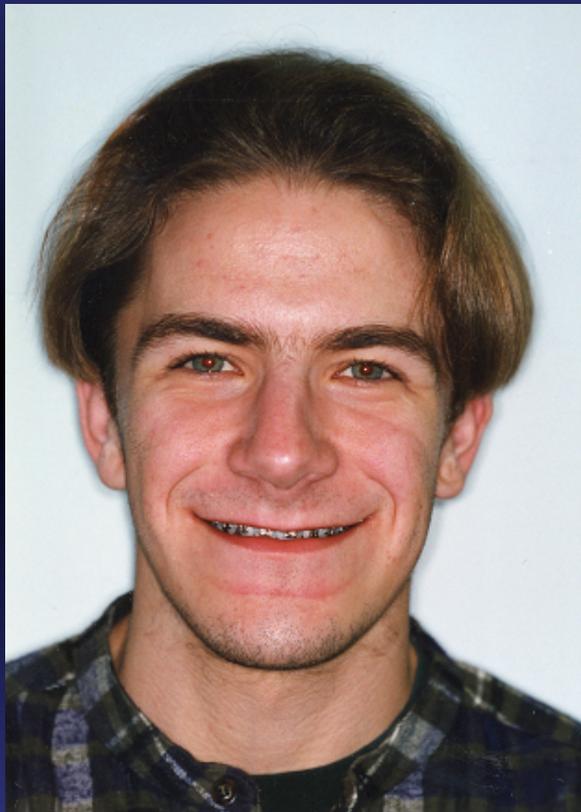
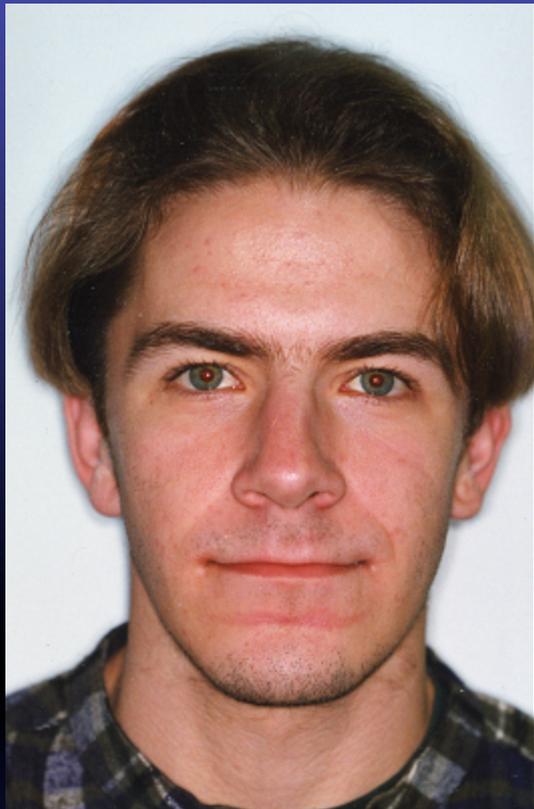
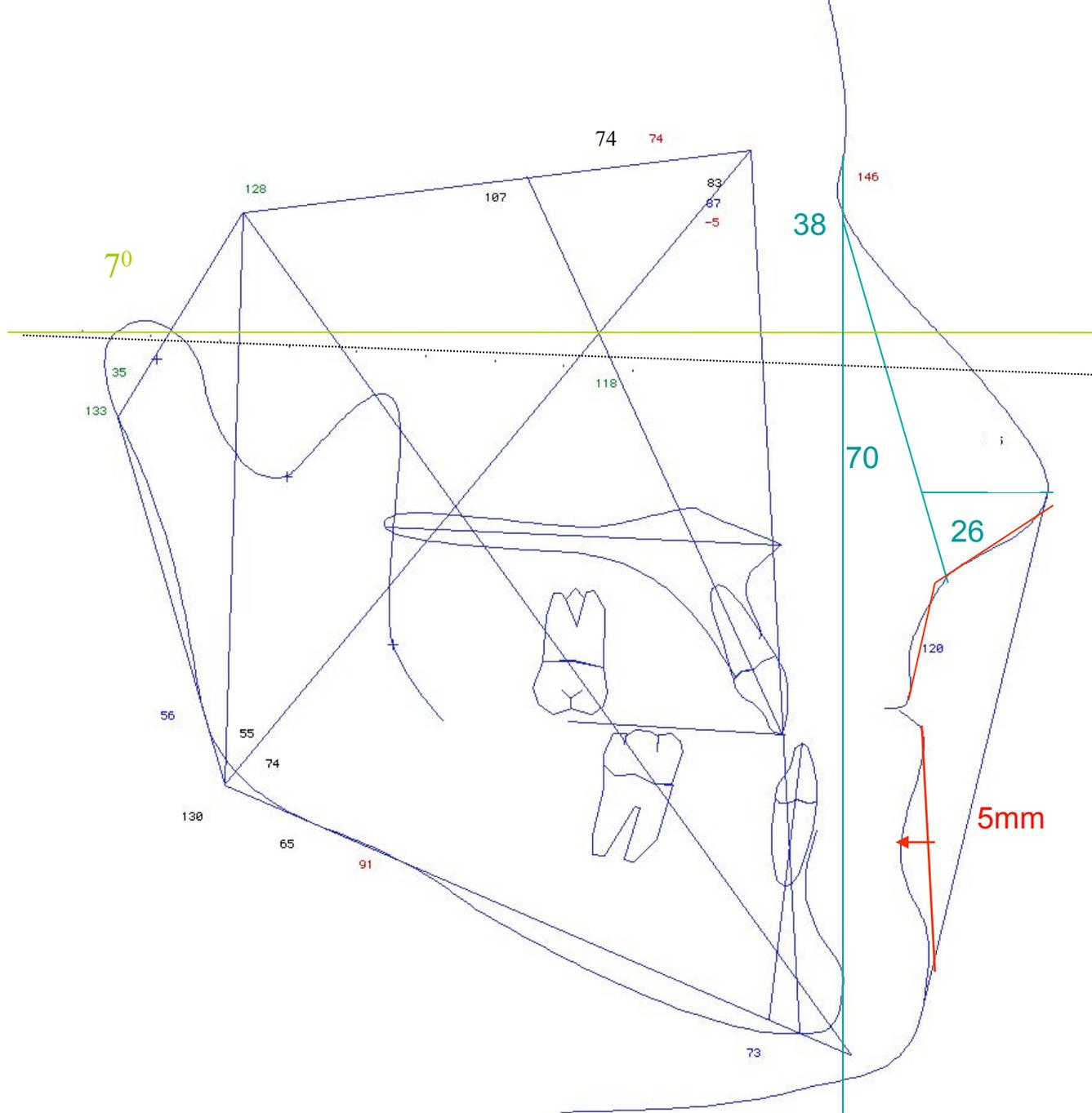
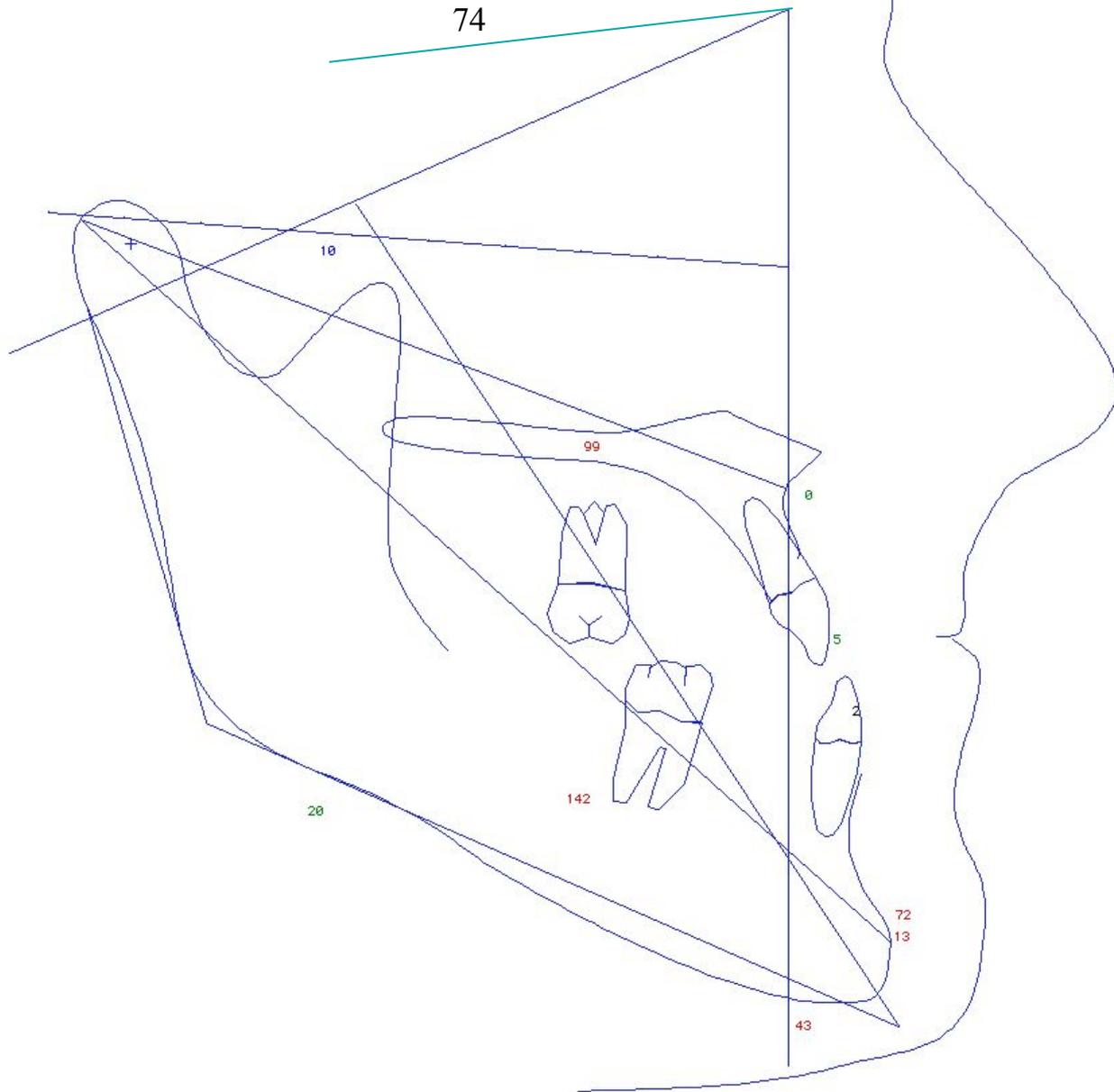


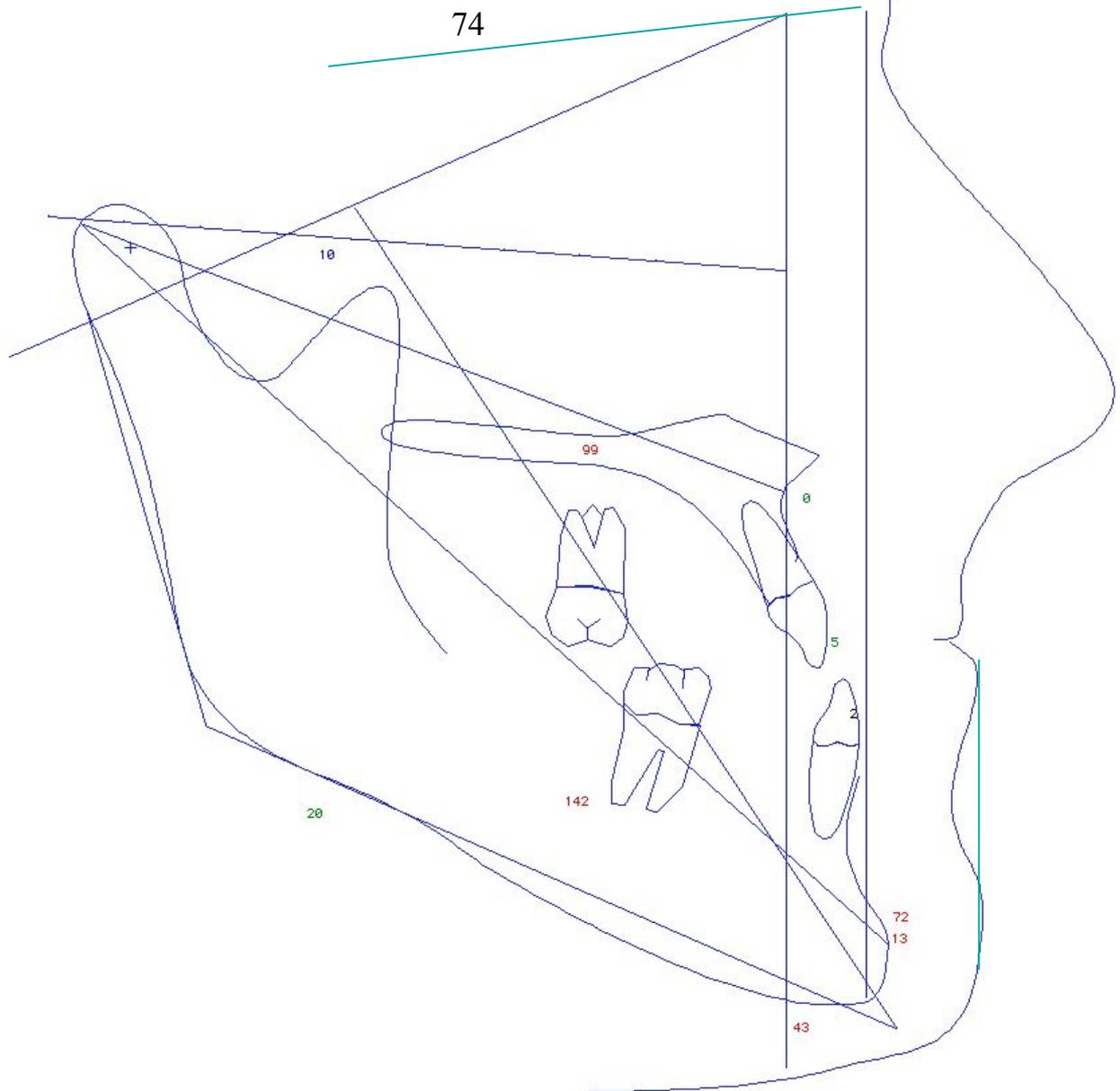
S.T.O.

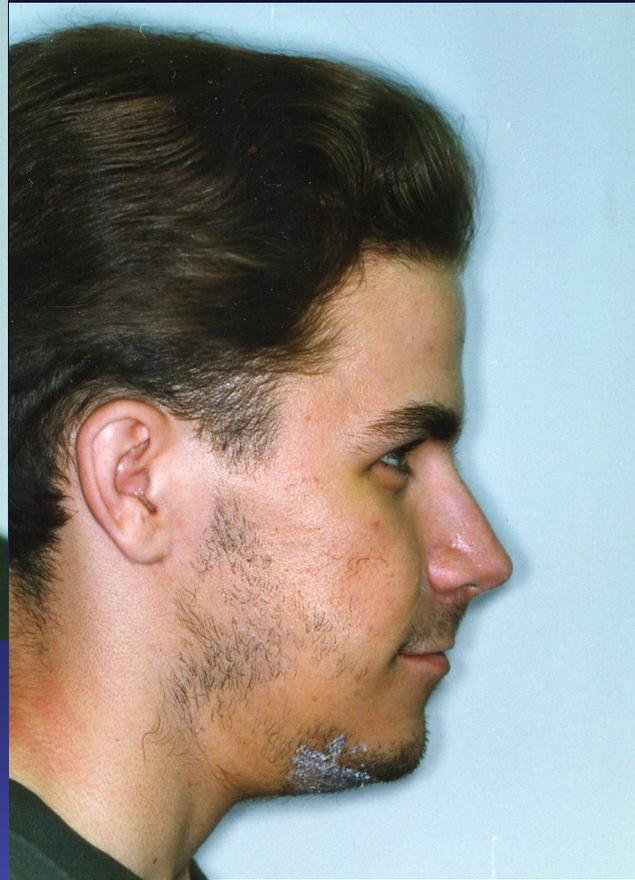
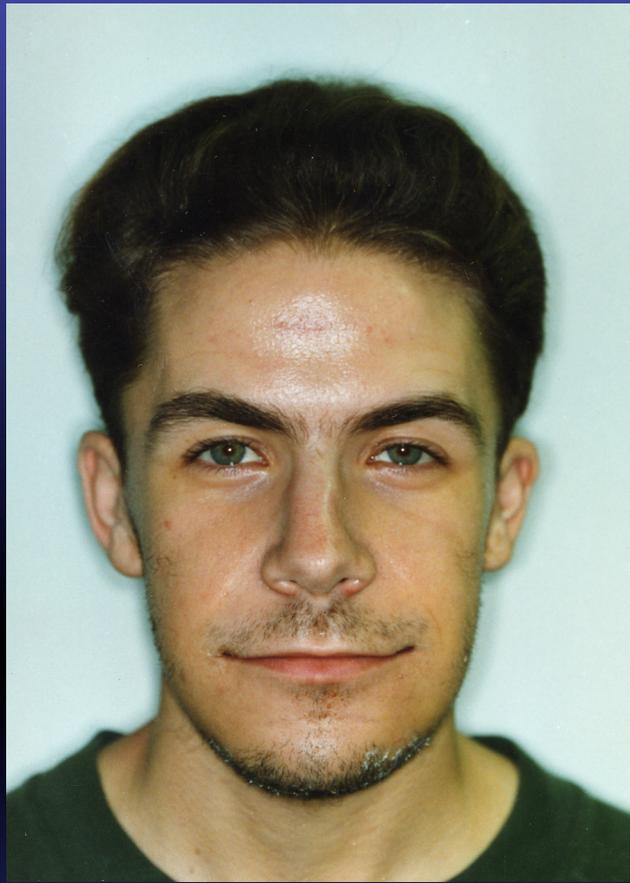
# Concept Of Cranial Base Correction



