measurement error in the interpretation of treatment results. European Journal of Orthodontics 23: 569-578

4.14 CEPHALOMETRIC MORPHOLOGICAL

ASSESSMENT I

	Pre-treatment			Mean SD
Sagittal Skeletal Relations				
Maxillary Position S-N-A				82º ± 3.5º
Mandibular Position S-N-Pg				80º ± 3.5º
Sagittal Jaw Relation A-N-Pg				2º ± 2.5º
Vertical Skeletal Relations				
Maxillary Inclination S-N/ANS-PNS				8º ± 3.0º
Mandibular Inclination S-N/Go-Gn				33º ± 2.5º
Vertical Jaw Relation ANS-PNS/Go-Gn				25º ± 6.0º
Dento-Basal Relations				
Maxillary Incisor Inclination 1-ANS-PNS				110º ± 6.0º
Mandibular Incisor Inclination 1 -Go-Gn				94º ± 7.0º
Mandibular Incisor Compensation 1 -A-Pg (mm)				2 ± 2.0
Dental Relations				
Overjet (mm)				3.5 ± 2.5
Overbite (mm)				2 ± 2.5
Interincisal Angle 1/1				132º ± 6.0º

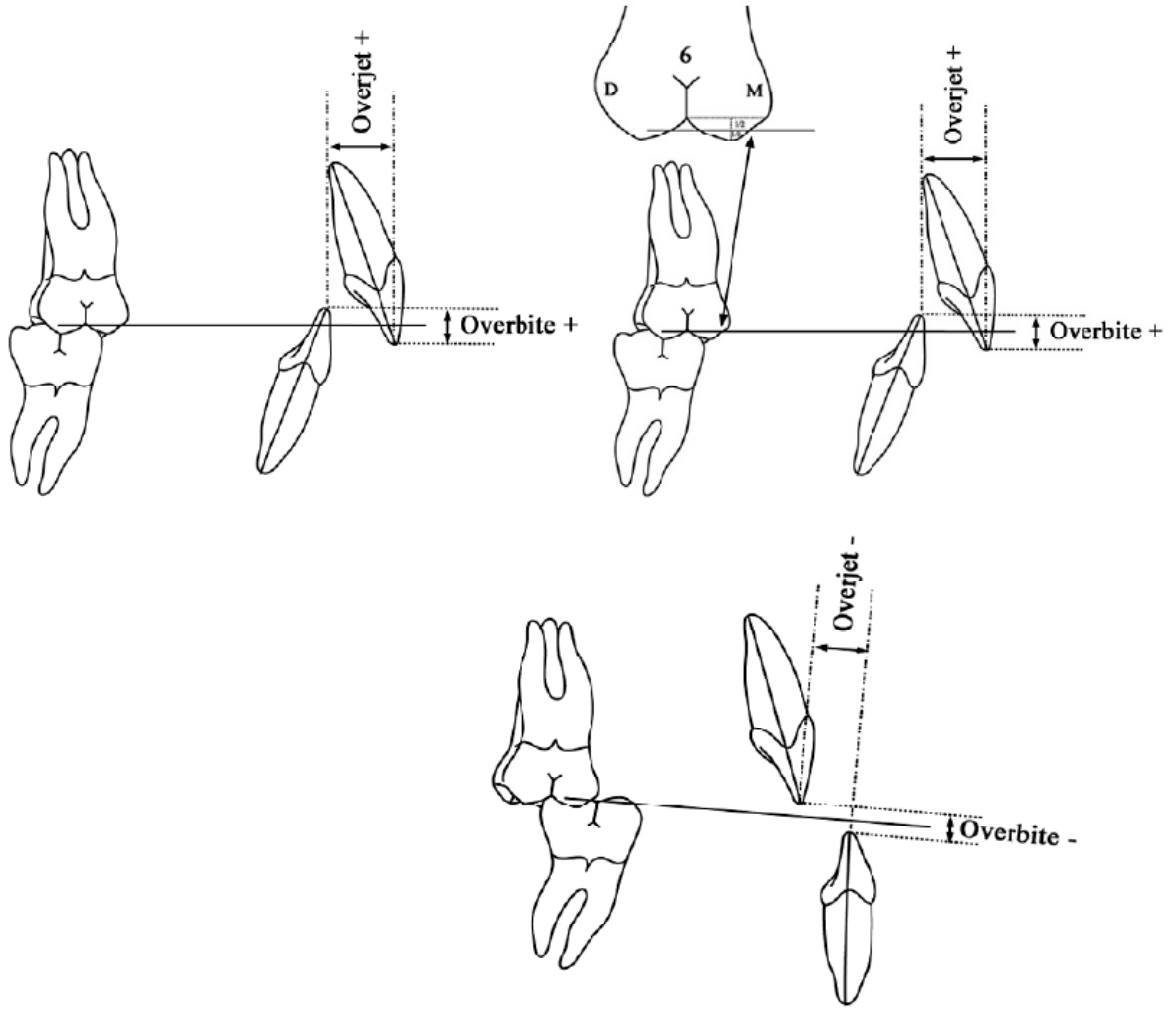
CANDIDATE NUMBER:

CASE NUMBER: DATE: AGE

4.15 WBLO CEPHALOMETRIC MORPHOLOGICAL ASSESSMENT

It is mandatory to fill in the forms for the WBLO Cephalometric Morphological Assessment (example on page 42). The morphological assessment is not a cephalometric analysis. The reason for including this mandatory form is to make it possible for the examiners to familiarize themselves more easily with the main characteristics of the case and to compare with other cases.

