



## **ESLO CASE PRESENTATION GUIDELINES**

### **TABLE OF CONTENT**

1. ESLO Active Members.....	1
2. ESLO Titular Members.....	1
3. PRESENTATION OF CASES .....	2
4. IDENTIFICATION OF RECORDS .....	2
5. EXAMINATION PROCEDURE .....	3
6. MEMBERSHIP .....	3
7. CASE PRESENTATION .....	3
7.1 GENERAL SET-UP OF CASE PRESENTATIONS .....	3
7.2 CASE PRESENTATION INDEX OF PAGES .....	4
7.3 IDENTIFICATION AND LABELLING MARKS .....	5
7.4 INCOMPLETE RECORDS.....	5
7.5 THE SYNOPSIS.....	5
7.6 THE “CASE RÉSUMÉ” PAGE .....	7
7.7 ABOUT THE TEXT BOXES .....	9
7.8 DENTAL TOMOGRAM/PANORAMIC RADIOGRAPH .....	9
7.9 CEPHALOMETRIC RADIOGRAPH .....	12
7.10 WHAT SHOULD I EXPLAIN ABOUT RADIOGRAPHS ? .....	13
7.11 CAN I USE MY OWN CEPHALOMETRIC ANALYSIS ? .....	13
7.12 WHAT DO I HAVE TO DO WITH MY MEASUREMENTS ? .....	14

7.13 CEPHALOMETRICS: TRACINGS, LANDMARKS, LINES .....	14
7.14 CEPHALOMETRIC MORPHOLOGICAL .....	16
7.15 ESLO CEPHALOMETRIC MORPHOLOGICAL ASSESSMENT .....	17
7.16 CEPHALOMETRIC SUPERIMPOSITION .....	17
7.16.1 GENERAL SUPERIMPOSITION .....	18
7.16.2 SUPERIMPOSITION OF THE MANDIBLE .....	19
7.16.3 SUPERIMPOSITION OF THE MAXILLA .....	20
7.17 OTHER ADDITIONAL RADIOGRAPHS .....	20
7.18 LIMITATIONS IN PATIENT RECORDS .....	21
7.19 THE DENTAL CASTS .....	22
7.20 THE EVALUATION OF OCCLUSION ON DENTAL CASTS .....	24
7.21 FACIAL COLOUR PHOTOGRAPHS .....	25
7.22 INTRA-ORAL COLOUR PHOTOGRAPHS OF THE OCCLUSION .....	26
8. EVALUATION BY EXAMINERS .....	27
9. APPENDICES :	
9.1.CASE PRESENTATION	(separate Appendix 1)
9.2 ASSESSMENT FORM	(separate Appendix 2)
9.3 APPLICATION FORMS	(separate Appendix 3)
9.3.1. ESLO Active Membership application form	
9.3.2. ESLO Titular Membership application form	

## **1. ESLO Active Members**

All active Members of ESLO are orthodontists, dentists or medical doctors, fulfilling the following requirements:

- a. Introduced by 2 Active, Titular, Founding or Past-President Members as their individual mentor.
- b. Adequate training in Orthodontics. Education: successful completion of the full curriculum of an accredited orthodontic program, as deemed by the council. Adequate training and ability in the efficient clinical use of the lingual appliance technique. ESLO Active Members are in good standing with legacy and obligations of their country. ESLO Active Member's Practice is limited to Orthodontics and has set goals to maintain or increase Lingual Orthodontics in his treatment methodology.
- c. The applicant to ESLO Active Membership, pays a registration fee of 75€ at registration as a candidate.
- d. Each ESLO Active Member has shown 2 totally treated lingual cases (one of the 2 cases must be an extraction case), in line with the requirements and result outcome validated by the ESLO Evaluation Commission).  
The requirements are subject to changes by the council of ESLO, according to the evolution of science and methods of treatment.  
The Evaluation Commission and Scientific Committee propose and report their decision to the Council.
- e. Active ESLO Members have the right to receive the European Journal of Lingual Orthodontics (EJLO), attend all meetings, to vote, to be eligible to vote and hold official positions, if elected.
- f. Active ESLO Members are subject to payment of dues and assessments.

## **2. ESLO Titular Members**

ESLO Titular Members are Active ESLO Members fulfilling the following additional requirements:

- a. Introduced by 2 Active, Titular, Founding or Past-President Members as their mentor.
- b. Adequate training in Orthodontics. Education: successful completion of the full curriculum of an accredited orthodontic program, as deemed by the council.
- c. Adequate training and ability in the efficient clinical use of the lingual appliance technique. ESLO Titular Members are in good standing with legacy and obligations of their country. ESLO Titular Member's Practice is limited to Orthodontics and has set goals to maintain or increase Lingual Orthodontics in his treatment methodology.
- d. The applicant to ESLO Titular Membership, pays a registration fee of 150€ at registration as a candidate.
- e. Each ESLO Titular Member has shown 5 totally treated lingual cases in respect with the ESLO Evaluation Commission prescriptions. The records prove outcome

- stability 1 year after treatment outcome. The proven result outcome is validated by the ESLO Evaluation Commission
- f. The requirements are subject to changes by the Council of ESLO, according to the evolution of science and methods of treatment. The Evaluation Commission and Scientific Committee propose and report their decision to the Council.
  - g. Titular ESLO Members have the right to receive the European Journal of Lingual Orthodontics (EJLO), attend all meetings, to vote, to be eligible to vote and hold official positions, if elected.
  - h. Titular ESLO Members are subject to payment of dues and assessments.