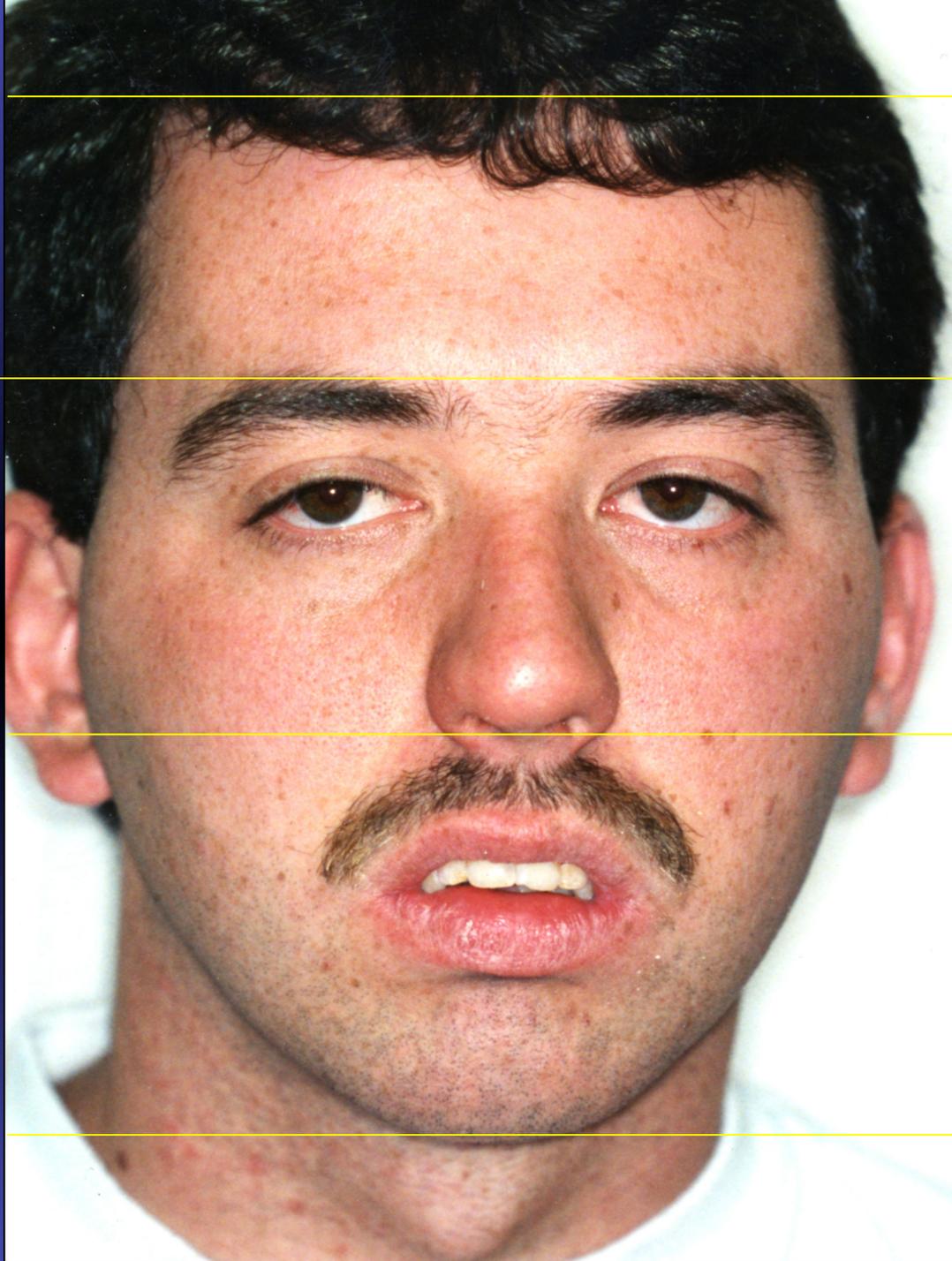










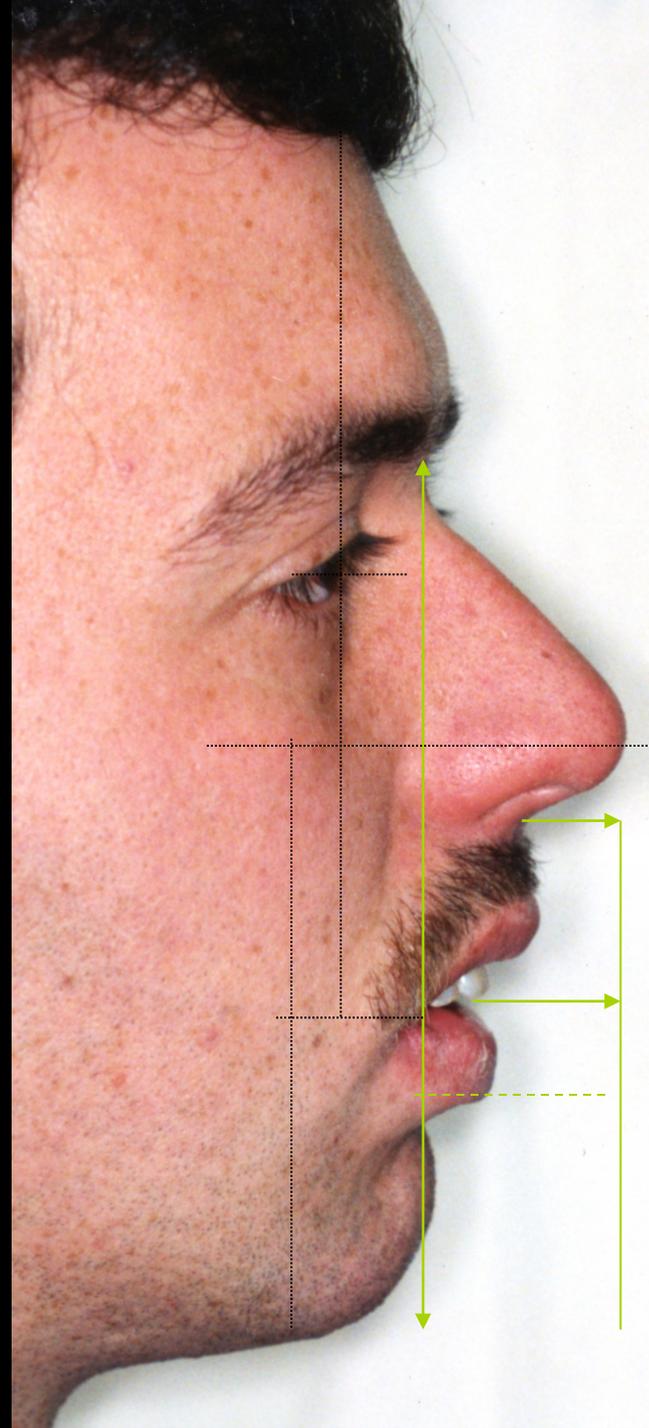
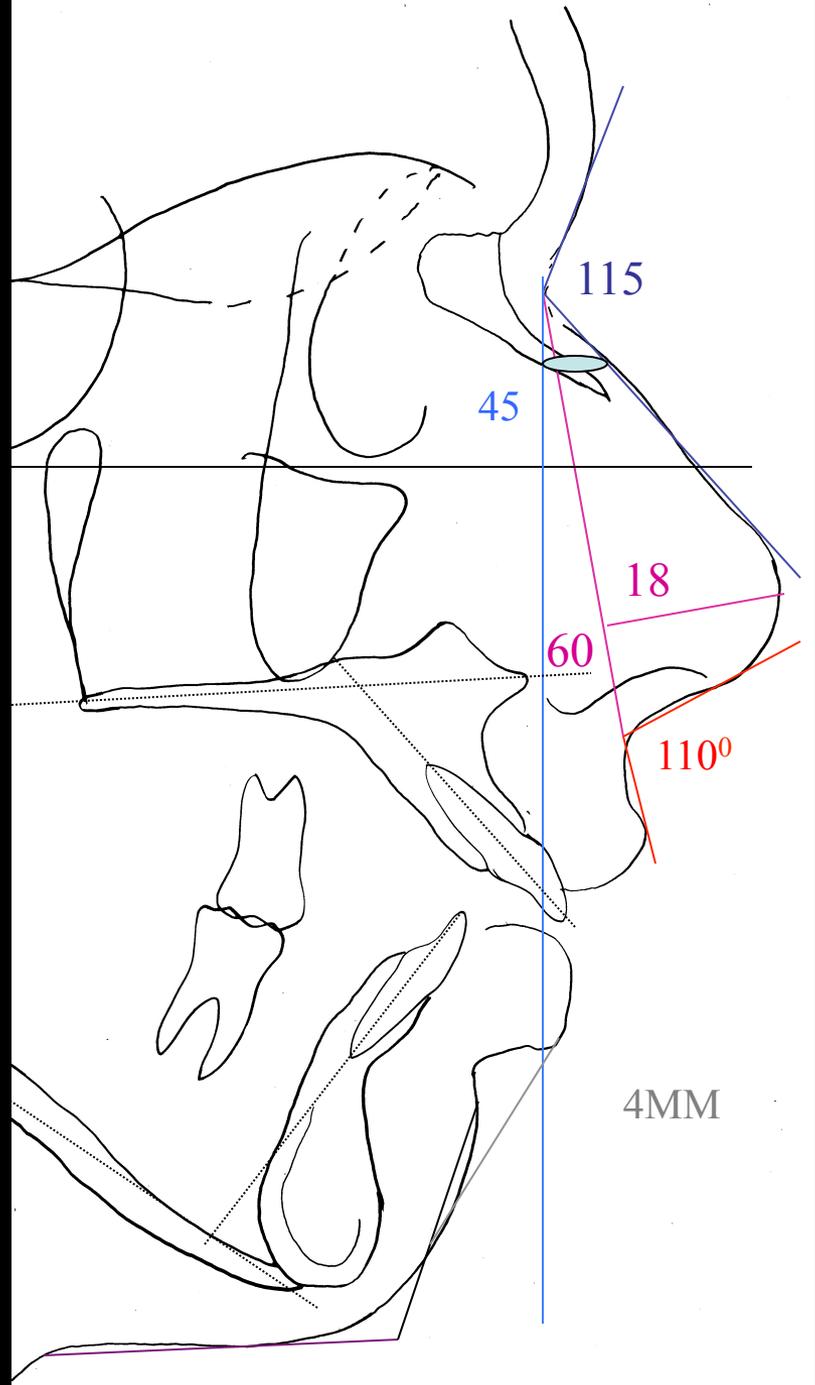












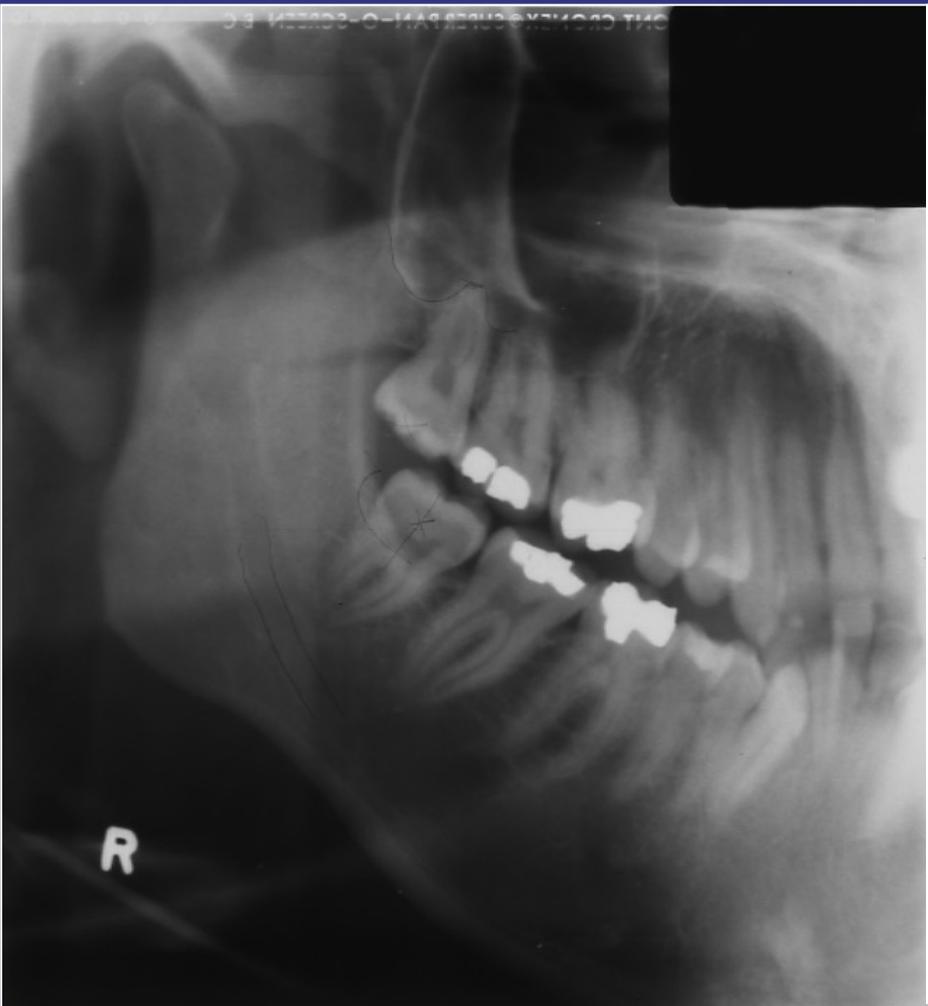


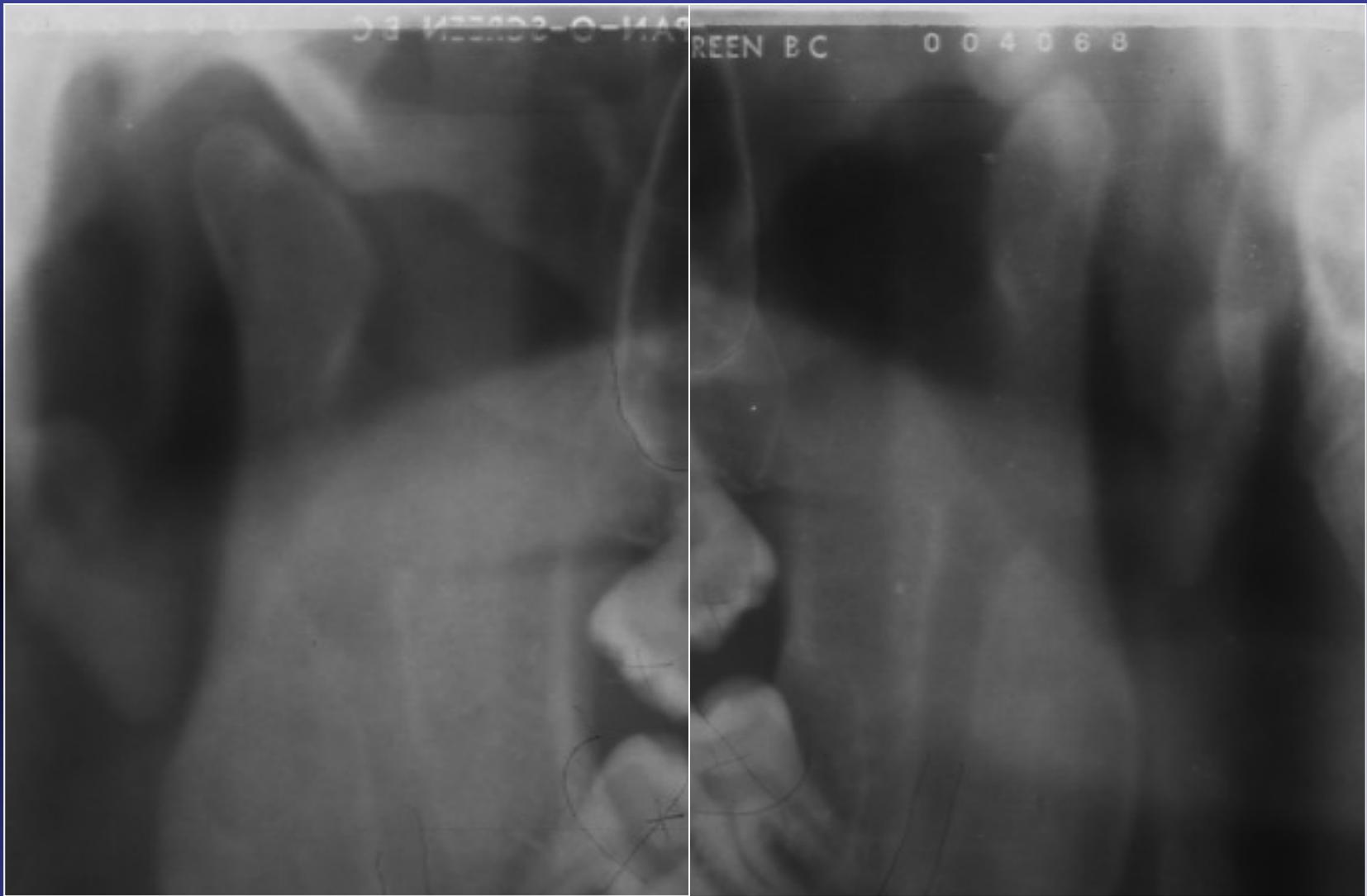


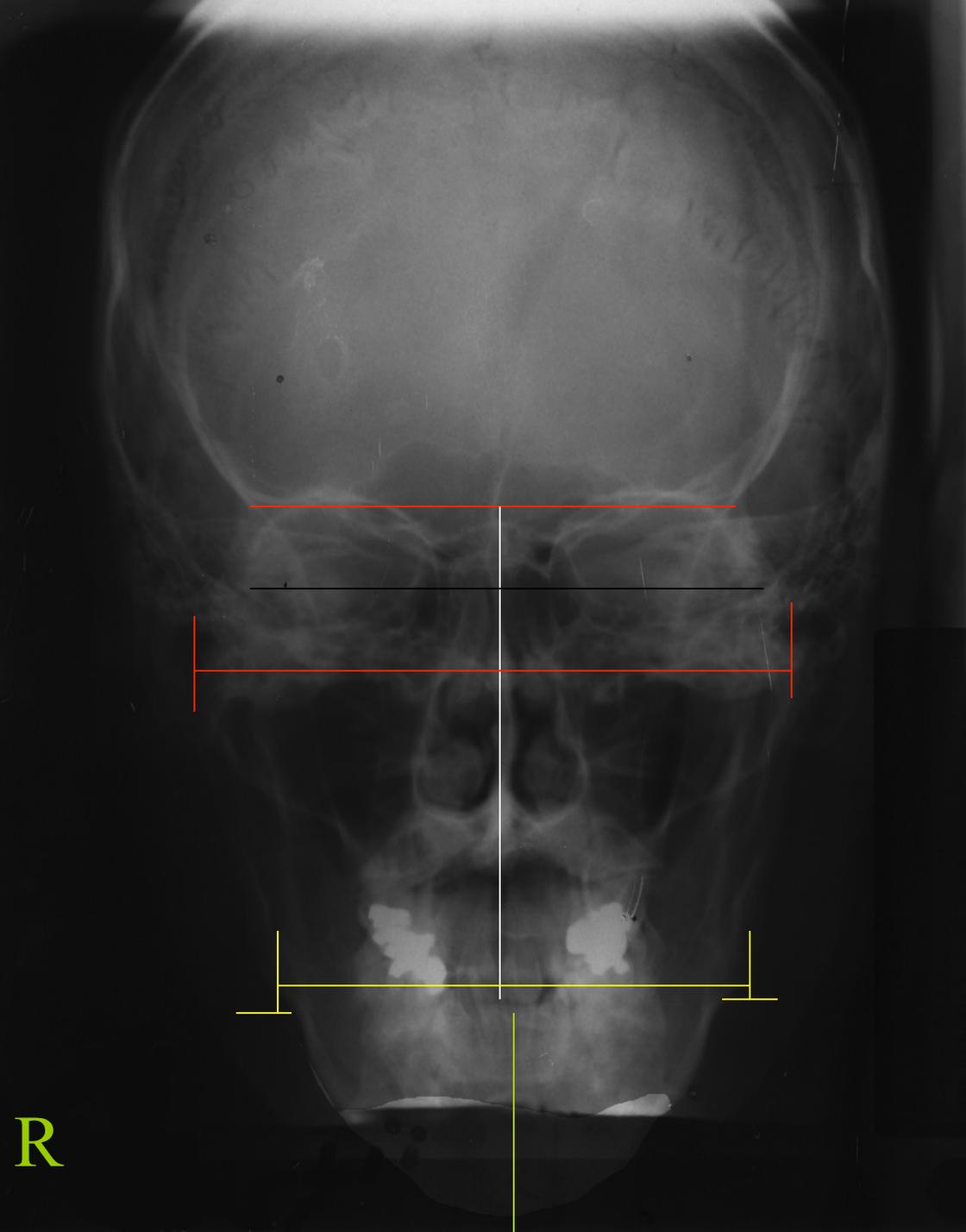


ONT. DENT. SUPPLY CO. - O-SCREEN B.C.