It is perfectly alright if you use your (own) usual cephalometric analysis and you may include that in the additional records, provided that you explain it properly so that it is understandable for anyone who is not familiar with that analysis. Do not forget to indicate landmarks on your tracing.



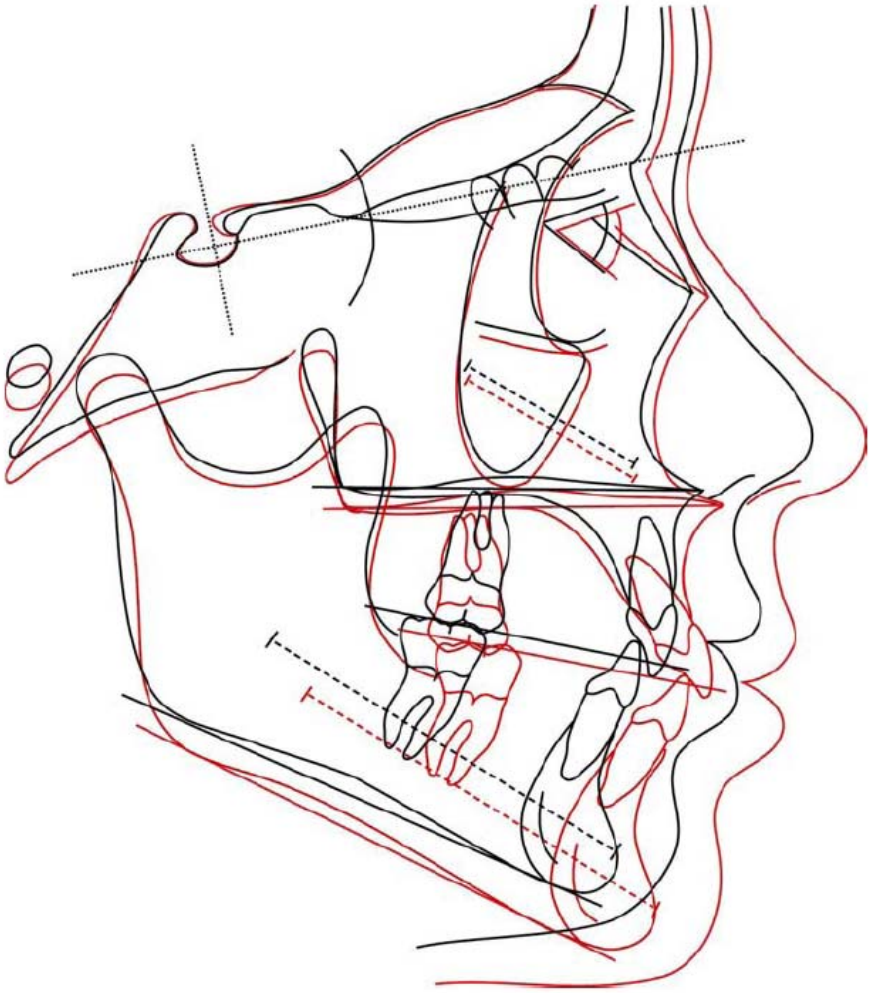
For the WBLO Cephalometric Morphological Assessment, overbite and overjet are measured as indicated.

4.15 CEPHALOMETRIC SUPERIMPOSITION

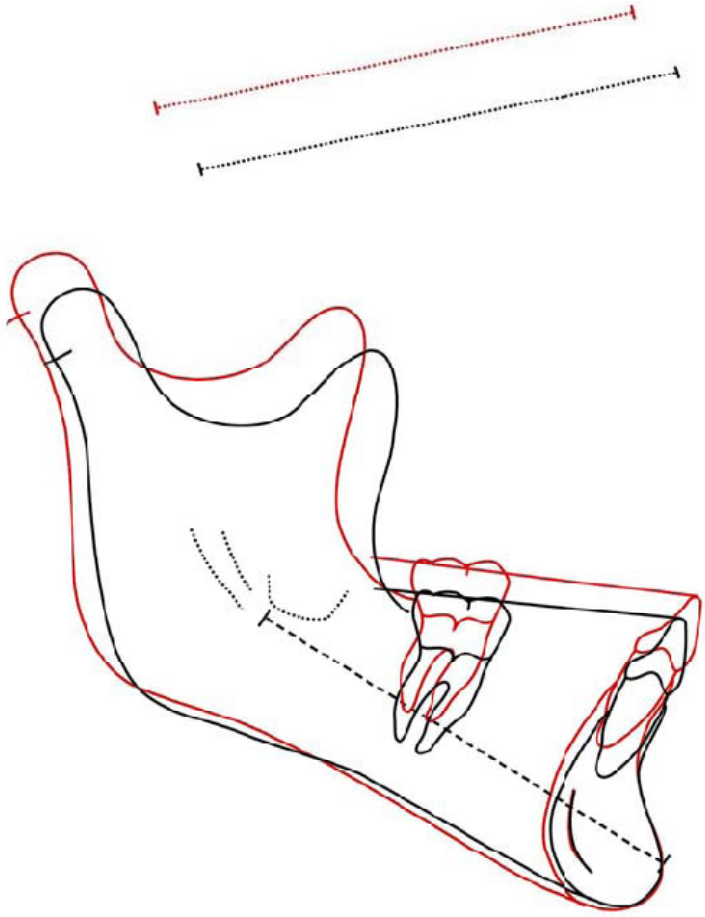
Superimposition of tracings is not mandatory. However if post-treatment radiographs are authorized in your country superimposition may greatly enhance the evaluation of the case. Björk's method (Björk and Skieller, 1983) of superimposition on natural reference structures in the cranial base, the mandible and maxilla is recommended. The illustrations in 4.15.1, 4.15.2 and 4.15.3 are printed here as examples to demonstrate how these superimpositions look.
If you use superimpositions describe also your interpretations and findings.