### **3. 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 8 cm (size subject to change in next version) 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.

### **4. 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:
  - o Beginning of the treatment. (Black color label)
  - o End of the treatment. (Red colored label)
  - o 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.

## **5. 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 ESLO Evaluation Commission 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.

## **6. MEMBERSHIP**

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

## **7. THE CASE PRESENTATION**

### **7.1 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 computers is recommended as it improves the quality of the presentation.

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 ESLO that records are as close to the real anatomy, morphology and pathology as possible. Reasonable digital cropping, resizing or rotation is permissible.

## **7.2 CASE PRESENTATION INDEX OF PAGES**

Index of pages

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

red: mandatory pages

if available, superimpositions may be placed in the back of the folder.

**ESLO 23 24 25 26 27 are only mandatory for ESLO Titular membership candidates.**

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 paragraphs 7.17 and 7.18 for additional information.

### **7.3 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**). Only mandatory for Titular membership candidates.

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 ESLO Evaluation Commission.

### **7.4 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 ESLO session he/she will be obliged to pay fees again.

### **7.5 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 six 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 Only mandatory for Titular membership candidates
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. Trans/vertical 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.

ESLO active membership candidates chose 2 cases among the 9 above possible categories, but 1 case must be an extraction case. ESLO Titular membership candidates chose 5 cases among the 9 categories.

## **7.6 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 6 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 1

## 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:                      DATE:

b) lower:

RETENTION ENDED :                      a) upper:                      DATE:

b) lower:

RETENTION TIME :

(POST-)RETENTION RECORDS :                      AGE:                      DATE:

TIME OUT OF RETENTION :

CANDIDATE NUMBER:

## **7.7 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 were 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 ESLO-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

## **7.8 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.

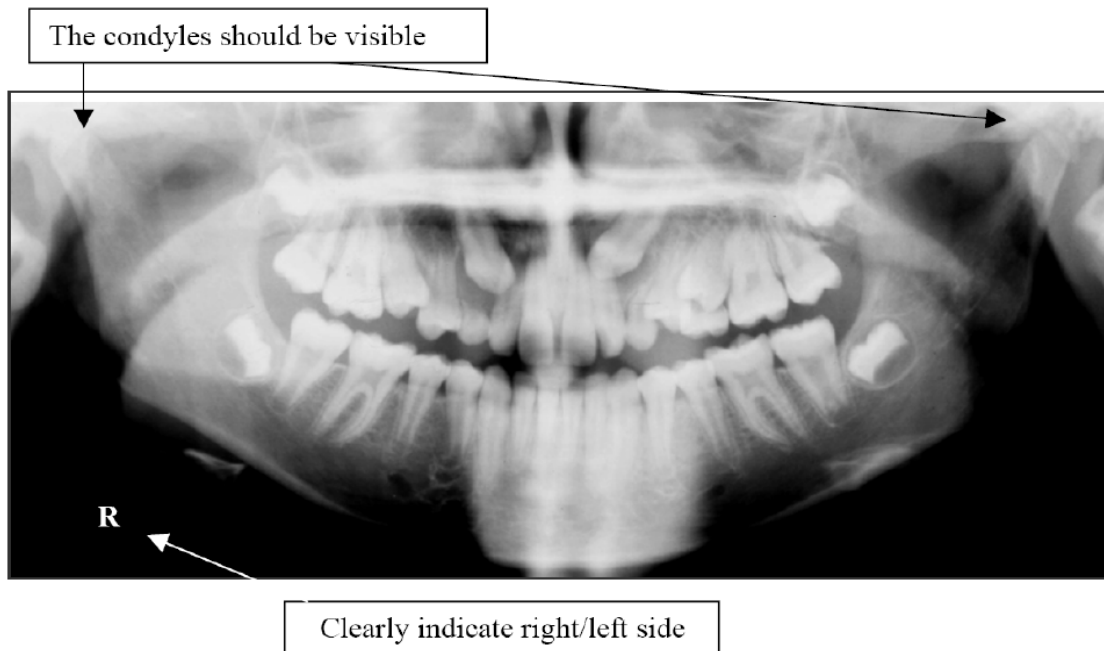
The literature is replete with articles emphasizing the advantages and disadvantages of panoramic radiographs. In addition to this, different types of machines produce different images each with specific characteristics.

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).