SUPER PAN-O-SCREEN B.C. 0 0 4 0 6 8







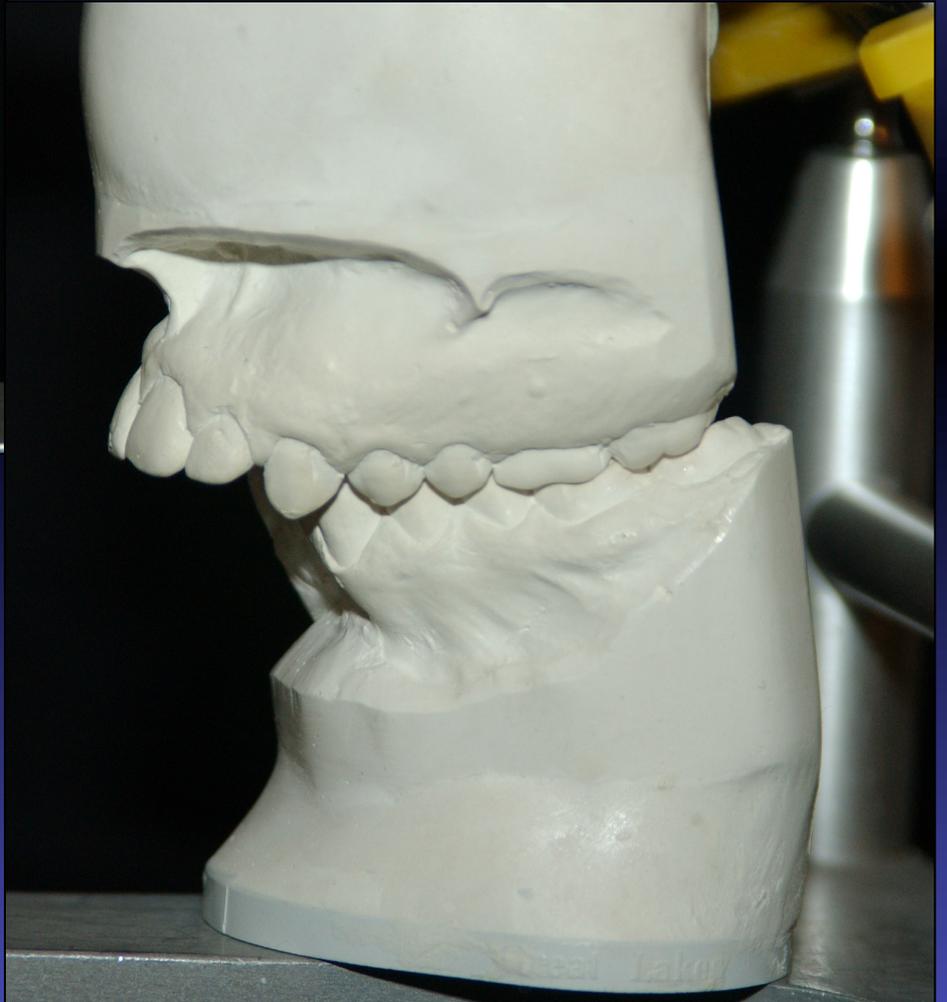
R



KODAK LIMEY REGOLIM 024988309AH

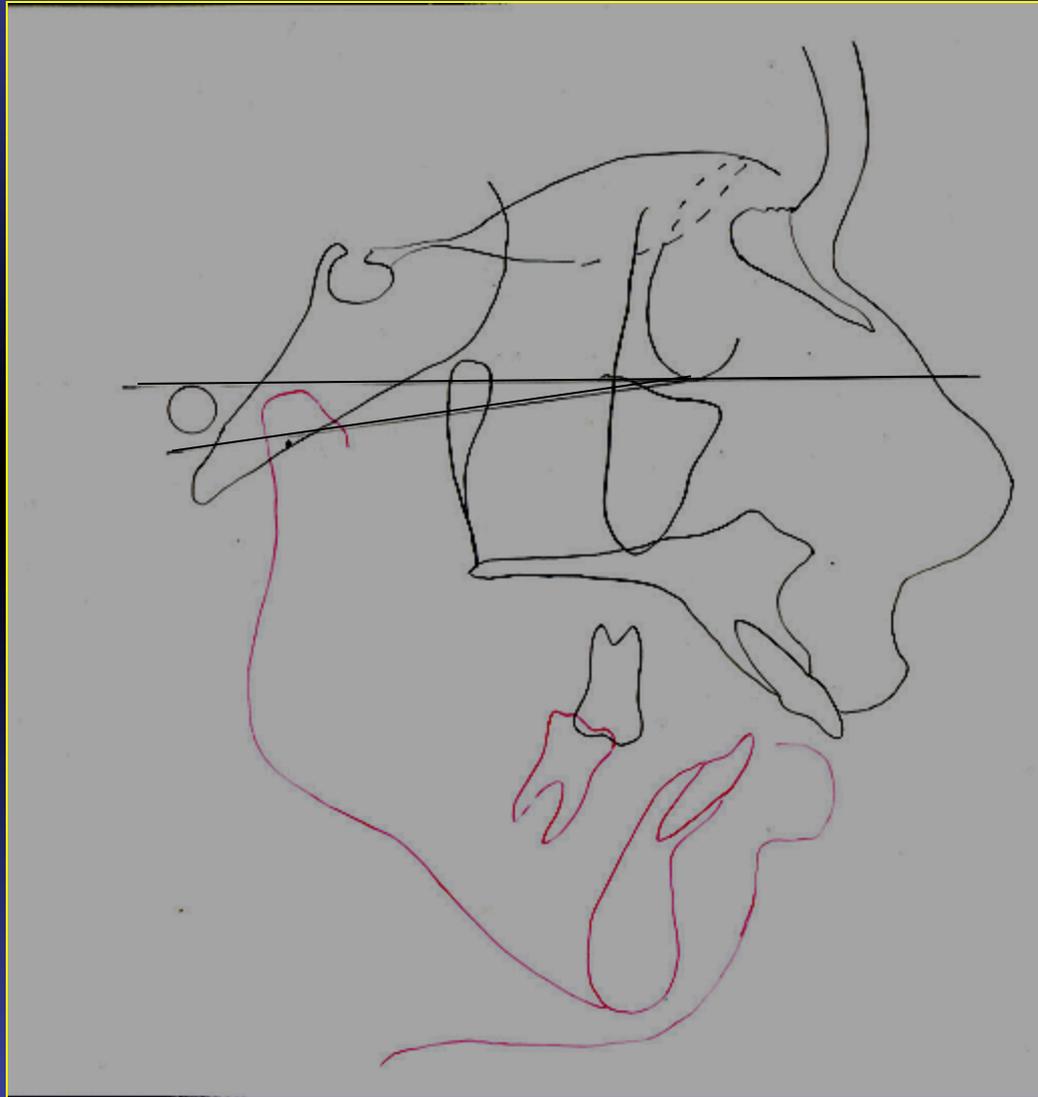
# First Step

- Place patient on splint
  - Centric relation splint
    - Purpose is to:
      - Deprogram the musculature
      - Acquire proper centric relation
- Ascertain stability of joint



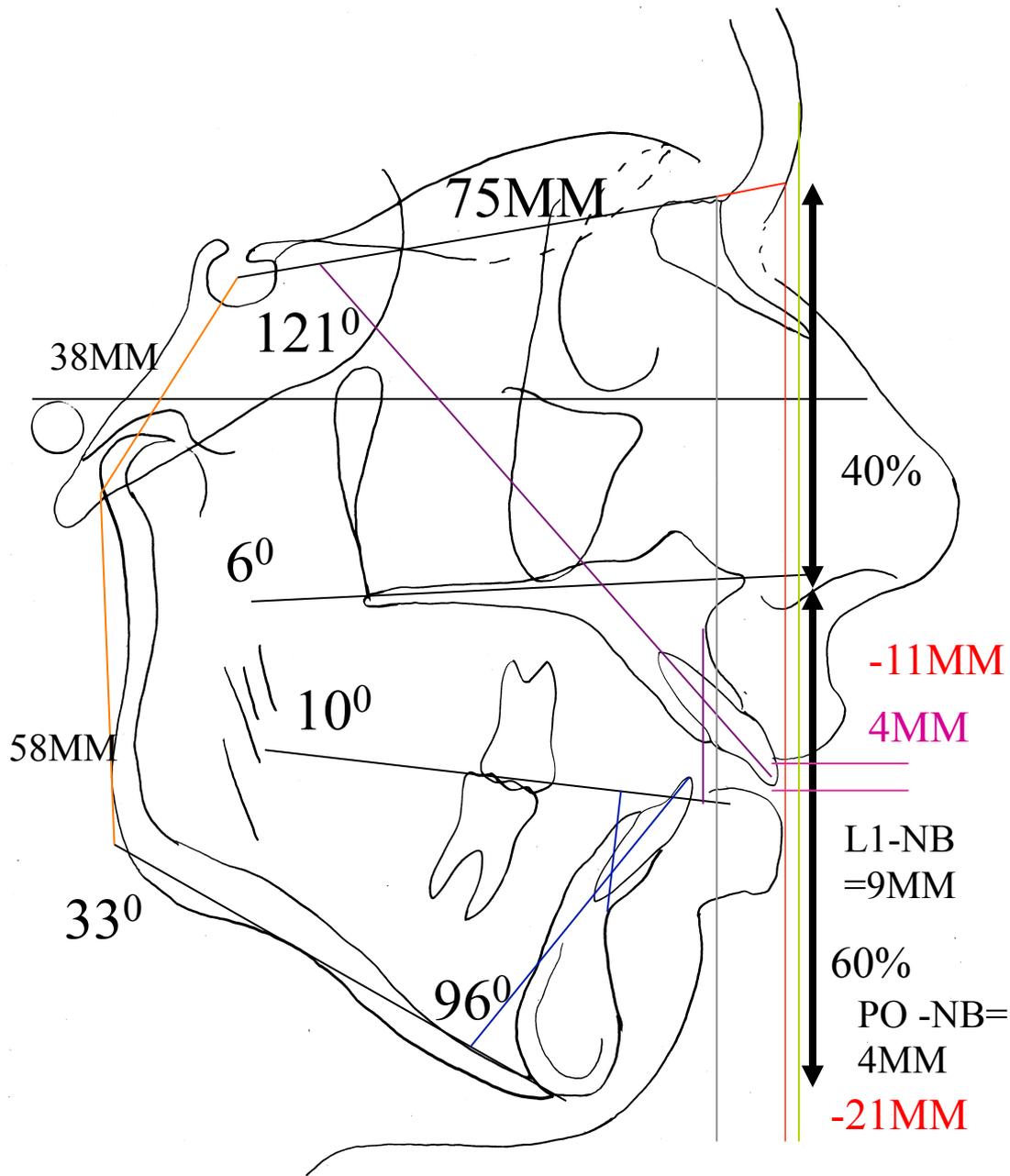


# Either perform Cr - Co Conversion



Or retake radiographs in centric relation

CANDIDATE # 88128  
CASE REPORT # 6  
DATE OF RECORDS 6-5-93  
PATIENT AGE 23-10  
STAGE OF TREATMENT



Area of study	Measurements	Standards	(A1)	(A2)	(B)
Cranial Base	S-N length	77F, 83M	75	75	75
	SN - FH	7 - 11	9	9	9
Maxilla to Cranial base	SNA	82	78	78	82
	N Prep.-A Pt. (UC)		-4	-3	0
	N Perp.- A Pt. (C)	0 mm	-11.5	-10	-7
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	N Prep.- A Pt. (UC)		-18	-23	0
	N Perp.- Pog. (C)	0 mm	-21	-30	-3
Maxillo-mandibular relation	ANB	2	7	10	6
	Wits	-1, +1	18	14	4
Vertical Relations	SN- Plt. Pln.	7	6	5	7
	SN- Occ.Pln.	14	10	18	16
	SN- CoGn	32	42	45	27
Max. and Mand. Incisor position	UI-NA deg.	22	44	27	22
	UI-NA mm.	4	11	6	4.5
	UI-SN	104	121	106	104
	L1-NB deg.	25	28	28	32
	L1-NB mm	4 mm	9	8	9
Soft Tissue	IMPA	90-95	96	95	104
	NB-Fog.		4	4	13
Soft Tissue	Nasofrontal	115-120	115	121	102
	Nasofacial	30-40	45	46	40
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	Holdaway Ratio (L1NB-NB-Fog)	1:1	9:4	1:2	9:13
	Post. Cranial Base Ramus Height	3:4	38:53	38:48	30:50

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	Post. Cranial Base Ramus Height	3:4	38:53	38:48	30:50

# Two Patient Concept

- Patient before orthodontics
  - To decide orthodontic goals
- Main purpose is to place the teeth independently in their position on the basal bone
- To decompensate the existing dental malocclusion to allow for maximum skeletal correction

# Two Patient Concept

- Patient after orthodontics
  - After dental decompensation
    - Purpose is to know where to place the skeletal structures
    - To bring the face to correct A/P, vertical and transverse proportions
    - Plan adjunctive procedures

# Evaluate Transverse Discrepancy



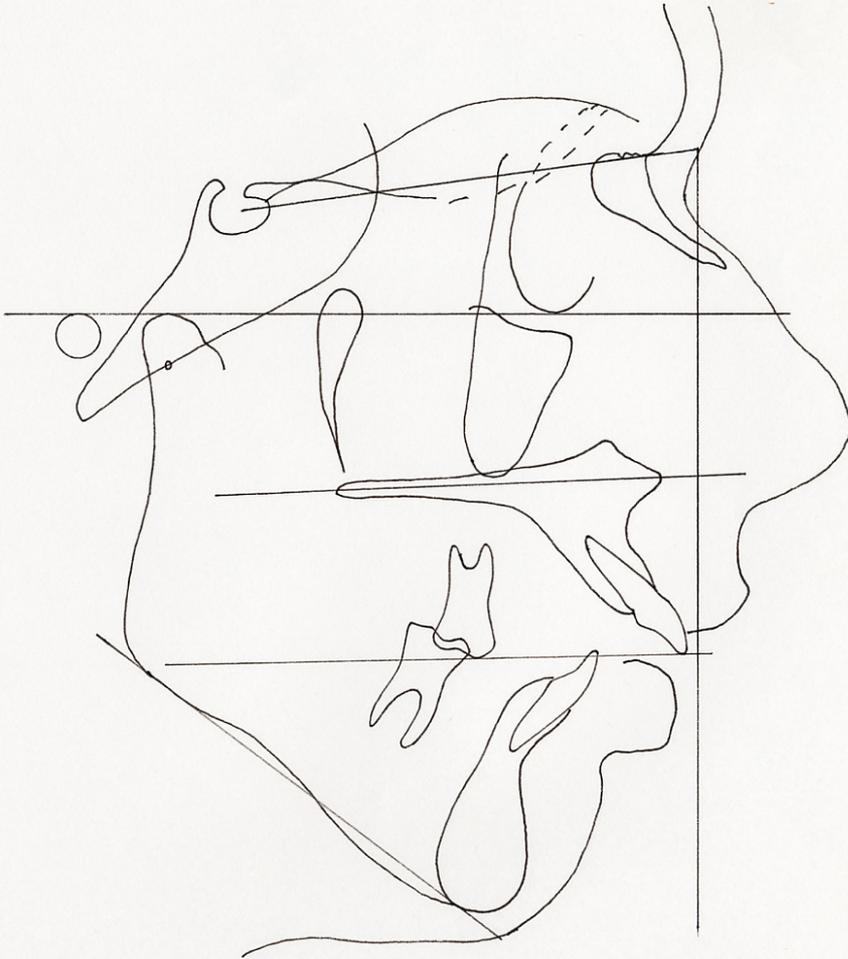
Advance mandible to a Class I cuspid position