4.15.1 GENERAL SUPERIMPOSITION

Superimposition on stable structures in the anterior cranial base

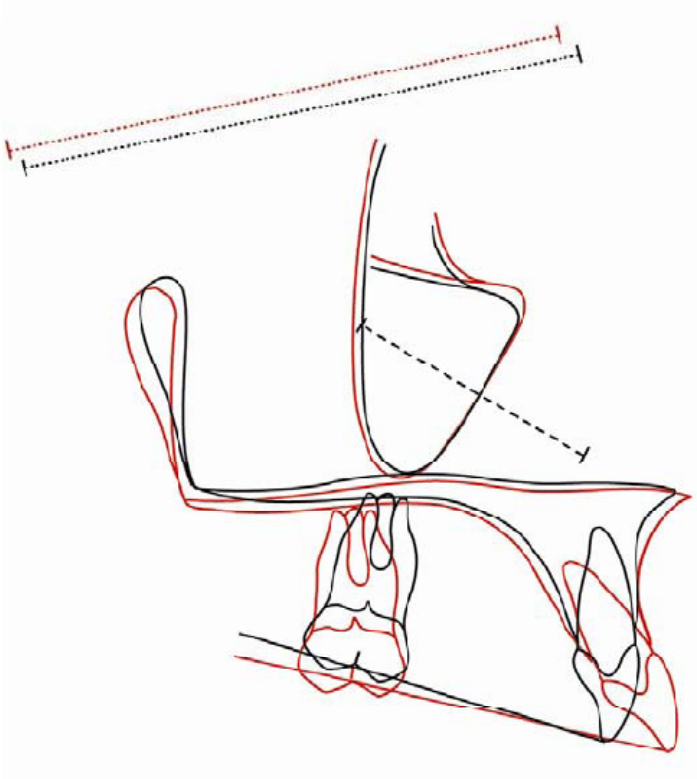


4.15.2 SUPERIMPOSITION OF THE MANDIBLE



Local superimposition on natural reference structures in the mandible

4.15.3 SUPERIMPOSITION OF THE MAXILLA



Local superimposition on natural reference structures in the maxilla

References

Björk A, V Skieller 1972 Facial development and tooth eruption. An implant study at the age of puberty. American Journal of Orthodontics 62: 339-383

Björk A, V Skieller 1976 Postnatal growth and development of the maxillary complex. In: McNamara Jr. J A (ed.) Factors affecting the growth of the midface. Monograph No. 6, Craniofacial Growth Series, Center for Human Growth and Development, University of Michigan, Ann Arbor, pp 61-69

Björk A, V Skieller 1983 Normal and abnormal growth of the mandible. A synthesis of longitudinal cephalometric implant studies over a period of 25 years. European Journal of Orthodontics 5: 1-46

4.16 OTHER ADDITIONAL RADIOGRAPHS

In more complicated cases additional radiographs might be necessary for complete diagnosis and treatment planning. Such radiographs should be placed with (A) The records before treatment on page WBLO-10 of the Case Presentation Book of that case. Explain on page WBLO-11, the need for these records and your interpretation and conclusions.

The routine standard use of posteroanterior or anteroposterior cephalograms and/or hand/wrist radiographs is not recommended. In cases of dental trauma or impacted unerupted teeth peri-apicals and/or other radiographs may be necessary for correct diagnosis and to demonstrate the appropriateness of your treatment decisions. In cases of severe developmental craniofacial deformities other three-dimensional imaging techniques may be needed.

Failure to include such records may impair judgment for the examiners.

4.17 LIMITATIONS IN PATIENT RECORDS

The Board promotes and recommends strict radiation dosage control.

In some countries limitations exist in taking radiographs.

They create no particular problem with regard to the requirements for the WBLO case presentations. Regarding post-treatment records, the guidelines of the BSO* are used as an example. These create no problem provided that proper evaluation of the treatment that was proposed is possible. The treatment of complicated and difficult cases often needs records during, towards the end, or even after orthodontics. They are needed to evaluate the treatment effects or as a starting point for other treatments such as prosthetics and/or periodontics or surgery.

*** Reference**

Isaacson K G, Thom A R (2nd edition 2001) Orthodontic radiographs: guidelines. British Orthodontic Society ISBN 1 899297 05

The WBLO distinguishes between mandatory records and additional other records.

The WBLO has therefore in the form “instructions to candidates” the following statements:

B records (Completion of Treatment),

Page WBLO-16: “lateral skull radiograph at the completion of treatment is not mandatory but useful if

available”

It is obvious in such condition that WBLO-17 (tracing in red) and WBLO-18 (Cephalometric Morphological Assessment II) are not mandatory, but useful if available.

Page WBLO-19 (Peri-apical or panoramic radiograph at completion of treatment) and page WBLO-20

(Radiographic analysis at completion of treatment) are mandatory.

C records: similar rules.

In addition to the above, examiners always take a close look at “additional records” for better evaluation of the case. For instance, a careful cephalometric evaluation of the growth/treatment effects with additional cephalograms, tracings and superimpositions may greatly enhance the

evaluation. The examiners also look to the justification for records, in particular radiographs; for instance the demonstration of a large number of TMJ radiographs when from the described diagnostics nothing indicated that there was a problem to be diagnosed in that way. This, of course, may obviously negatively influence the marks. Though only 10% of the marks are given for record quality, excellent records can considerably improve proper judgment. In short: the candidate has quite some freedom in what to present, but there is a minimum of mandatory records and of course the presentation of the case must be such that it can be properly evaluated. Additional records may be useful for the evaluation of the case. For instance the use of intra-oral photographs taken during treatment to explain and/or demonstrate specific treatment mechanics.