## 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.

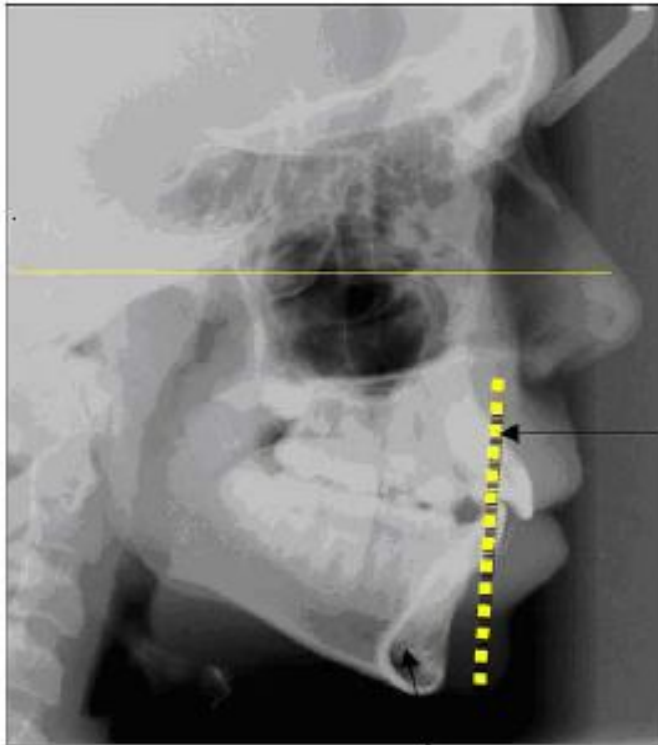


Thus in extreme cases, where the occlusal plane makes a larger than normal angle to the nasal floor, the head of the patient is positioned upward so that the angle of the occlusal plane approaches 7 degrees. However, in subjects with a severe mandibular backward position, even when the patient is asked 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 roll, so that the anterior teeth are not imaged in overlap.

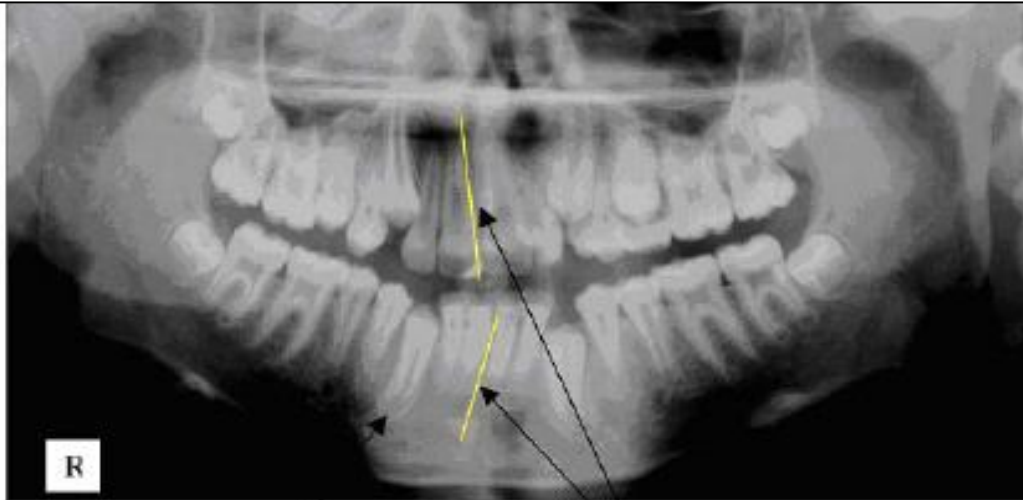
The patient's head should also be placed as precisely as possible with the midsagittal plane in the same position as the midline of the machine. Some machines have light indicators to find the correct position. Incorrect placement may lead to unacceptable distortions and blurring.

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.



**Approximate position of the image layer of the panoramic machine**

**In the panoramic radiograph the lower (mandibular) part appears increasingly transversally enlarged. Thus, in the radiograph the distance between the apices of the lower canines is much larger than the distances between canine crowns. This is caused by the dorsal positions of the chin area relative to the image layer of the panoramic machine. Such distortions are sometimes unavoidable.**



**The root of 43 appears distorted and the apical area is transversally enlarged.**

**The patient was incorrectly positioned; the face was rotated to the right around a vertical axis. This distortion is avoidable, depending on the symmetrical position of the dental arch relative to the midsagittal plane.**

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.

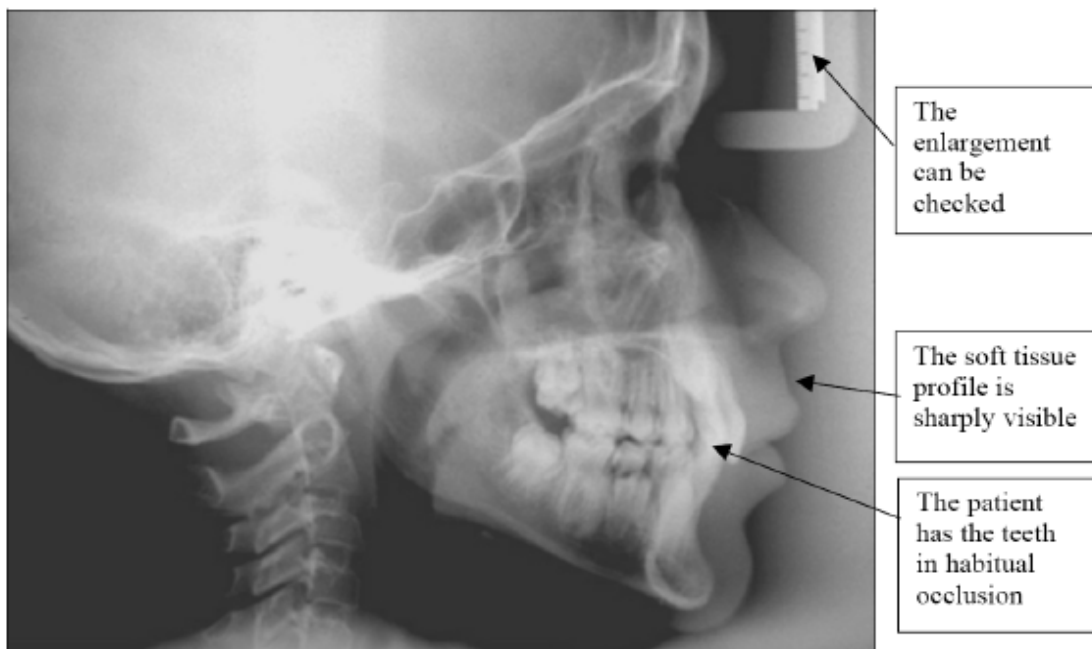
### References:

Türp J C, W Vach, JR Strub, K Harbich, KW Alt 1995 Erkennung von mandibulären asymmetrien auf der Panoramafilmaufnahme 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.

## 7.9 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

#### **7.10 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?

#### **7.11 CAN I USE MY OWN CEPHALOMETRIC ANALYSIS ?**

Yes you can! However measurement of cephalograms according to the ESLO 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.

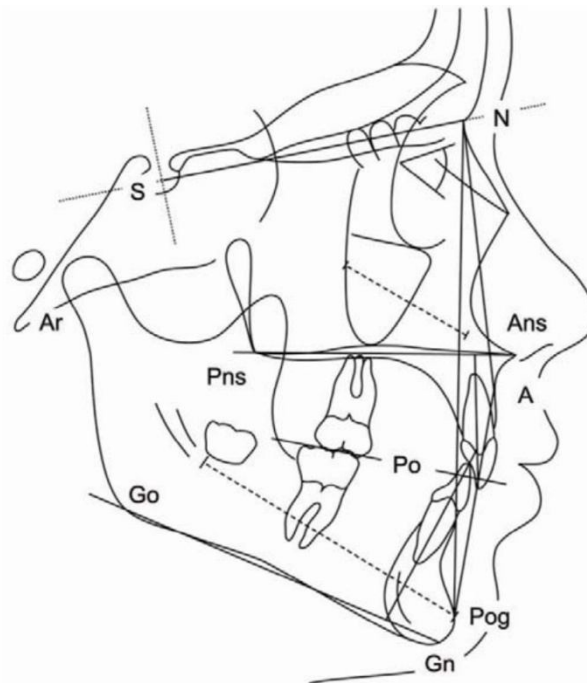
## **7.12 WHAT DO I HAVE TO DO WITH MY MEASUREMENTS ?**

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”.

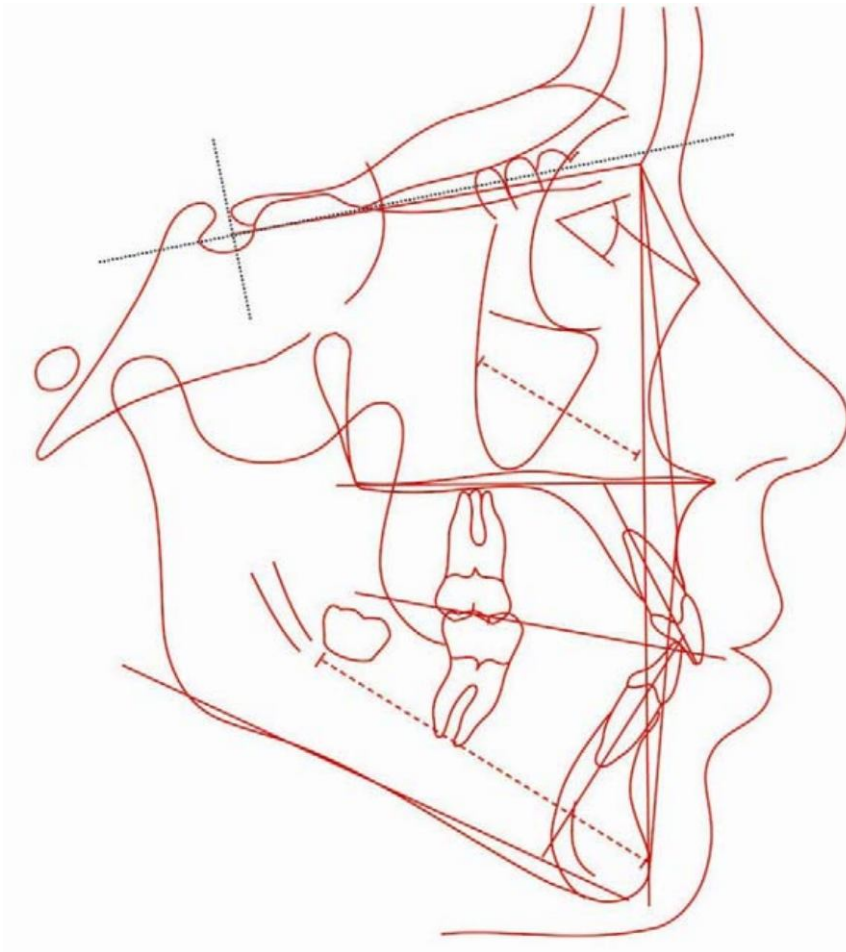
**All the above advice is aimed at making the presentation of your diagnosis and treatment plan as clear and logical as possible, based on the described observations and analysis.**