Note extent of buccolingual discrepancy

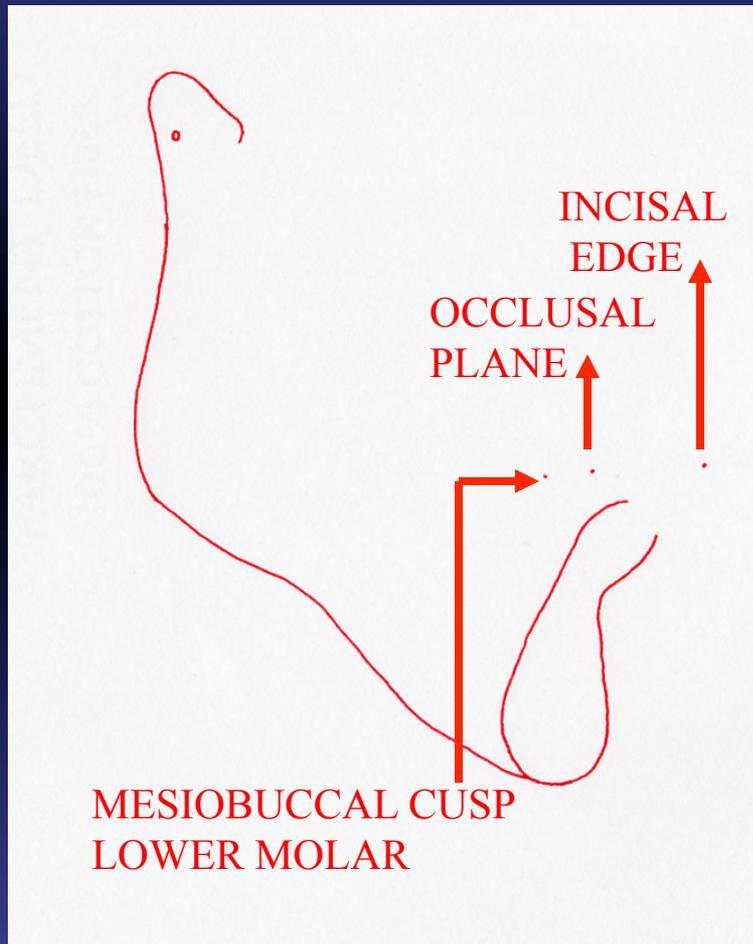


# Preparing Main Tracing



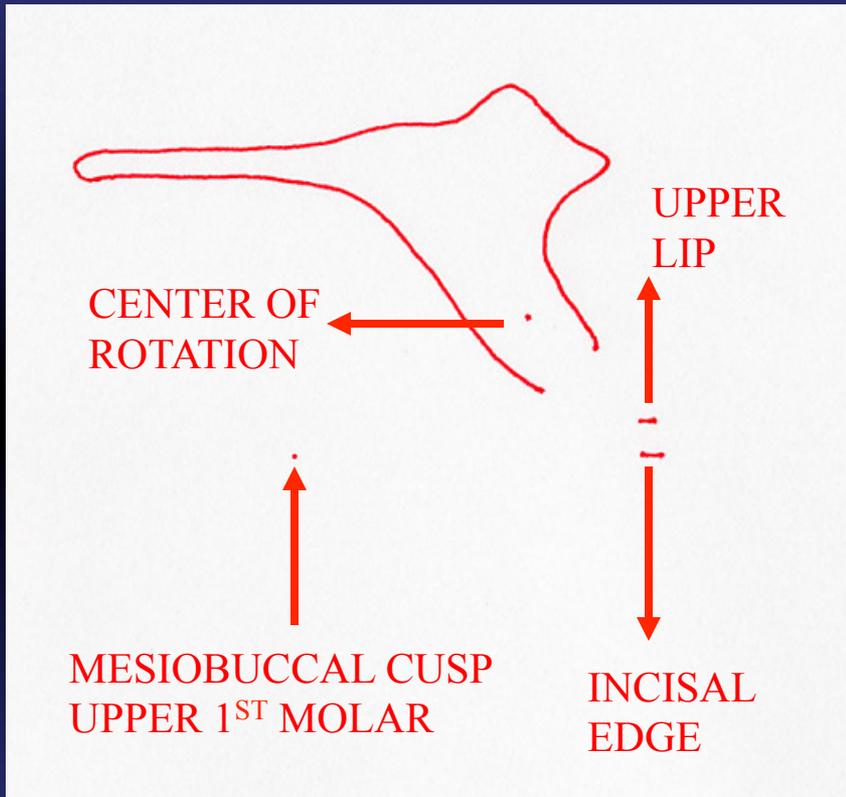
- On the tracing
  - Construct S-N plane
  - Correct angulation to 7-11 deg.
  - Length 77mm F  
83mm M
- Construct
  - True facial axis
  - Palatal plane
  - Occlusal plane
  - Mandibular plane

# Mandible and Mandibular Dentition



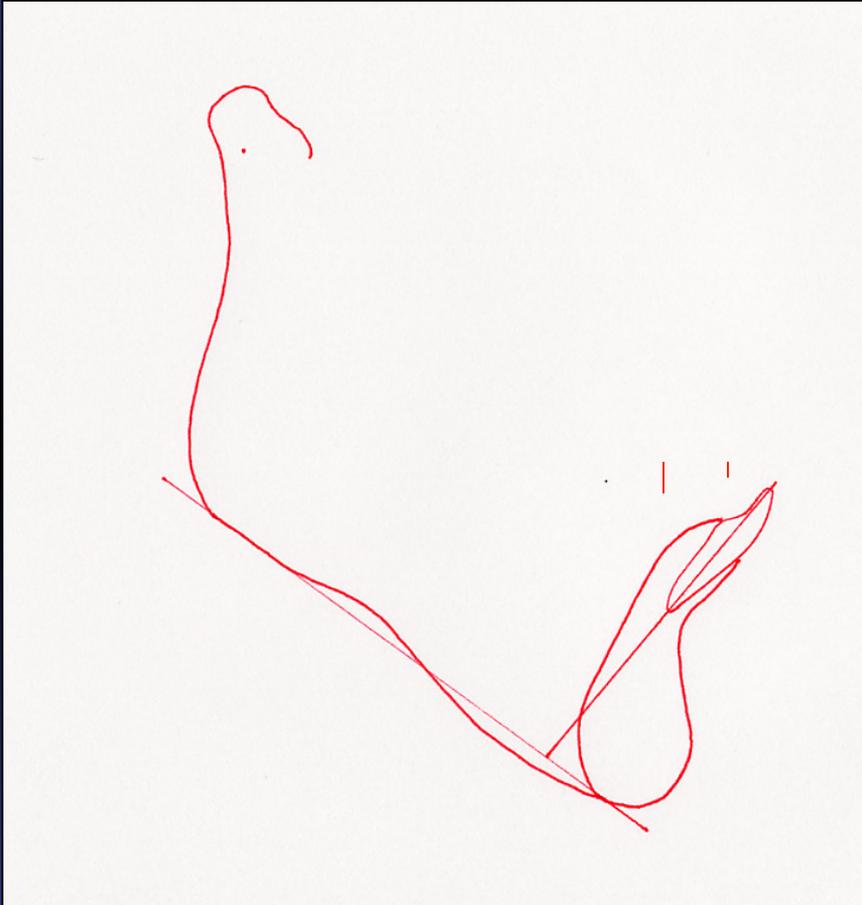
- Trace the mandible
  - Mark the center of rotation
  - Mark the incisal edge
  - Occlusal plane
  - Mesio Buccal cusp of lower 1<sup>st</sup> molar

# Maxilla and Maxillary Dentition



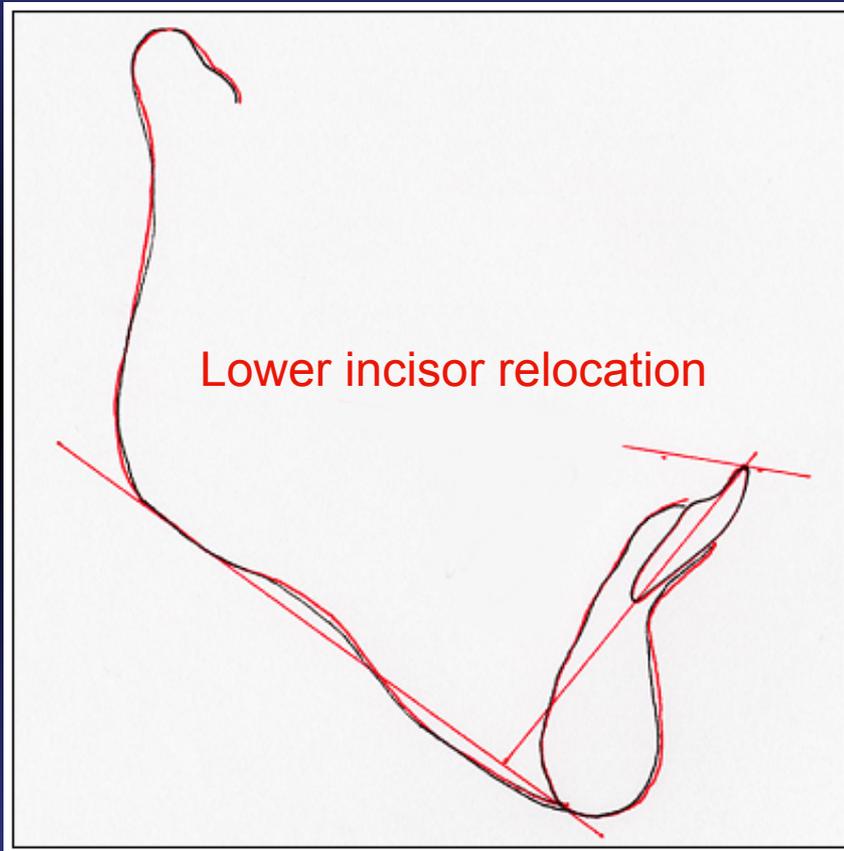
- Trace the maxilla and mark
  - Incisal edge
  - Upper lip
  - Center of rotation of upper incisor
  - Mesio Buccal cusp of upper molar

# Mandibular Dentition

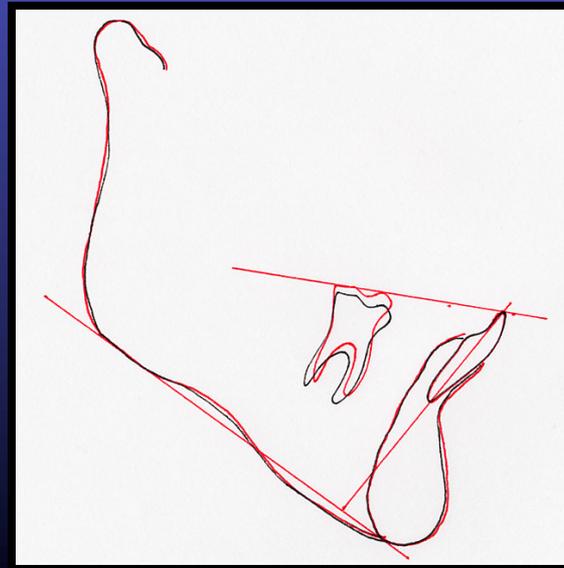


- Using the template place the incisor bodily in the center of the alveolar trough
- Place the tooth at  $90^{\circ}$  -  $95^{\circ}$  to the mandibular plane
- Do not intrude the tooth more than 3mm

# Mandibular Dentition



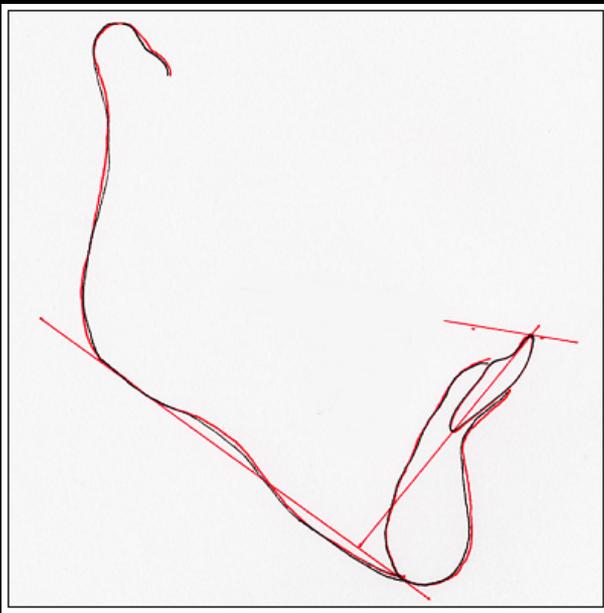
- Superimpose on the original tracing
- Calculate the change in tooth position and space requirement
- Evaluate anchorage needs



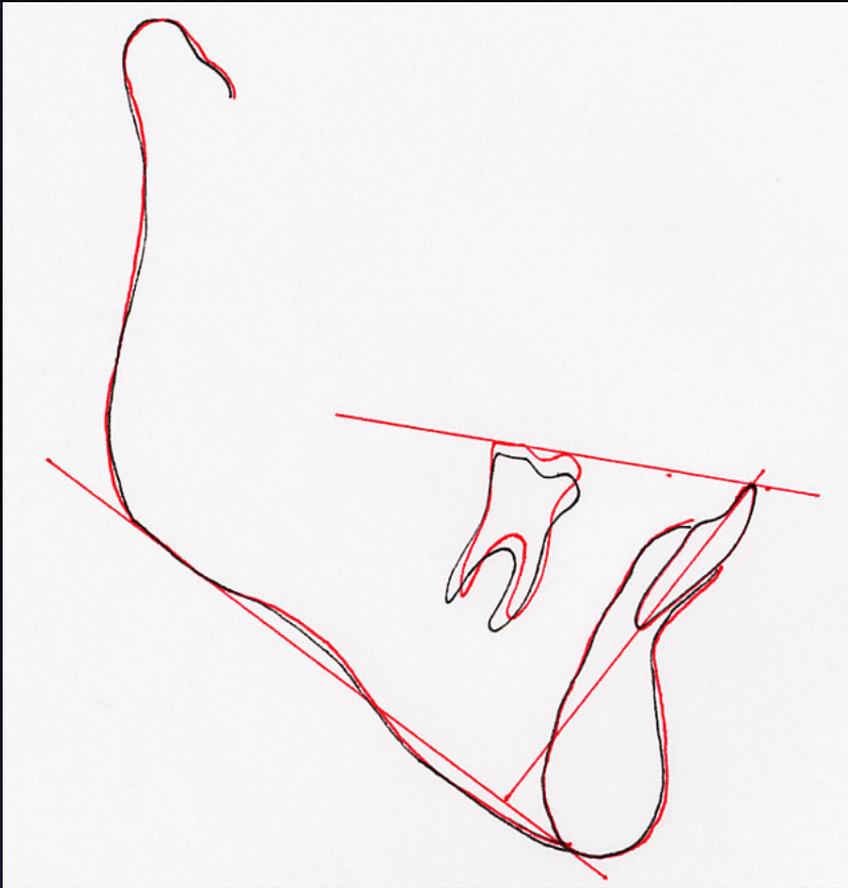
- Lower incisor crowding 6mm
- Lower incisor relocation = 0mm
- Curve of spee correction  
 $1.5\text{mm} \times 2 + 0.75 = 3.75\text{mm}$   
(Ideal - 2 lower bicuspid ext.)

### -PERIO CONSIDERATION

Space gained by 1 lower incisor ext. and strip lower 4-4 (because of poor prognosis of lower rt. 2)

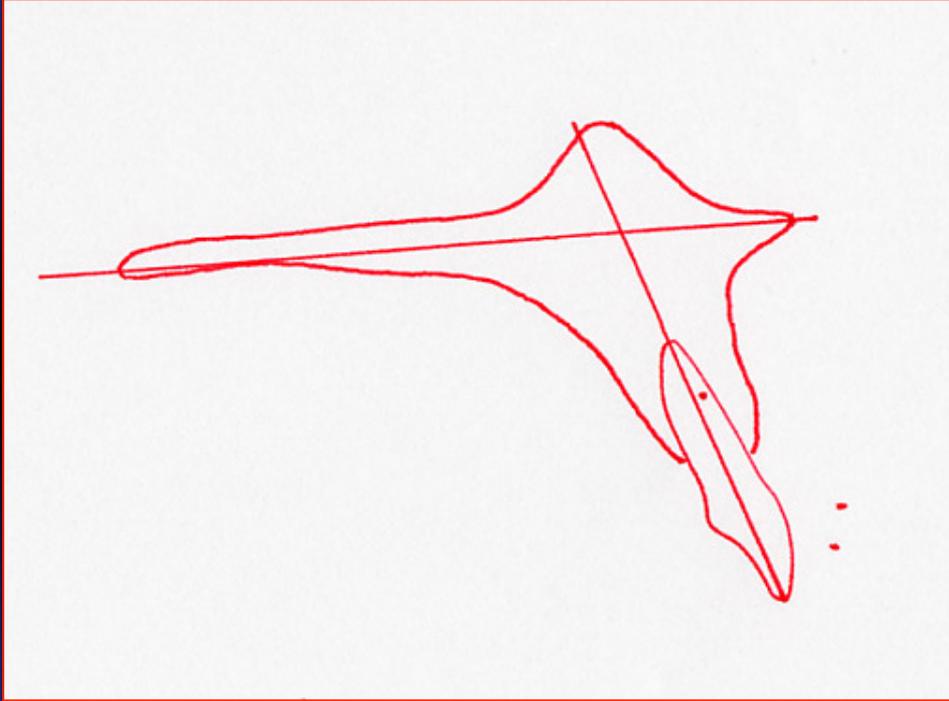


# Mandibular Dentition



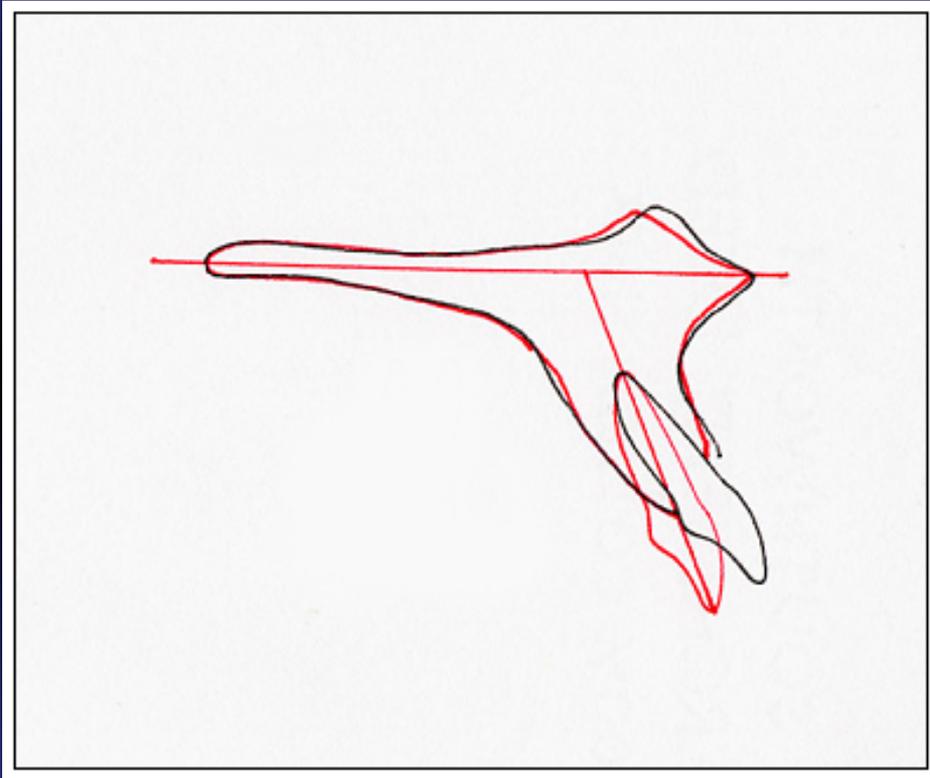
- Make adjustments for correction of curve of spee
- Redraw the molar