4.18 THE DENTAL CASTS

Three sets of dental casts are mandatory. Only dental casts images are not acceptable.

They should show correct anatomical detail of all the teeth and the surrounding tissues.

They should be made of white orthodontic plaster, soaped and lightly polished.

The dimensions of the base of the casts are shown in the figures.

Wax or silicone bites may be useful for protection.

The occlusion will be judged by placing the upper and lower cast together with the backside of the base on the table.

The use of articulators and mounted models is acceptable.

All dental casts (upper and lower) should be identified as shown in the figures.

Identification:

A circular identification mark (for instance a coloured sticker) is placed on the front of the lower cast and on the left side of both casts.

This colour of the mark is different at the three stages of the presentation:

At the before treatment records: **black**

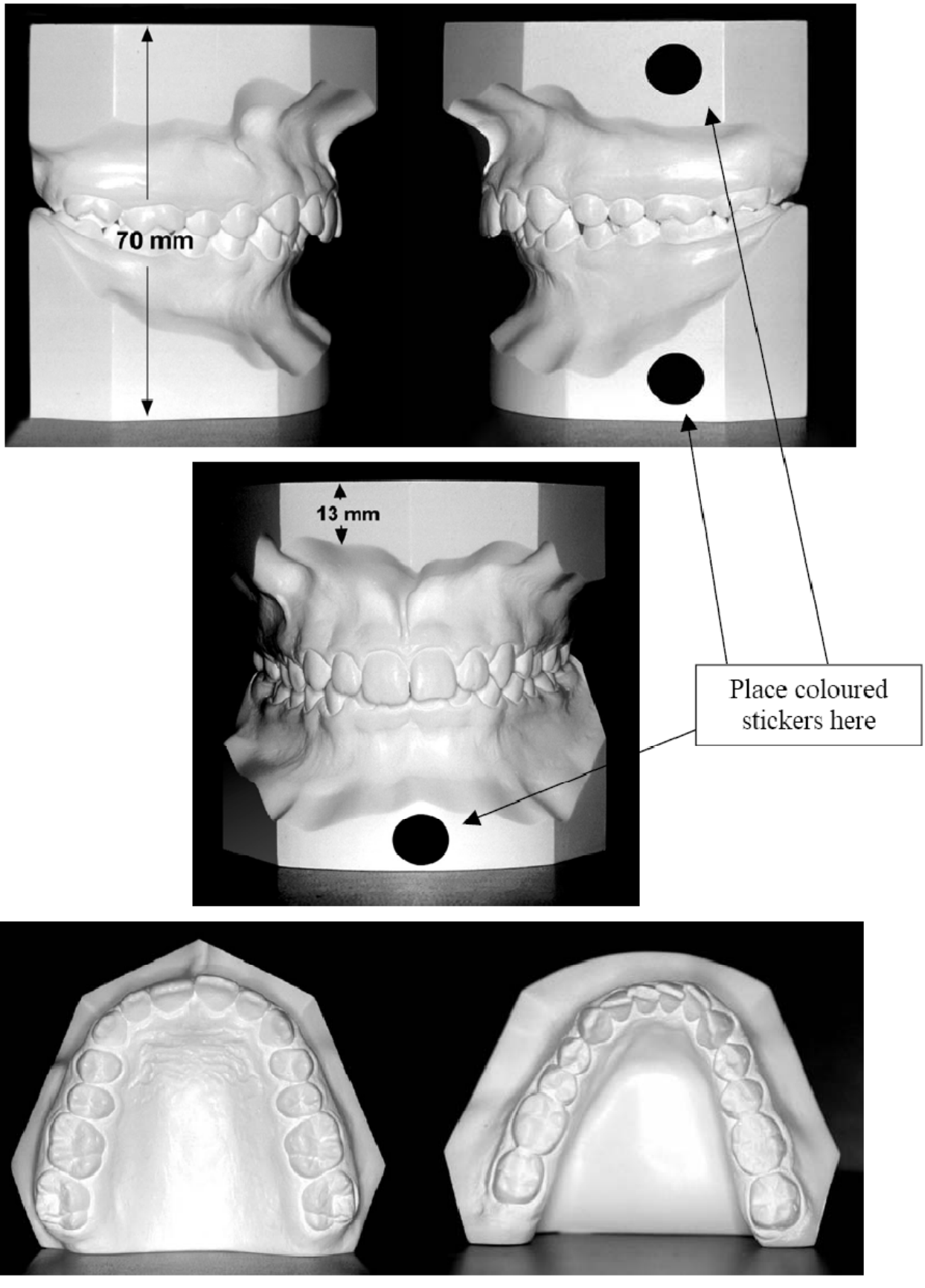
At the completion of treatment records: **red**