## **7.13 CEPHALOMETRICS: TRACINGS, LANDMARKS, LINES**



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

Tracings 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 ESLO 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 (not mandatory, but desirable, if available). Final records: tracing in green (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

## 7.14 CEPHALOMETRIC MORPHOLOGICAL

### ASSESSMENT I

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

CANDIDATE NUMBER:

CASE NUMBER:

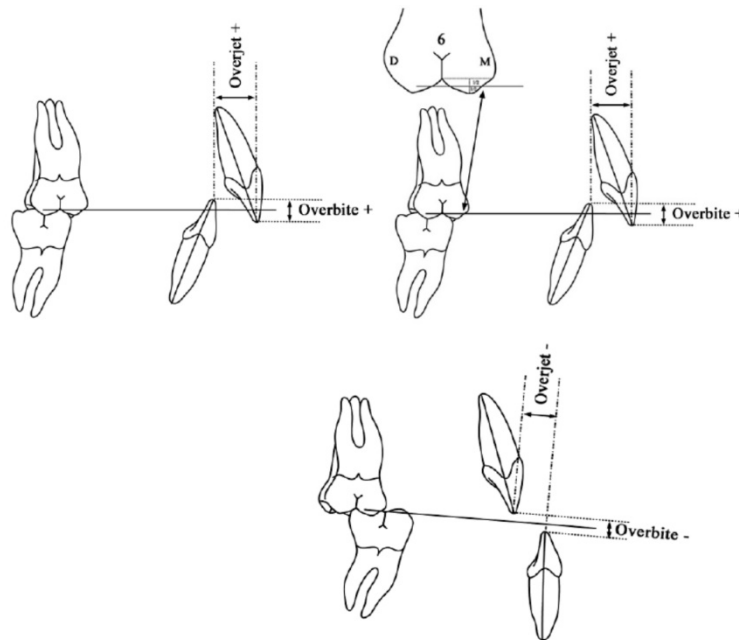
DATE:

AGE :

## **7.15 ESLO CEPHALOMETRIC MORPHOLOGICAL ASSESSMENT**

It is mandatory to fill in the forms for the ESLO 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 ESLO Cephalometric Morphological Assessment, overbite and overjet are measured as indicated.

## **7.16 CEPHALOMETRIC SUPERIMPOSITION**

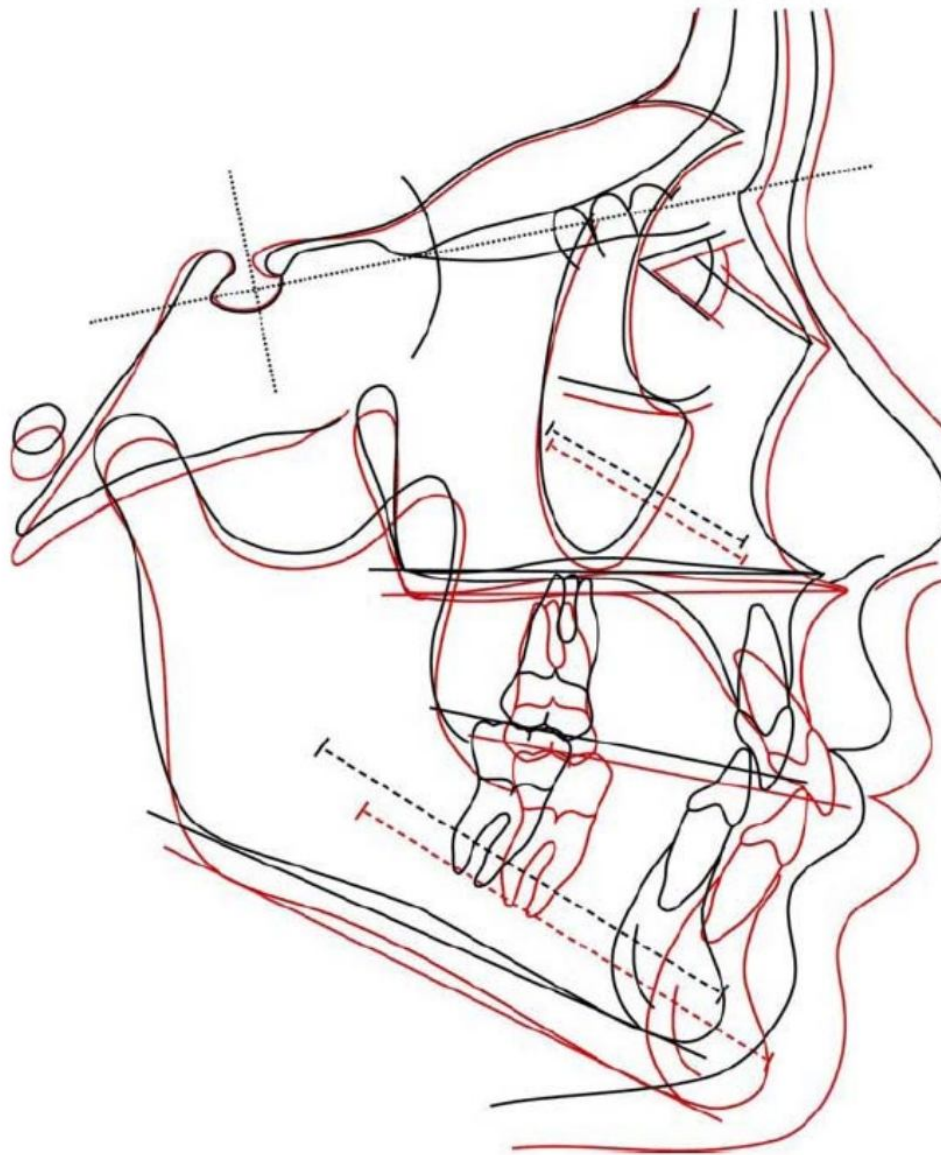
Superimposition of tracings is not mandatory. However if post-treatment radiographs are authorized in your country superimposition may greatly enhance the evaluation of the case.