# Maxillary Dentition



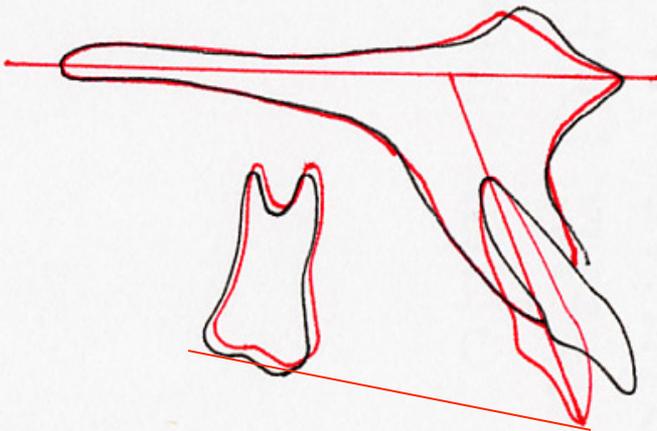
- Place the template in the center of the alveolar trough
- Rotate across the center of rotation of the tooth
- Place the tooth such that the tooth is at  $110^{\circ}$  to palatal plane
- Do not intrude the tooth more than 3mm

# Maxillary Dentition

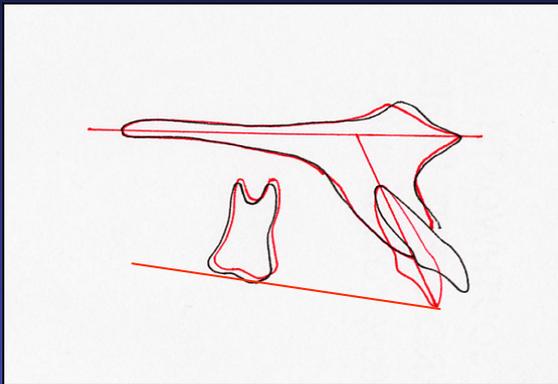
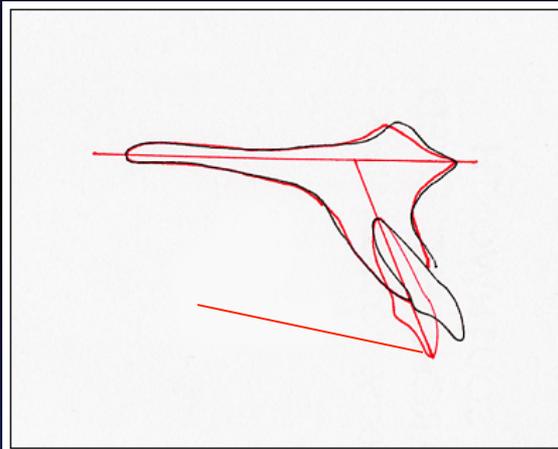


- Superimpose on the lingual aspect of the palate
- Calculate the amount and direction of movement

# Maxillary Dentition



- Draw-in the molar at the appropriate position for space management
- Do not change the existing occlusal plane by anterior tooth extrusion
- (Intrude anterior teeth, extrude posterior teeth)



- Crowding = 3mm
- Upper incisor relocation = 4mm  
(4mm x 2 = 8mm)

---

Total space  
required = 11mm

- Crossbite correction  
10mm expansion = 10mm
- Strip U 3-3 = 6mm
- Space = 16mm
- Molar adjustment 2.5 mm per side

- SURG RPE. TREAT UPPER  
ARCH NON EXTRACTION.

# Orthodontic Goals and Objectives Summary

- Mandibular arch
  - Correct mucogingival defect
  - Space gaining – Extract mandibular left lateral incisor
  - Maintain lower incisor position
  - Correct curve of spee
  - Anchorage requirements - Maximum
- Maxillary incisors
  - Space gaining - Surgical assisted expansion
  - Retract maxillary incisors - 4mm
  - Strip maxillary 3-3 to compensate for tooth mass
  - Anchorage requirements - Maximum

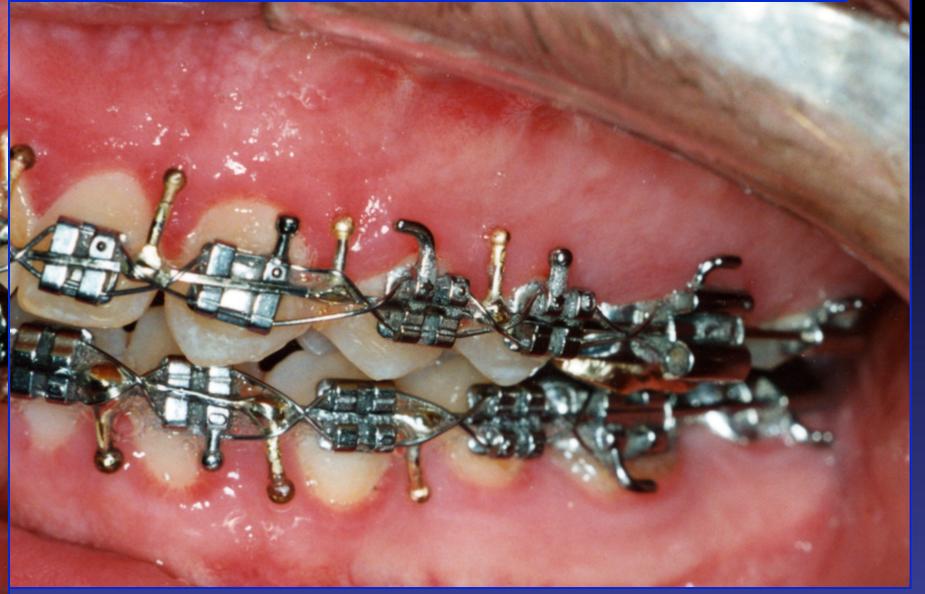
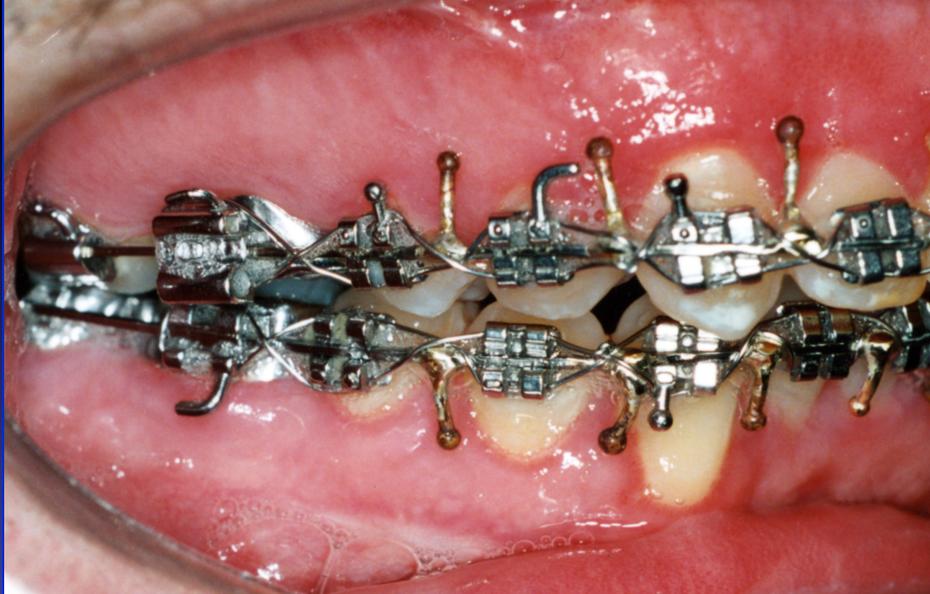