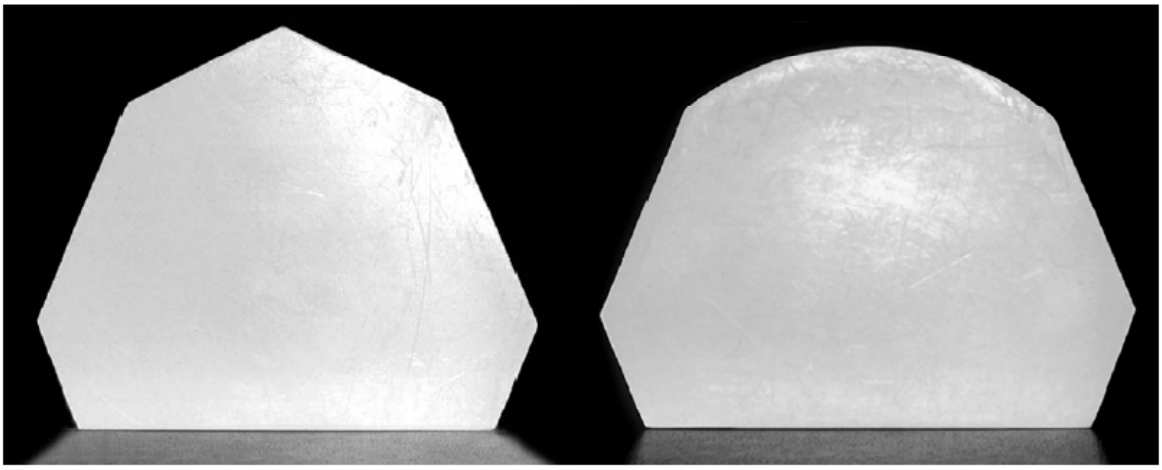
At the (post) retention records: **green**

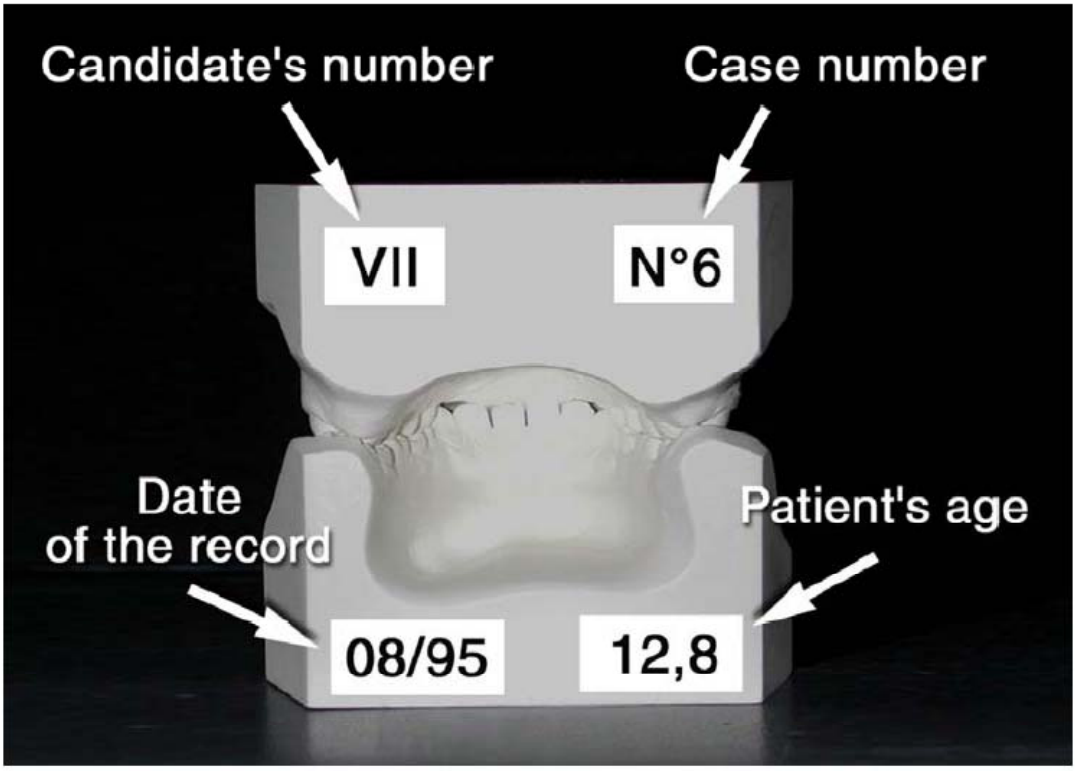
The casts are further identified by placing a label on the back of the upper and lower casts with:

1. The candidate's number on the left side of the upper cast
2. The case number on the right side of the upper cast
3. The date the impression was made on the left side of the lower
4. The patient's age on the right side of the lower.

REMEMBER THAT ALL THE REQUIREMENTS FOR THE CASE PRESENTATIONS ARE MADE TO FACILITATE THE EVALUATION BY THE EXAMINERS WITHIN A LIMITED TIME FRAMEWORK AND TO AVOID OMISSIONS, MISTAKES OR CONFUSION. FOLLOWING THE REQUIREMENTS EXACTLY IS TO YOUR ADVANTAGE.


70 mm
13 mm
Place coloured stickers here





4.19 THE EVALUATION OF OCCLUSION ON DENTAL CASTS

With the immediate after treatment (red) cast the candidate has the opportunity to demonstrate how well he/she is able to handle the biomechanics of the orthodontic appliance used and how the occlusion changed.

The “at least” one year after treatment cast (green) shows the final occlusion as it has settled. This is the cast to evaluate finishing details and minor changes that occurred during settling and- possibly - further growth. It may also provide estimation on the prospects of stability.

Studies on adult dental occlusion have a long history dating back to the beginning of the last century when Angle (1899) for the first time presented a systematic description, and, in more recent years, the evaluation by Andrews (1972).

His concept of “six keys to normal occlusion” have been widely used as a standard and led to the development of pre-adjusted multi-bracketed appliances.