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 7.16.1, 7.16.2 and 7.16.3 are printed here as examples to demonstrate how these superimpositions look.

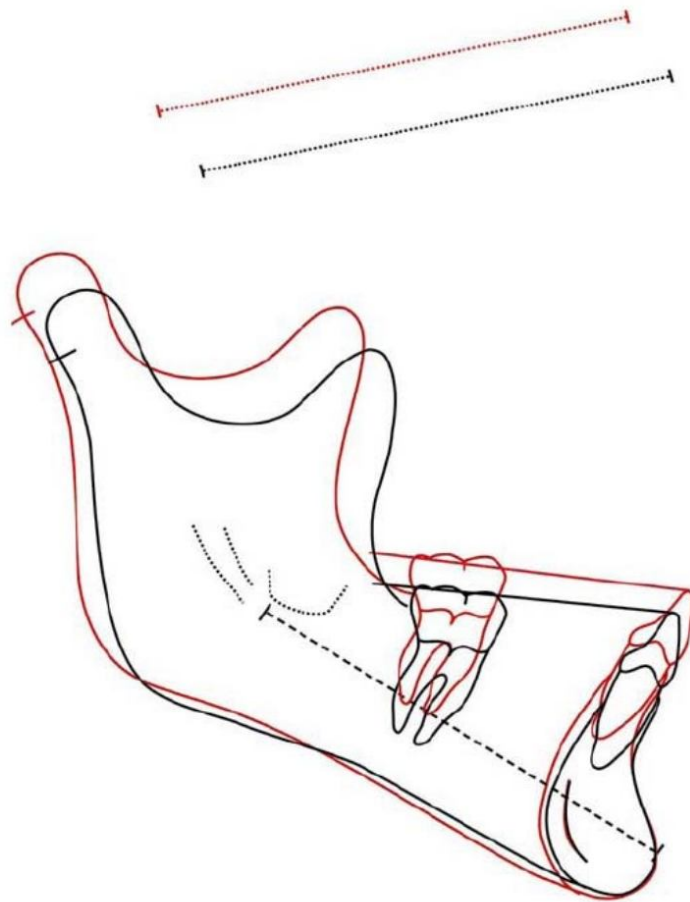
If you use superimpositions describe also your interpretations and findings.

### 7.16.1 GENERAL SUPERIMPOSITION

Superimposition on stable structures in the anterior cranial base

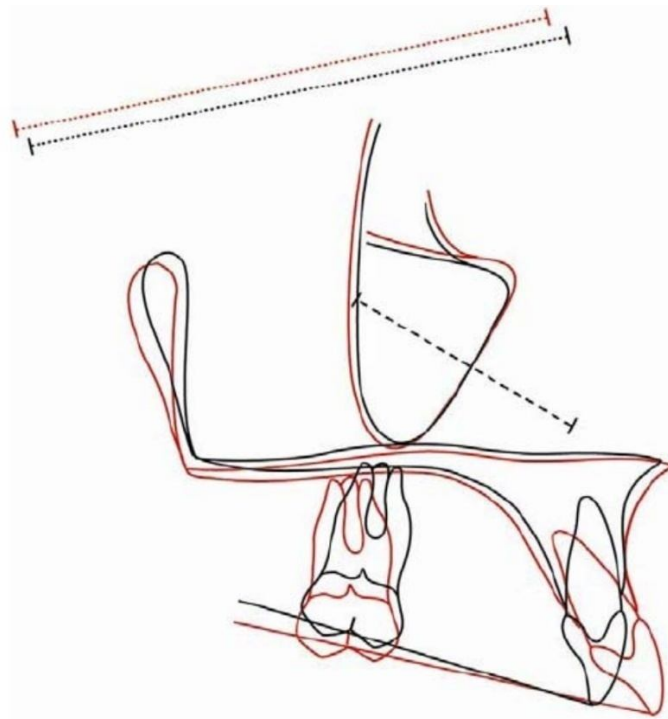


### **7.16.2 SUPERIMPOSITION OF THE MANDIBLE**



**Local superimposition on natural reference structures in the mandible**

### **7.16.3 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

### **7.17 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 ESLO-10 of the Case Presentation Book of that case. Explain on page ESLO-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 periapicals 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.

## **7.18 LIMITATIONS IN PATIENT RECORDS**

ESLO 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 ESLO 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 ESLO distinguishes between mandatory records and additional other records.