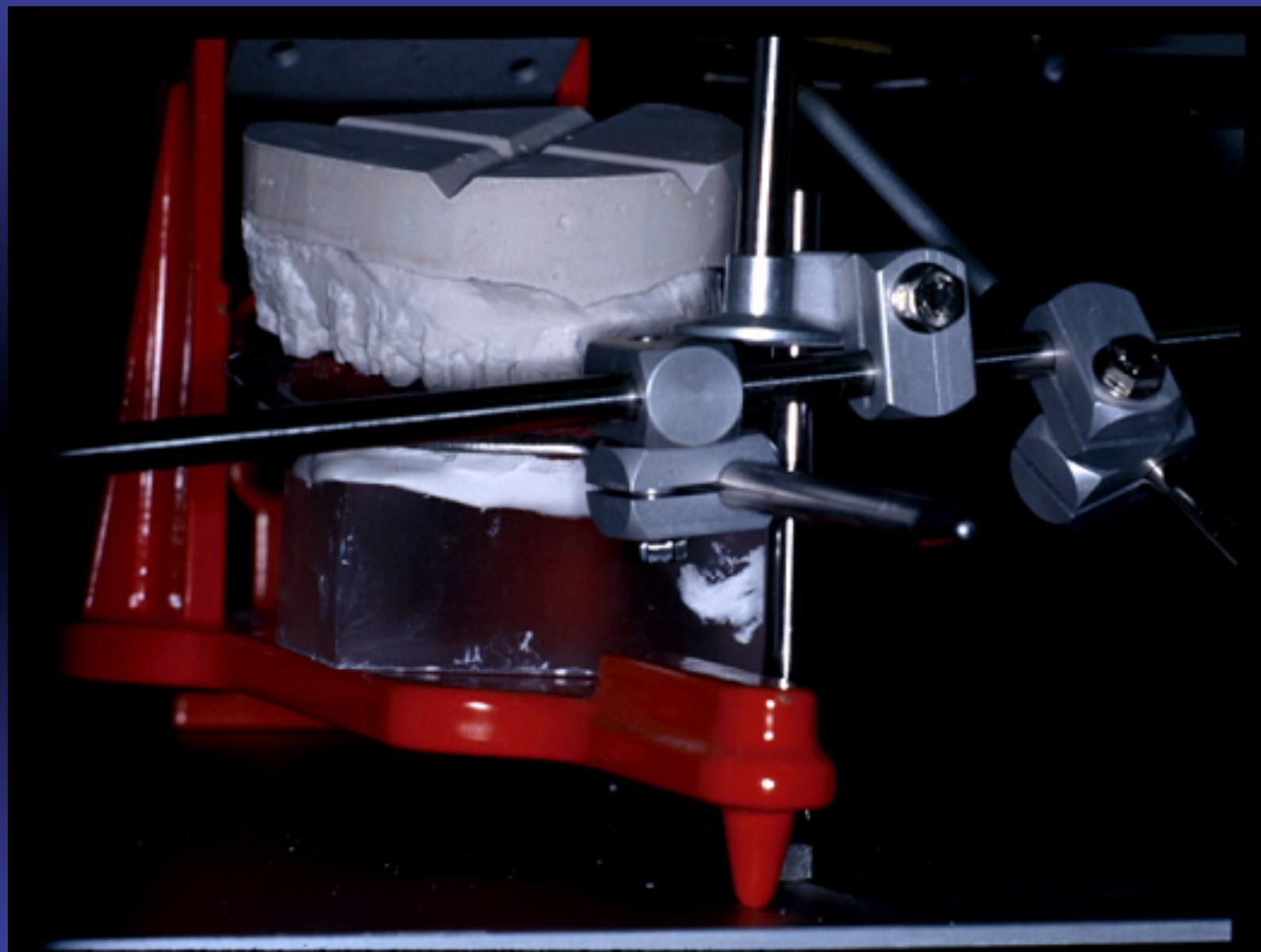




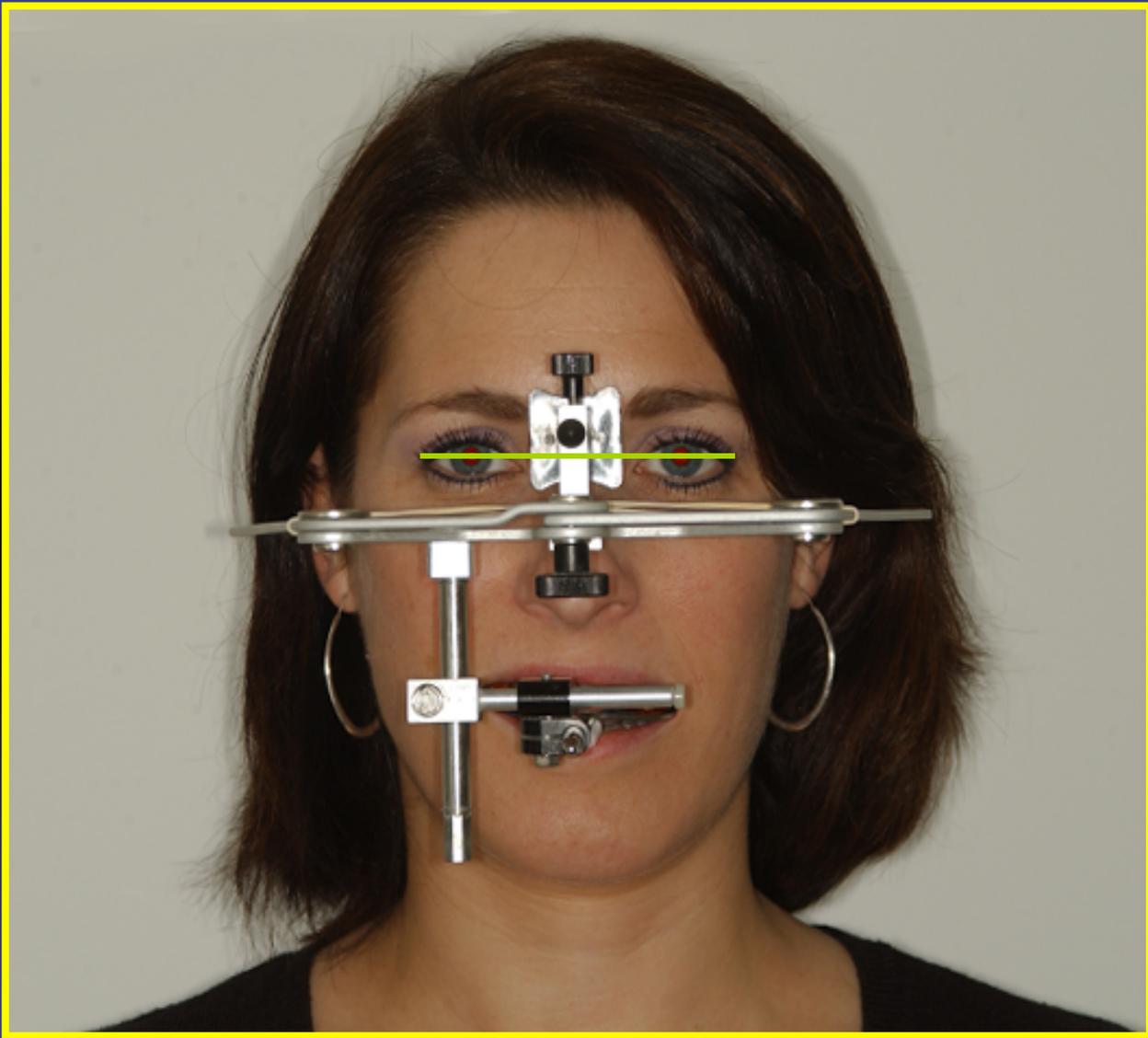




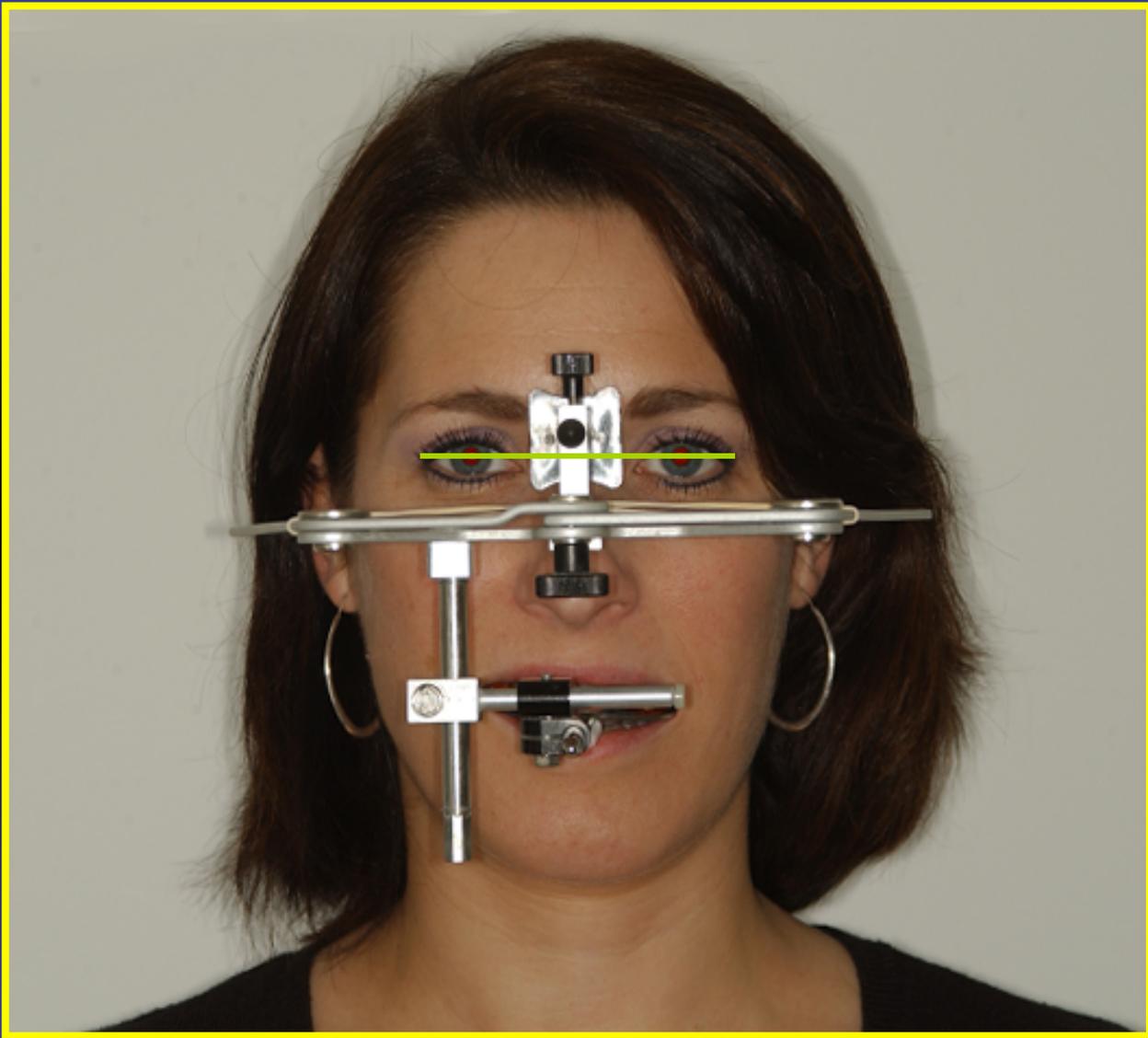
# Pre-surgical Records Mounted Models And Radiographs