Longitudinal studies of development of the occlusion in orthodontically untreated individuals show that changes occur also after the permanent teeth have emerged and come into occlusion. This has been found not only in adolescents but also in adults (Moyers *et al.*, 1976; Schols and van der Linden, 1988; Duterloo, 1991). These changes include reduction in arch length and increase in crowding, particularly in the anterior areas. In addition, long-term studies of occlusal changes after orthodontic treatment (Riedel, 1977) show similar tendencies. Minor, individually patterned, changes in occlusion are common. Particularly, changes in the lower anterior area are notorious, but other treatment effects such as changes in the curve of Spee appear more stable (De Praeter *et al*., 2002). Continued facial growth after the active treatment period is seen as the major cause for the described changes. This makes “green records” of particular interest. Longitudinal, long-term studies show that the stability of a treatment result has no direct relationship to the excellence of the treatment performed and is in fact unpredictable. After treatment changes have lead to the universal application of semi–permanent fixed retention and other devices and procedures to reduce the tendencies of undesirable occlusal changes (Zachrisson, 1997).

Occlusion on dental casts (“red” and/or “green”) can be evaluated and appreciated in several different ways. It should be remembered that ideal “textbook” occlusion is not always a viable treatment objective in complex and difficult cases. Extreme variations in morphology of the jaw bases, crowns and/or the roots of the teeth may lead to occlusal variations that are acceptable. On the other hand changing tooth morphology is a common orthodontic procedure to improve functional occlusal fit and stability.

The Board promotes, as a general rule, that the final occlusion should be as precise as is appropriate for the case in question. However, undue lengthening of treatment and/or extended procedures to reach for an “ideal” may not be in the interest of the patient. Convincing scientific evidence is lacking that in all cases an “ideal” occlusion is essential for total treatment effectiveness. Balanced weighting of all clinical aspects of treatment characterises the mature and excellent clinician. In WBLO case presentations this can be demonstrated in the descriptive texts reporting the actual treatment procedures, progress and result as well as in the dental casts and the photographs.

The literature offers a number of methods to assess “quality” of after-treatment-occlusion as a measure for quality of treatment. The Peer Assessment Rating (PAR) Index was developed in 1987 by examining over 200 dental casts (Richmond *et al*., 1992, 1994). This index has recently been used to develop a treatment outcome standard for fixed appliance treatment in the UK (McMullan *et al*., 2003). According to the ABO, the PAR index “has good reliability and validity, however this measuring system is not precise enough to discriminate between the minor inadequacies of tooth position that are found in ABO case reports” (Casko *et al*., 1998). The ABO developed an “objective grading system” after field-testing on 832 casts and panoramic radiographs. Most common inadequacies in the occlusion are an overjet of mandibular/maxillary second molars and overjet in the incisor areas; inadequate root angulation was seen most in lateral maxillary incisors, canines, second premolars and mandibular first premolars. The Board introduced the ABO

measuring gauge and developed a grading system to obtain a numerical standard (Casko *et al*., 1998). With the ABO system seven different criteria are used on dental casts: alignment, marginal ridges, buccolingual inclination, occlusal relationship, occlusal contacts, overjet and root angulations. Root angulation is evaluated on panoramic radiographs.
To help candidates evaluate their after treatment casts, the “six keys to normal occlusion” (Andrews, 1972) are presented below.

4.20 IMPLEMENTING THE SIX KEYS

Candidates are encouraged to implement Andrew's "six keys to normal occlusion" when they select and evaluate their cases for presentation.

Key I pertains to the occlusion and the interarch relationships of the teeth...

This key consists of seven parts:

1. The mesiobuccal cusp of the permanent maxillary first molar occludes in the groove between the mesial and middle buccal cusps of the permanent mandibular first molar, as explained by Angle.

2. The distal marginal ridge of the maxillary first molar occludes with the mesial marginal ridge of the mandibular second molar

3. The mesiolingual cusp of the maxillary first molar occludes in the central fossa of the mandibular first molar

4. The buccal cusps of the maxillary premolars have a cusp-embrasure relationship with the mandibular premolars

5. The lingual cusps of the maxillary premolars have a cusp-fossa relationship with the mandibular premolars

6. The maxillary canine has a cusp-embrasure relationship with the mandibular canine and first premolar. The tip of its cusp is slightly mesial to the embrasure

7. The maxillary incisors overlap the mandibular incisors, and the midlines of the arches match.

The cusp-groove and the marginal-ridge conditions of the molars, the cusp-embrasure relationship of the premolars and canines, and incisor overjet can be observed directly from the buccal perspective.

The assessment of the lingual-cusp occlusion of the molars and premolars is possible when these teeth are viewed from their mesiobuccal aspect, as explained below.

Interarch relationship of the posterior teeth of two dentitions can be the same, but the interfacing of the occlusal surfaces of the two dentitions may differ because of differing crown inclinations. Judging crown inclination (and therefore occlusal interfacing) is ineffective from the buccal perspective.

It can be compared to attempting to learn whether the flanges of a hinge are together or apart by looking only at its joint.

Correct occlusal interfacing depends on correct interarch relationship, angulation, and crown inclination. Interarch relationship and angulation are best judged from the buccal perspective; crown inclination for posterior teeth is best judged from the dentition's mesiobuccal perspective. Judging posterior occlusion first from the buccal (for angulation and interarch relationship) then from the mesiobuccal aspect (for inclination) provides a perspective that can be systematically described and quantified.

Such information, along with other occlusal guidelines, provides a set of standards against which occlusal deviations can be identified.

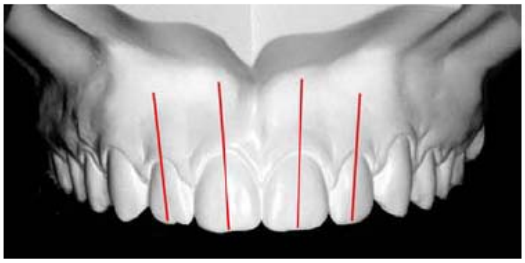
Key II: Crown Angulation

Essentially all crowns have a positive angulation.