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

### **B records** (Completion of Treatment),

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

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

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

## 7.19 THE DENTAL CASTS

Three sets of dental casts are mandatory.

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**

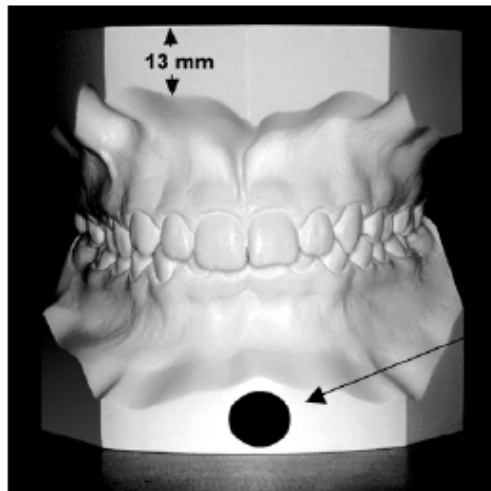
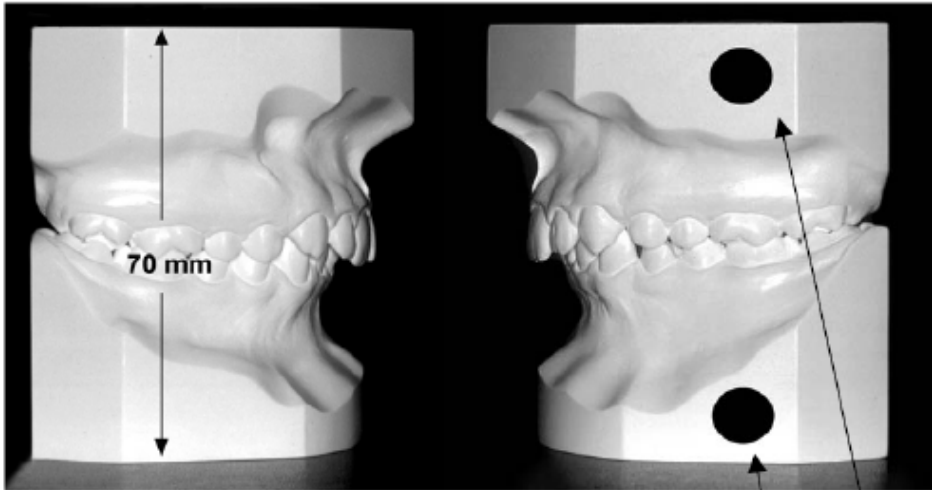
At the (post) retention records: **green** – only mandatory for ESLO Titular membership candidates.

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

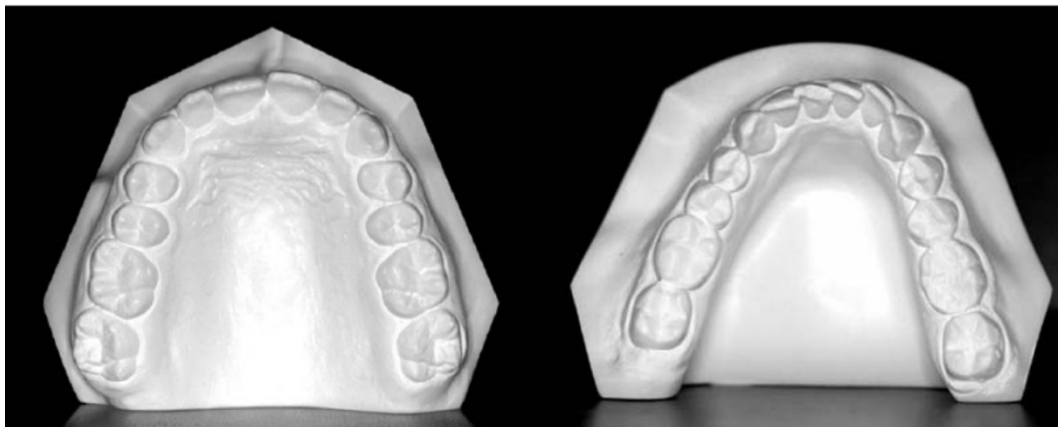
1. The candidate's number on the left side of the upper cast
2. The case number on the right side of the upper cast
3. The date the impression was made on the left side of the lower
4. The patient's age on the right side of the lower.