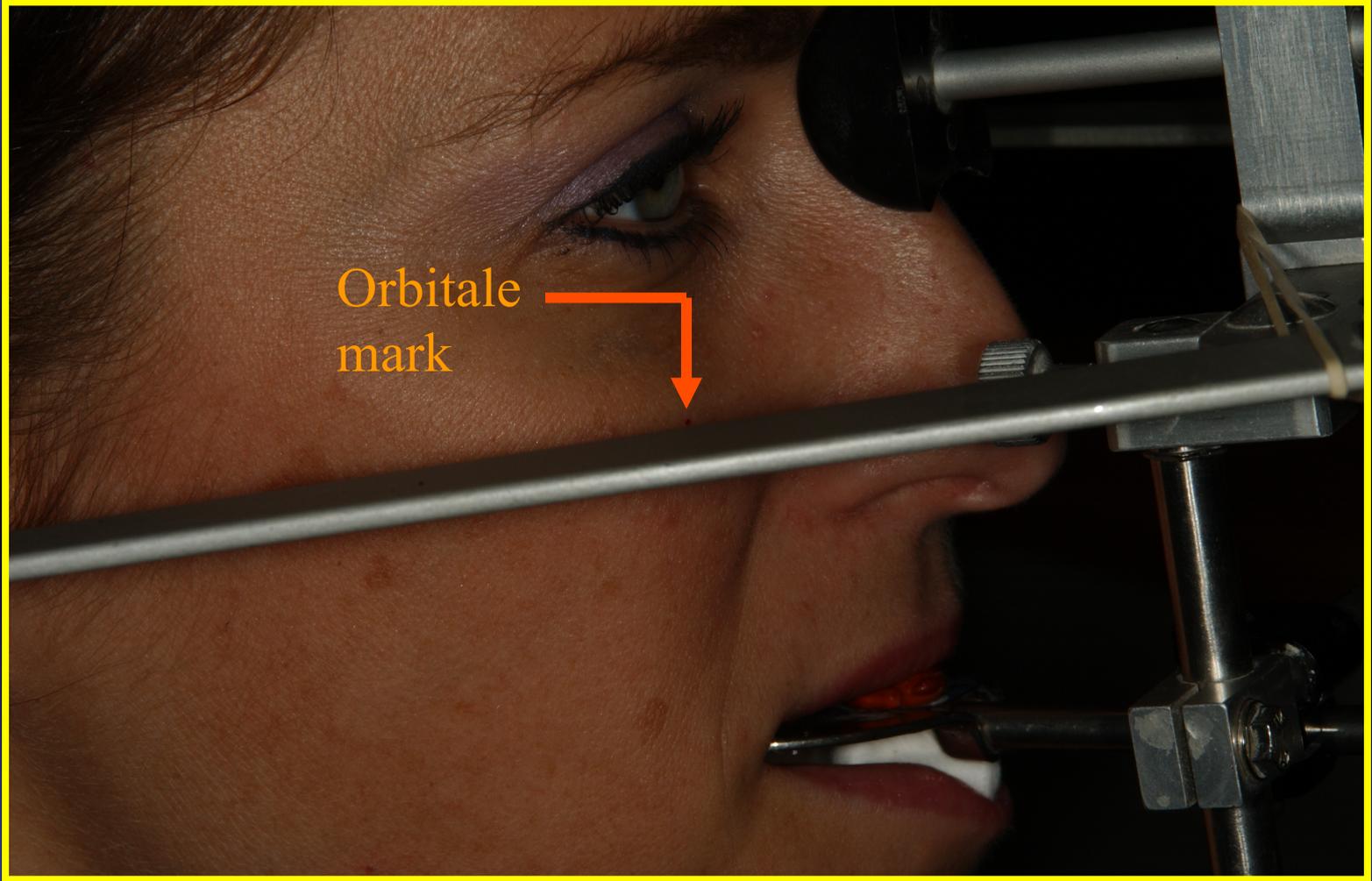






Axis mark

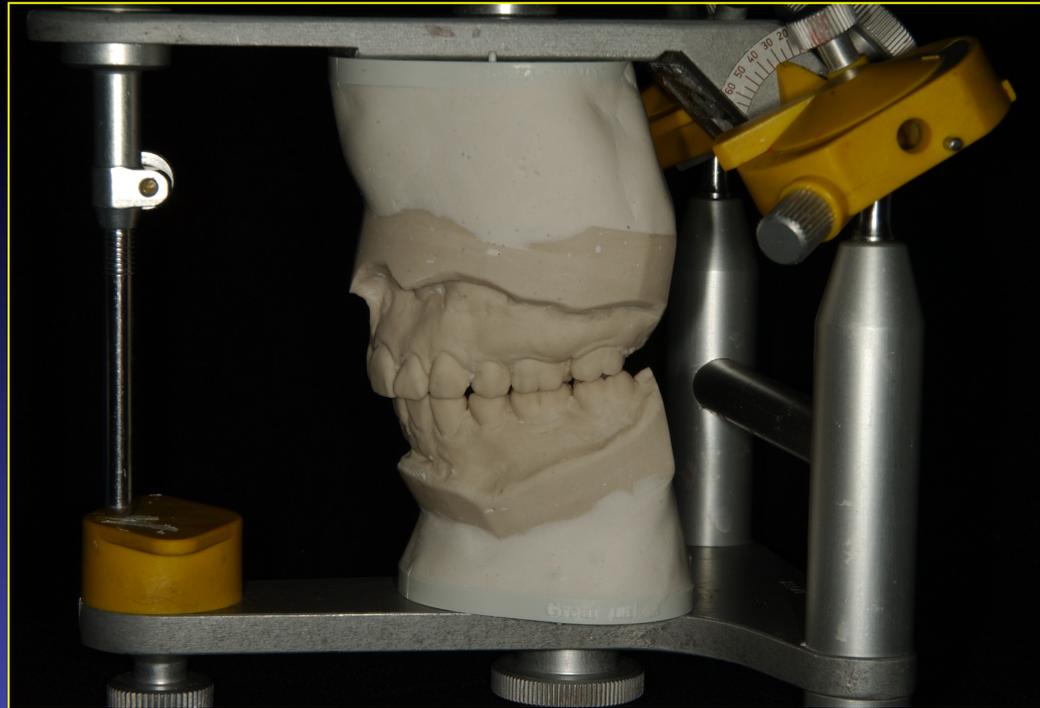
Note ear rod is  
out of the ear

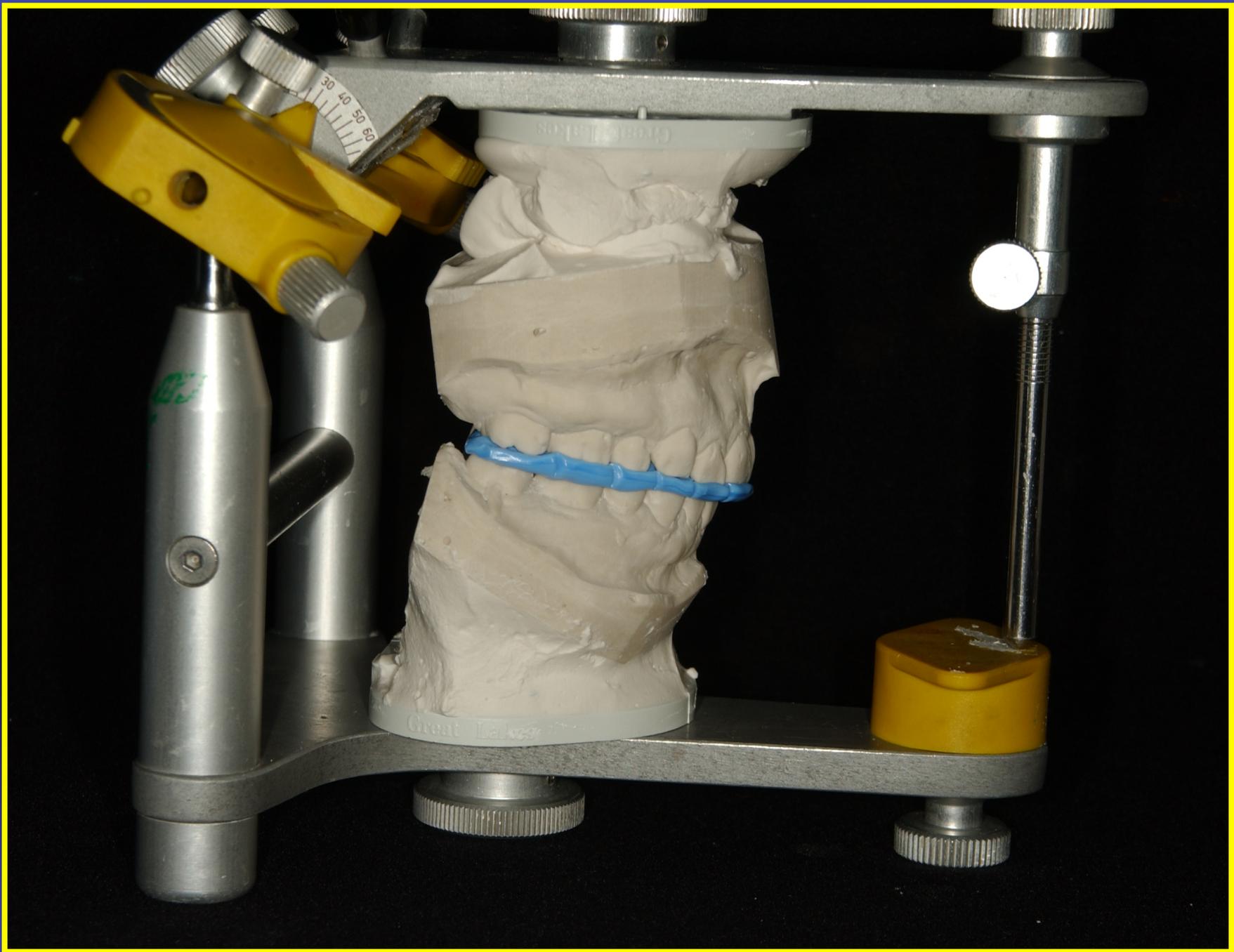


Orbitale  
mark



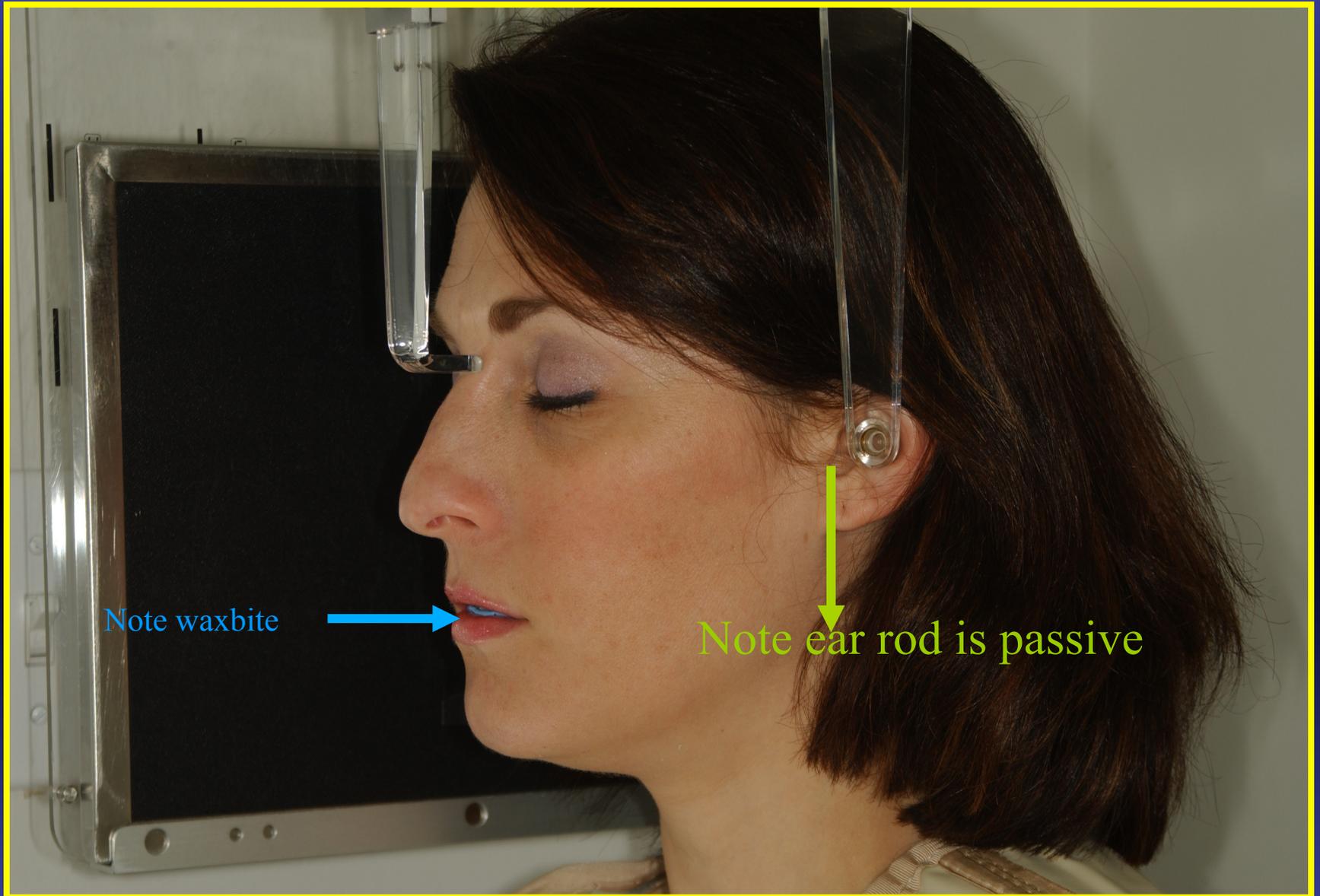




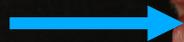




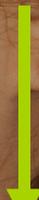




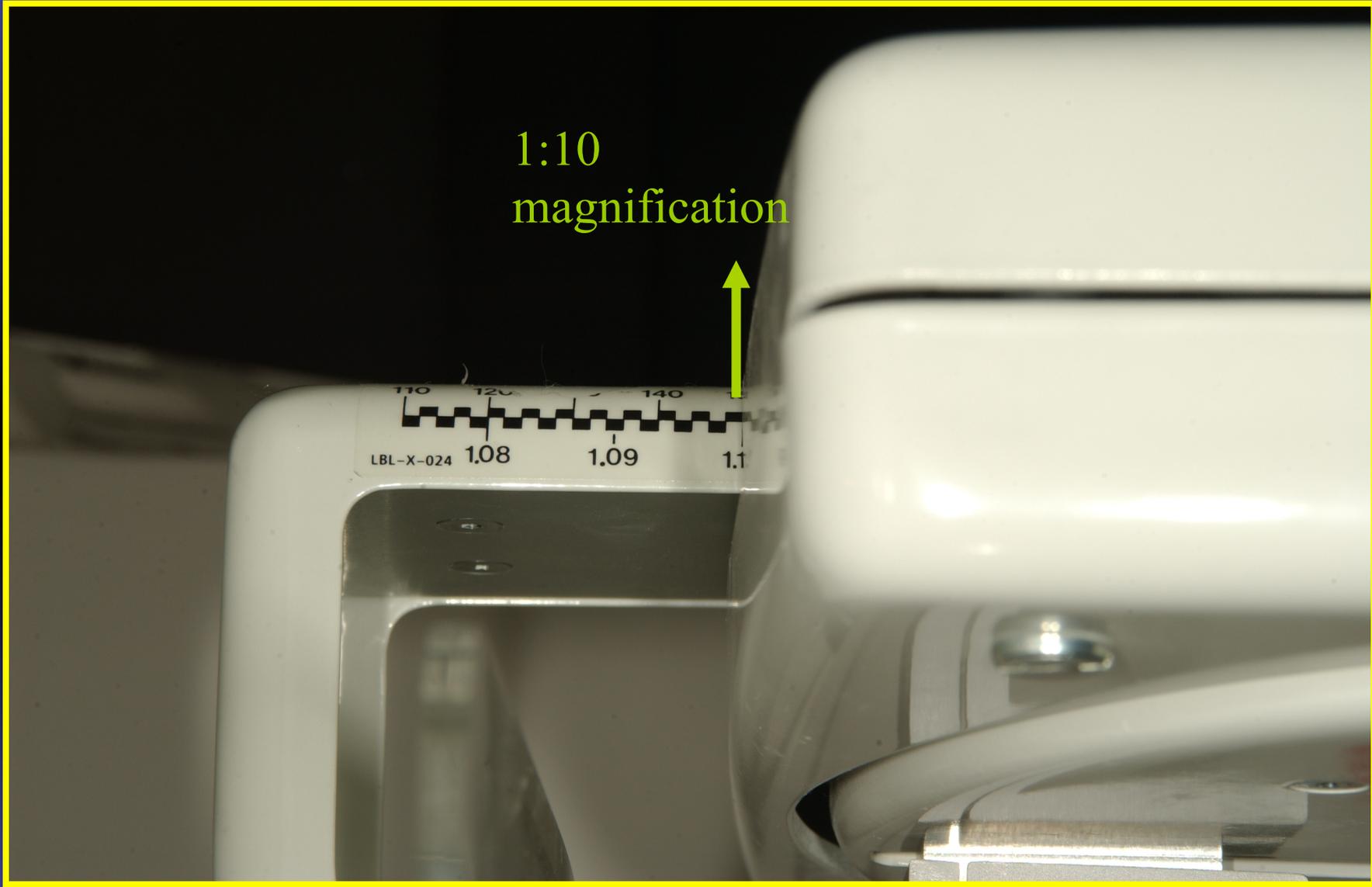
Note waxbite

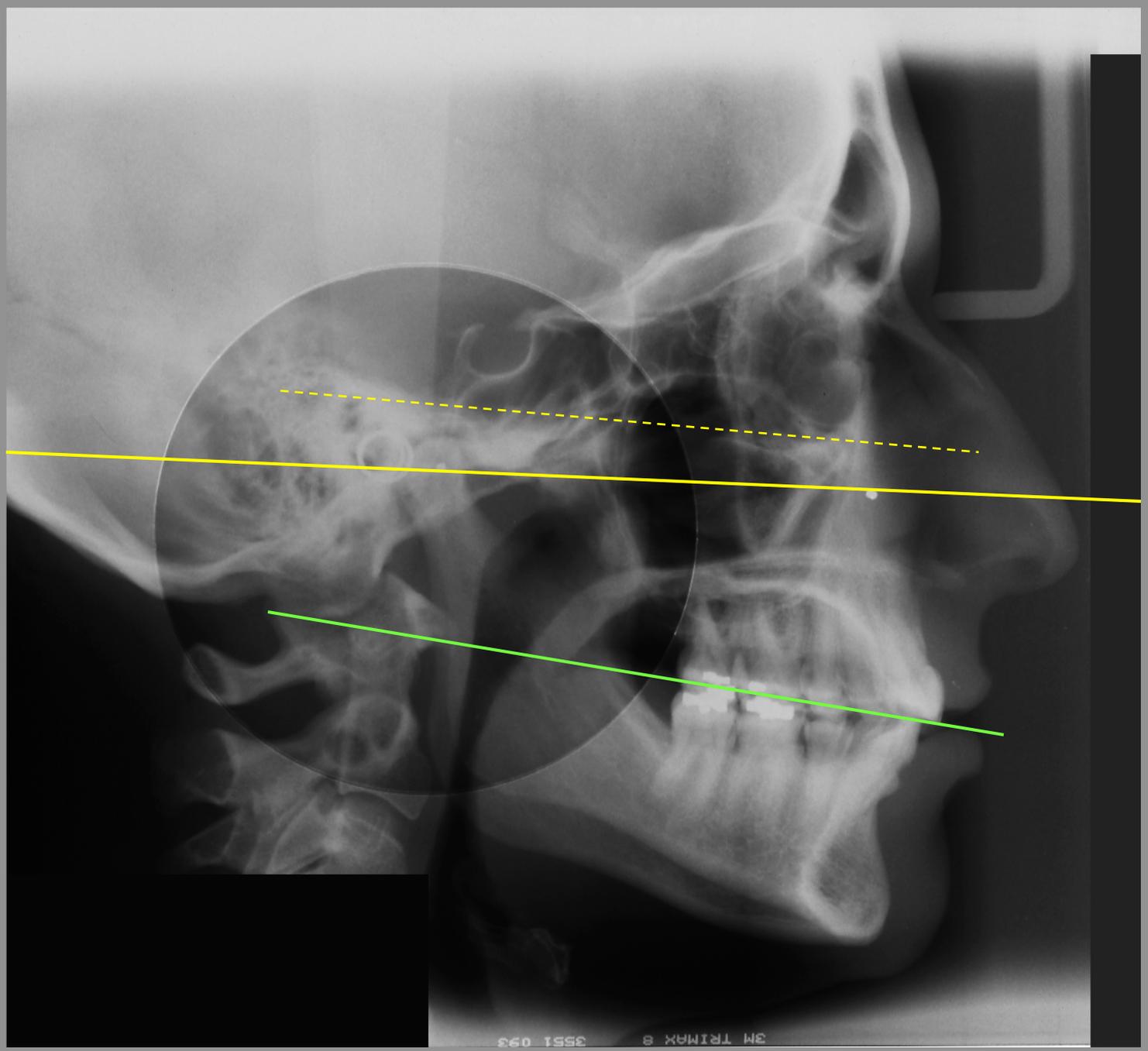


Note ear rod is passive



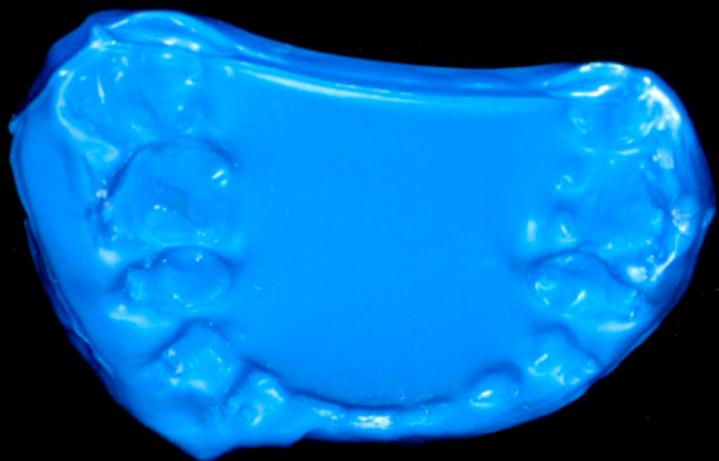
1:10  
magnification







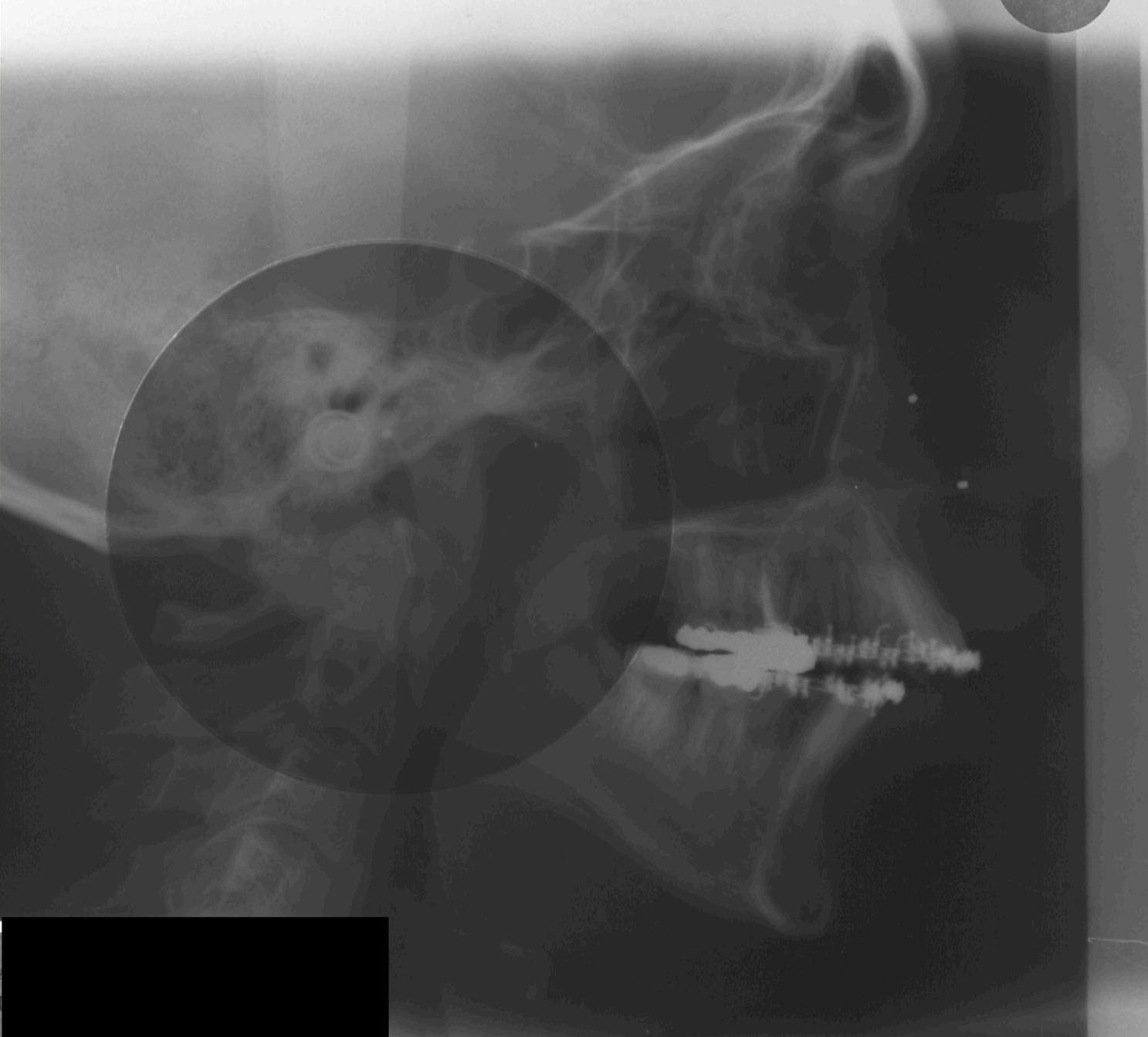




KODAK TMGZRA D

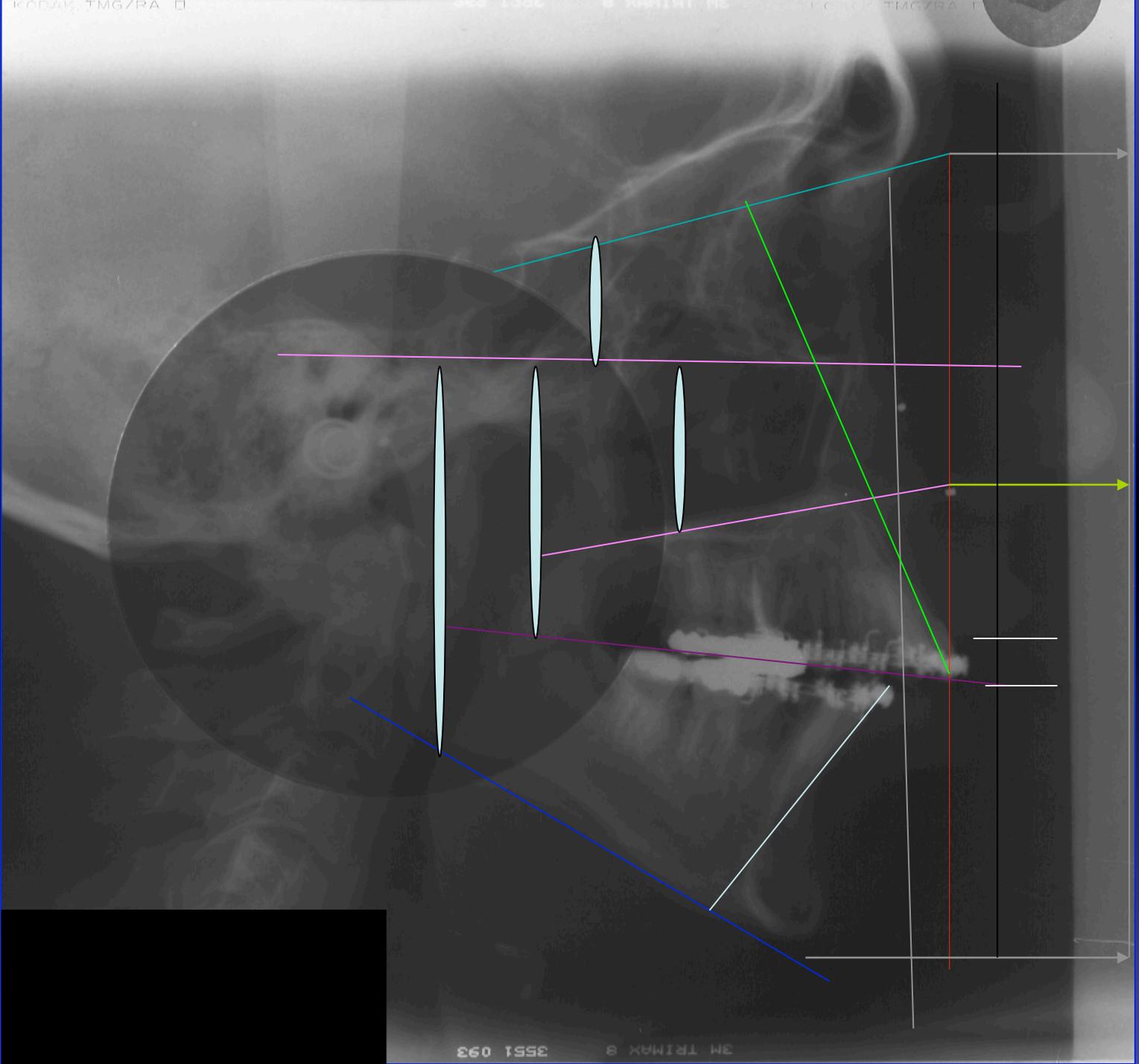
3M TRIMAX 9

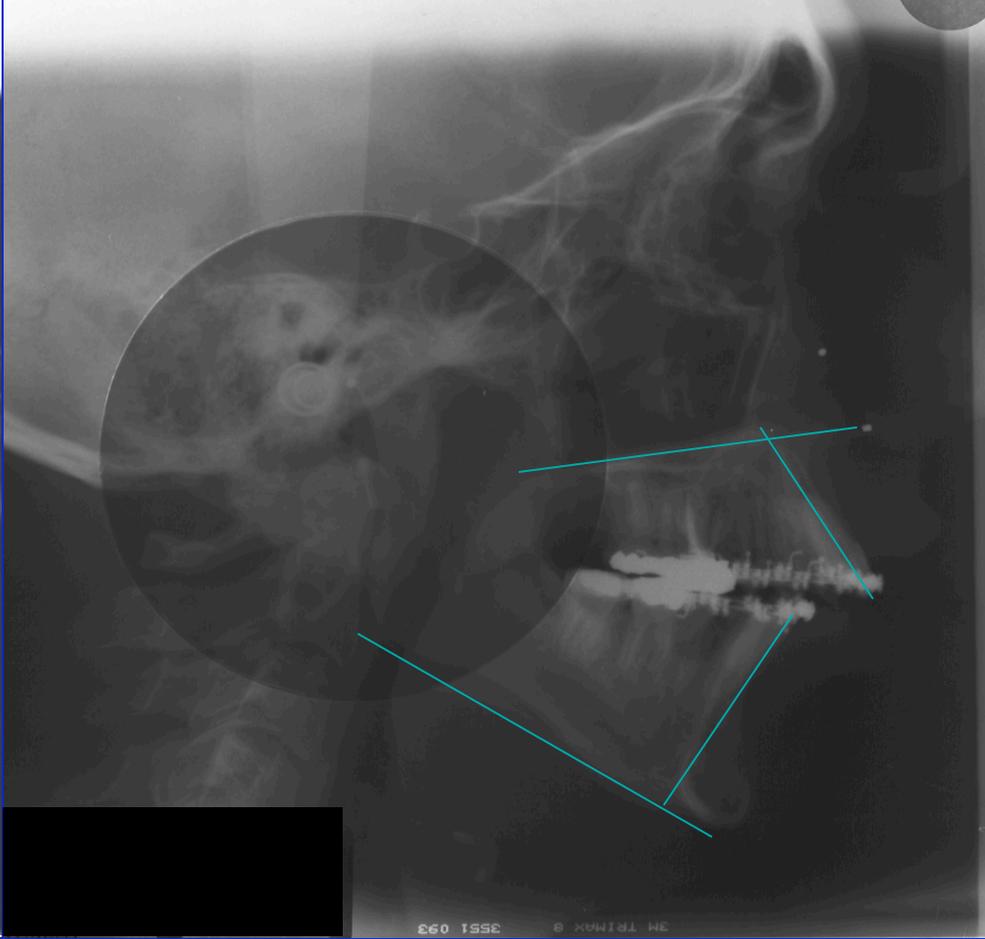
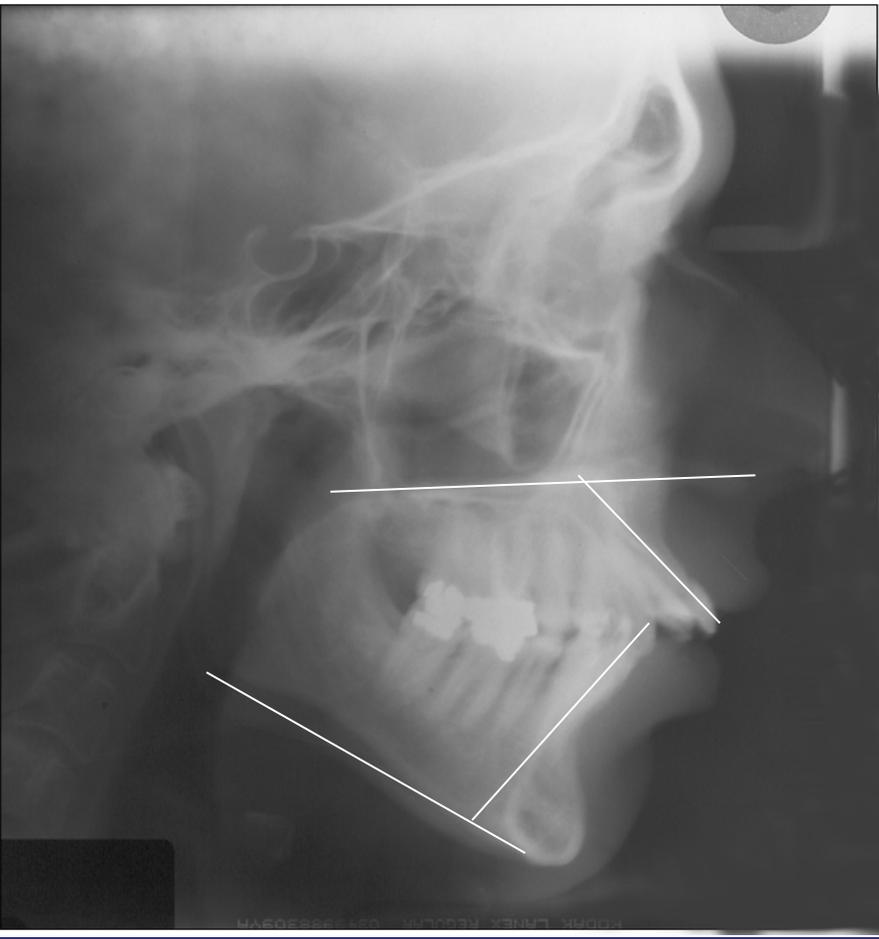
3551 093