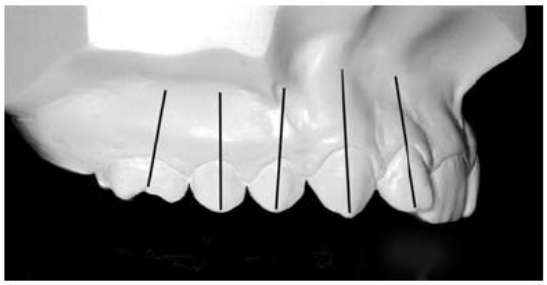
All crowns of each tooth type are similar in the amount of angulation.

Maxillary second molars are positive in angulation only if they have completed their eruption. Third molars are not present often enough to be evaluated.

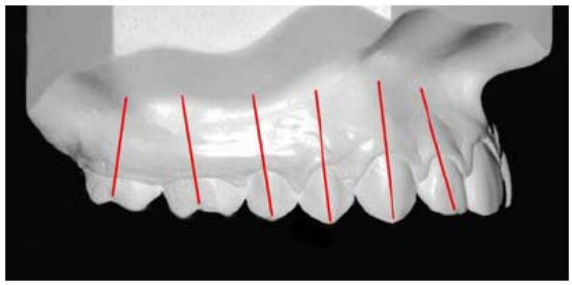
Before treatment



After treatment

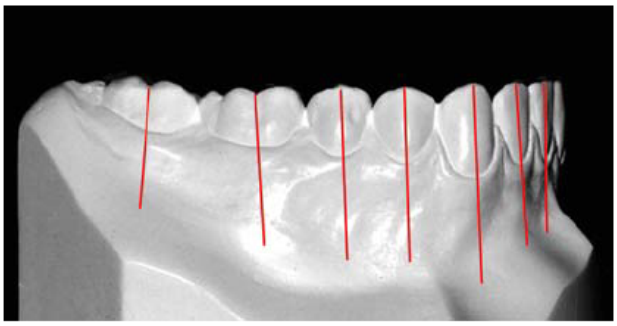


Before treatment



After treatment

Before treatment



After treatment

Key III: Crown Inclination

As they do in angulation, consistent patterns also prevail in crown inclination, with the following characteristics for individual teeth.

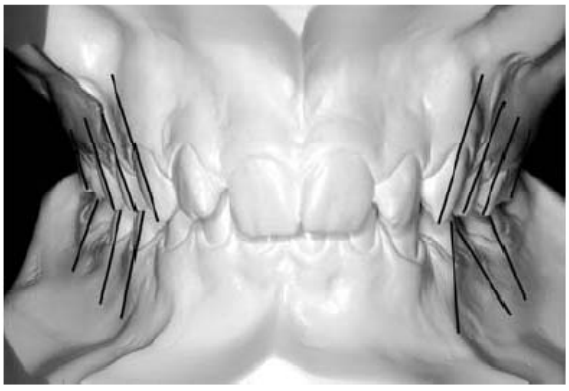
1. Most maxillary incisors have a positive inclination; mandibular incisors have a slightly negative inclination. The crowns of the maxillary incisors are more positively inclined, relative to a line 90° to the occlusal plane. The mandibular incisors are negatively inclined to the same line.

2. The inclinations of the maxillary incisor crowns are generally positive, the centrals more positive than the laterals.

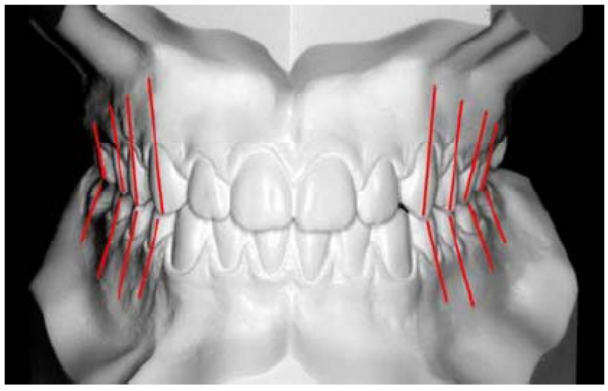
3. The inclinations of canines and premolars are negative and quite similar.

The inclinations of the maxillary first and second molars are also similar and negative, but slightly more negative than those of the canines and premolars. The molars are more negative because they are measured from the groove instead of from the prominent facial ridge, from which the canines and premolars are measured.

4. The inclinations of the mandibular crowns are progressively more negative from the incisors to the second molars.



Before treatment

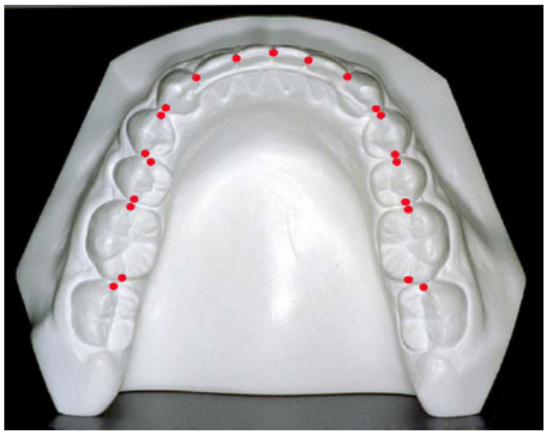


After treatment

Key IV: Rotations

The fourth key to optimal occlusion is absence of tooth rotations


A well aligned upper arch

An apparently well aligned lower arch
but a careful examination shows some small rotations

Key V: Tight Contacts

Contact points should abut unless a discrepancy exists in mesiodistal crown diameter.