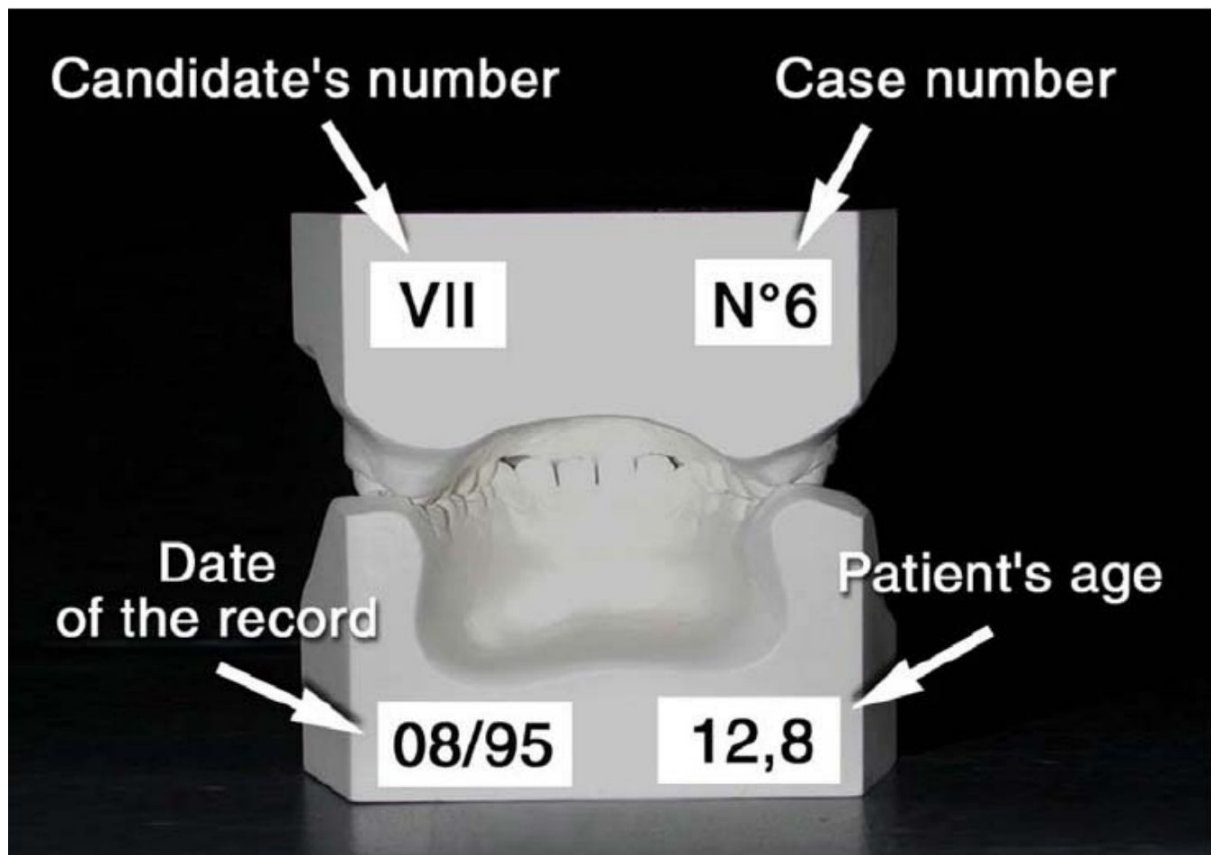
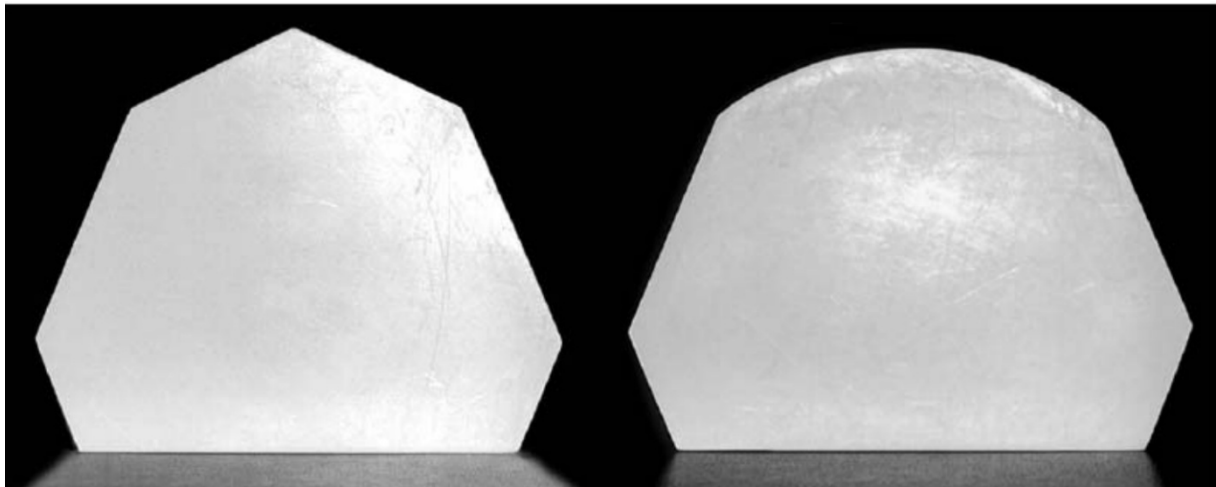
REMEMBER THAT ALL THE REQUIREMENTS FOR THE CASE PRESENTATIONS ARE MADE TO FACILITATE THE EVALUATION BY THE EXAMINERS WITHIN A LIMITED TIME FRAMEWORK AND TO AVOID OMISSIONS, MISTAKES OR CONFUSION.

FOLLOWING THE REQUIREMENTS EXACTLY IS TO YOUR ADVANTAGE



Place coloured stickers here





### 7.20 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.

**Mandatory for Titutal membership candidates:** 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).

## **7.21 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)



## **7.22 INTRA-ORAL COLOUR PHOTOGRAPHS OF THE OCCLUSION**

Intra-oral color photographs of the occlusion from frontal, right, and left side 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.

## **8. EVALUATION BY EXAMINERS**

Currently in progress by ESLO Council.