Key VI: Curve of Spee

The depth of the curve of Spee ranges from a flat plane to a slightly concave surface.


Before treatment

After treatment

References

Andrews L F 1972 The six keys to normal occlusion. American Journal of Orthodontics 62: 296-309

Angle E H 1899 Classification of malocclusion. Dental Cosmos 41: 248-264, 350-357

Casko J S *et al*. 1998 Objective grading system for dental casts and panoramic radiographs. American Board of Orthodontics. American Journal of Orthodontics and Dentofacial Orthopedics 114: 589-599

De Praeter J, Dermaut L, Martens G, Kuijpers-Jagtman A M 2002 Long-term stability of the leveling of the curve of Spee. American Journal of Orthodontics and Dentofacial Orthopedics 121: 266-272

Duterloo H S 1991 Development of the dentition under the influence of functional In: Hunter W S, Carlson D S (eds.) Essays in honor of Robert E Moyers. Monograph No. 24 Craniofacial Growth Series, Center for Human Growth and Development University of Michigan, Ann Arbor, pp 103-121

McMullan R E, Doubleday B, Muir J D, Harradine N W, Williams J K 2003 Development of a treatment outcome standard as a result of a clinical audit of the outcome of fixed appliance therapy undertaken by hospital-based consultant orthodontists in the UK. British Dental Journal 194:81-84

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Richmond S *et al*. 1992 The development of the PAR Index (Peer Assessment Rating): reliability and validity. European Journal of Orthodontics 14:125-139

Richmond S *et al*. 1994 An introduction to occlusal indices. 2nd Edition, Mandent Press.

Riedel R A 1977 Post-pubertal occlusal changes In: McNamara Jr. J A (ed.) The biology of occlusal development. Monograph No. 7, Craniofacial Growth Series, Center for Human Growth and Development, University of Michigan, Ann Arbor, pp. 113-141

Schols J G J H, van der Linden F P G M1988 Gebiszentwicklung und Gesichtswachstum in der Adoleszenz. Informationen Aus Orthodontie und Kieferorthopädie 20:21-109

Zachrisson B U 1997 Important aspects of long-term stability. Journal of Clinical Orthodontics 31: 562-568

4.21 FACIAL COLOUR PHOTOGRAPHS

Frontal, lateral, and oblique facial color photographs should be presented as prints with dimensions of 5 by 8 cms. with the head positioned in FH and so that the eyes are on one line. Avoid shadows.

Try to avoid shadows; use preferably white background.
Try to position patient's head parallel to Frankfurt Horizontal (FH).
(However, an imprint of FH in the photograph in your case is not mandatory)

4.22 INTRA-ORAL COLOUR PHOTOGRAPHS OF THE OCCLUSION

Intra-oral color photographs of the occlusion from frontal, right, and left side and occlusal view should be printed in dimensions of 5 by 8 cms. The occlusal line should be horizontal. Prints of the occlusal views of the arches are mandatory.

The horizontal and vertical lines in these pictures indicate the position of the dentition within the frame; there is no need to show them in your case. Occlusal view images should be include at least first molars in A-P direction.

At least three treatment steps intra-oral occlusal view images (beginning, middle and end of treatment) showing lingual appliance must be presented for upper and lower arch to demonstrate lingual treatment progress.

EVALUATION BY EXAMINERS

5.1 WHO ARE THE EXAMINERS?

The Council of the WBLO nominates examiners for a four-year period on the basis of membership of the Board and their expertise, and the number of examiner will be in relation to the number of candidates. The language used will be English.

5.2 HOW DO THE EXAMINERS WORK?

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. No more than 10% of the marks can be gained from the quality of the records. 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, describe difficulties encountered during treatment, or express doubts or self-criticism on particularly controversial aspects of the treatment provided.

Two examiners, working independently, see each case. After evaluation of all cases they compare their results and make a weighted judgment. If this is not possible the complete committee judges the case(s) or discusses the oral examination to arrive at a decision. Different examiners act for the oral examination independently and they are unaware of the judgment of the cases. The final judgment on the cases and the oral examination takes place at the adjudication meeting. All final decisions of the Examination Committee are corporate decisions. The Chairman of the Committee functions as “*Primus inter pares*”.

5.3 THE WBLO 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 clinics		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

The examiners, to systematically evaluate each of the cases individually use the form printed above. The evaluation contains three parts: records, clinics, and therapeutics. The content of each part is indicated in the diagram above. The total number of marks to be gained on a case is 100. The minimum number of marks to be successful = 65 (65%). This holds for each of the three parts of the evaluation. As one can see 30 marks (30%) can be gained by efficient treatment in a difficult case. The Board promotes the presentation of difficult cases.

5.4 THE FORM TO PRESENT THE EXAMINATION RESULT

The form below is used by the Examination Committee to evaluate the examination. All the totals for records, clinic and therapeutics will be filled in. This form and all other individual data remain confidential and will not be given to anybody else. The Examination Committee, for its confidential reports to the WBLO Council, may use data (anonymous) for statistics and policy development.

CANDIDATE	Case 1	Case 2	Case 3	Case 4	Case 5	Case 6	Case 7	Case 8	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 clinics									**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**

WBLO …….. (year) CANDIDATE ..…. RESULT CASES

Total score cases =……./8 =……. Minimum score = 520 / 8 = 65

5.5 POSTSCRIPT

Though the WBLO examiners regularly calibrate their judgment 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 ability 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 most likely 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 a somewhat stressful day. The successful candidates are quite rightly proud of their achievement and we have yet to meet a successful candidate who did not think the WBLO was a very worthwhile pursuit of clinical excellence.