3M TRIMAX 9

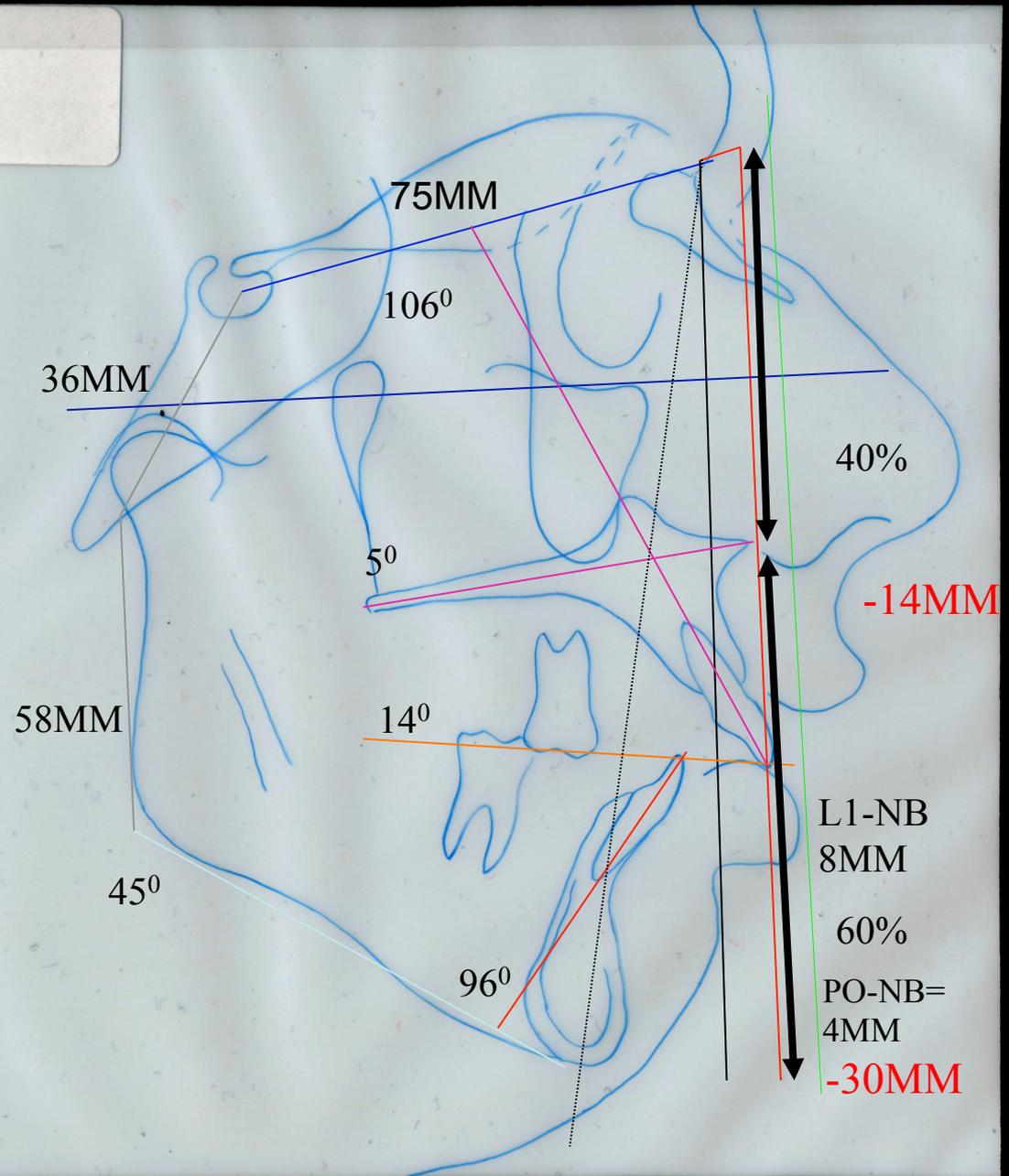
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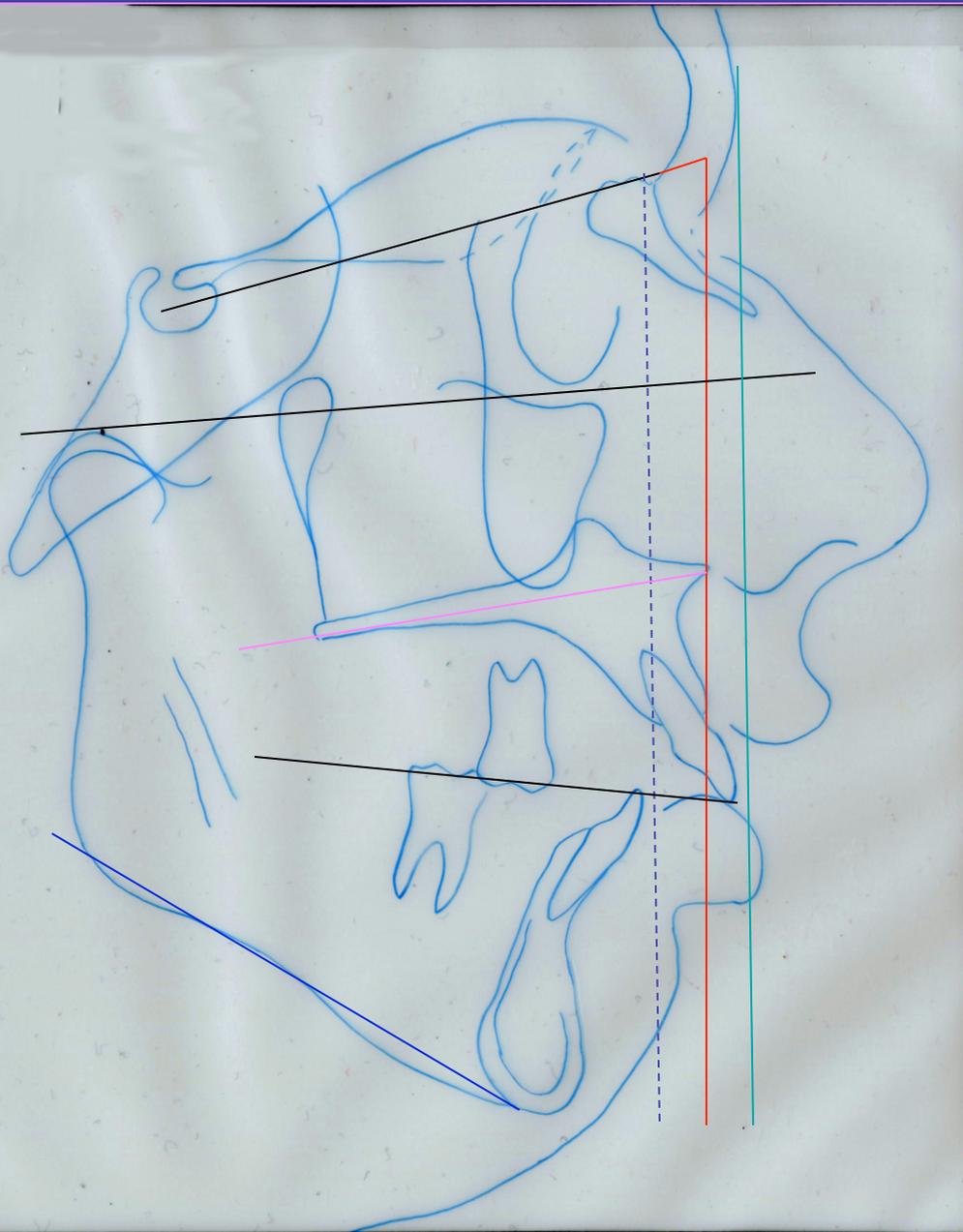
3M TRIMAX 9 3551 093

CANDIDATE # 88128  
 CASE REPORT # 6  
 DATE OF RECORDS 5-6-95  
 PATIENT AGE 25-9  
 STAGE OF TREATMENT



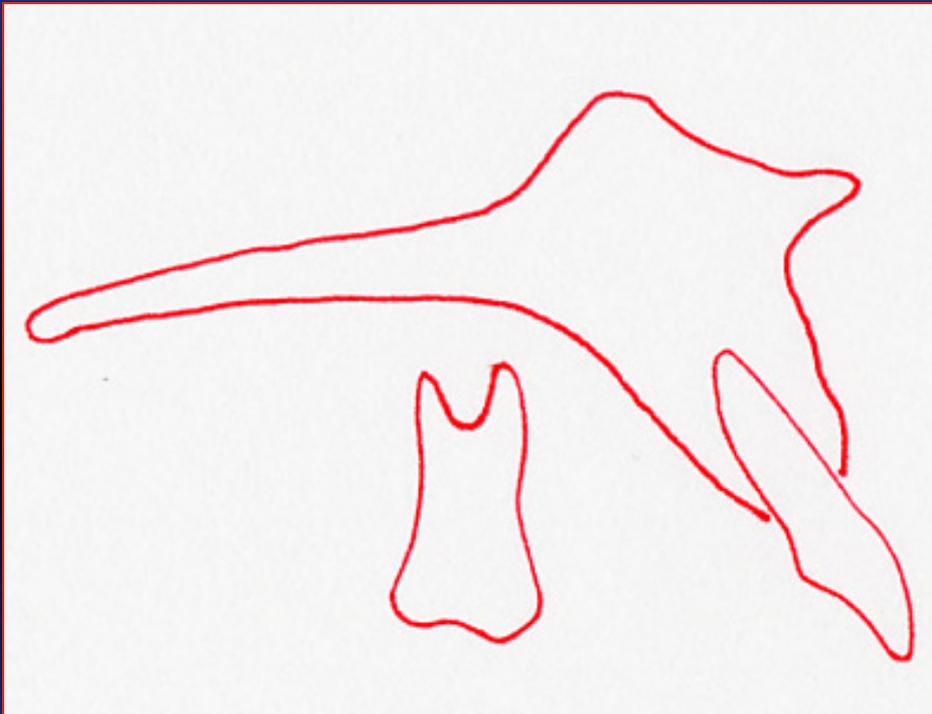
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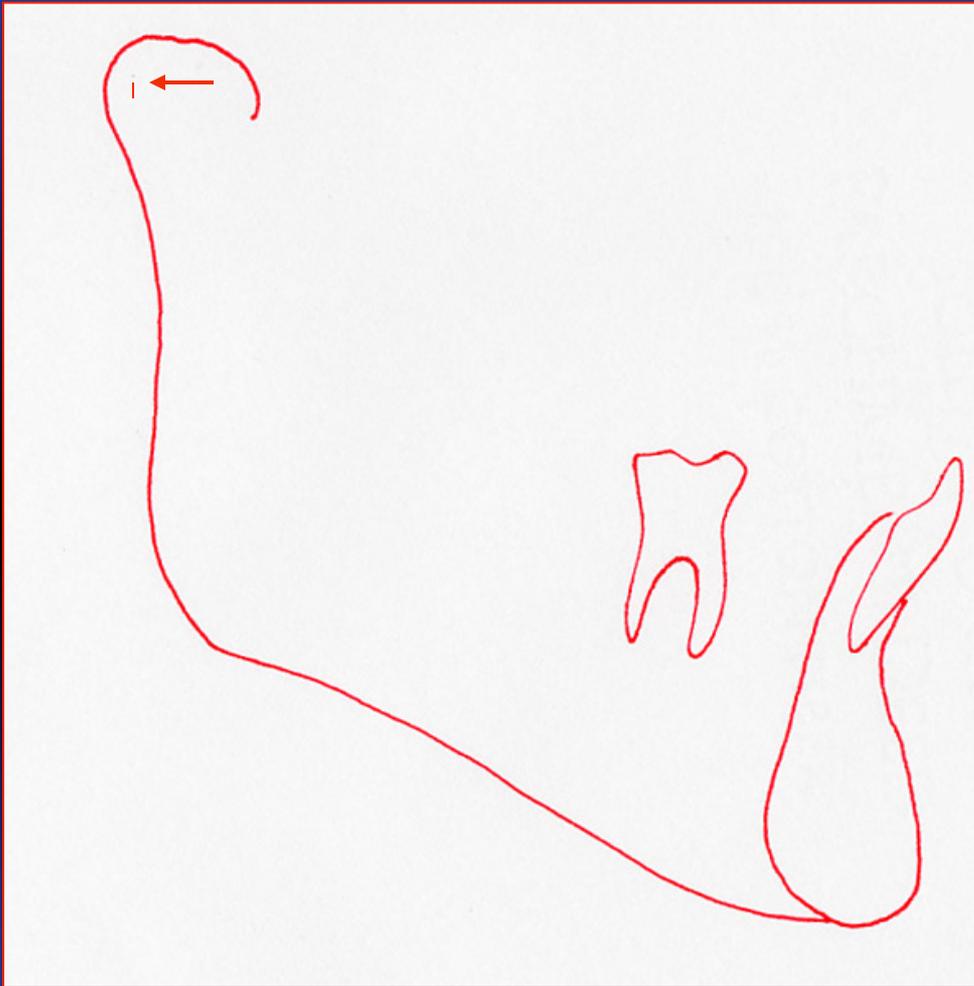
- Draw Sella-Nasion
- Frankfort horizontal plane
- Palatal plane (ANS – PNS)
- Occlusal plane
- Mandibular plane
- True facial axis to corrected cranial base
- Glabella perpendicular

# Maxilla



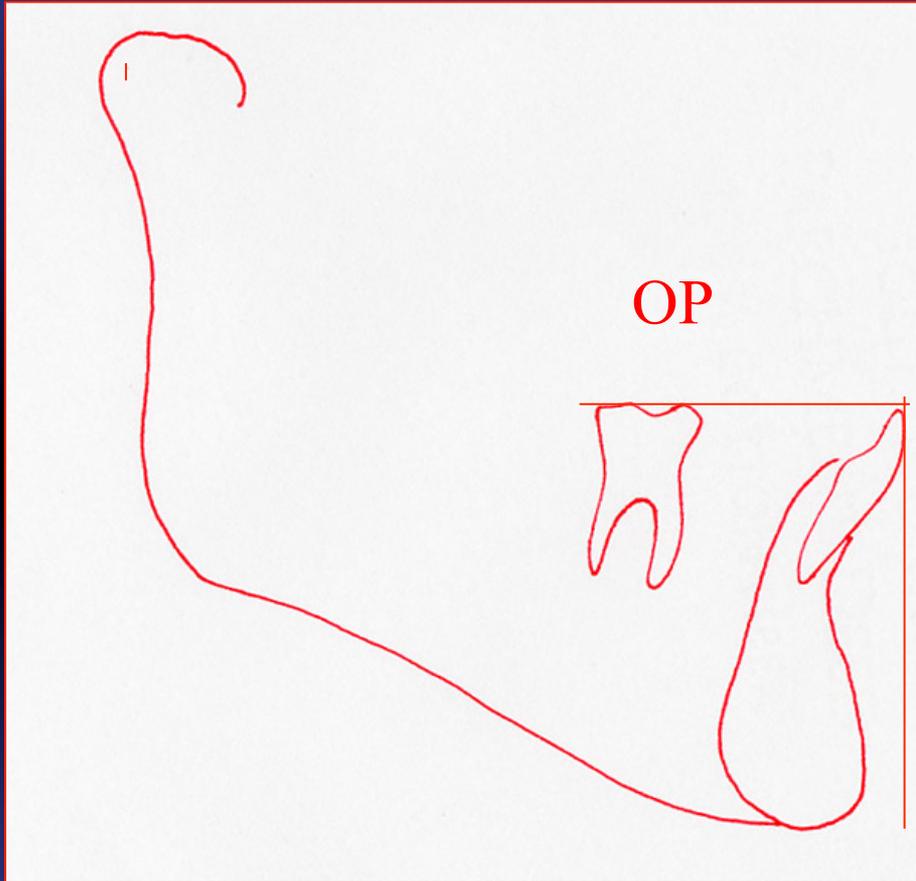
- Trace the maxilla
- Trace the maxillary incisor and molar

# Mandible



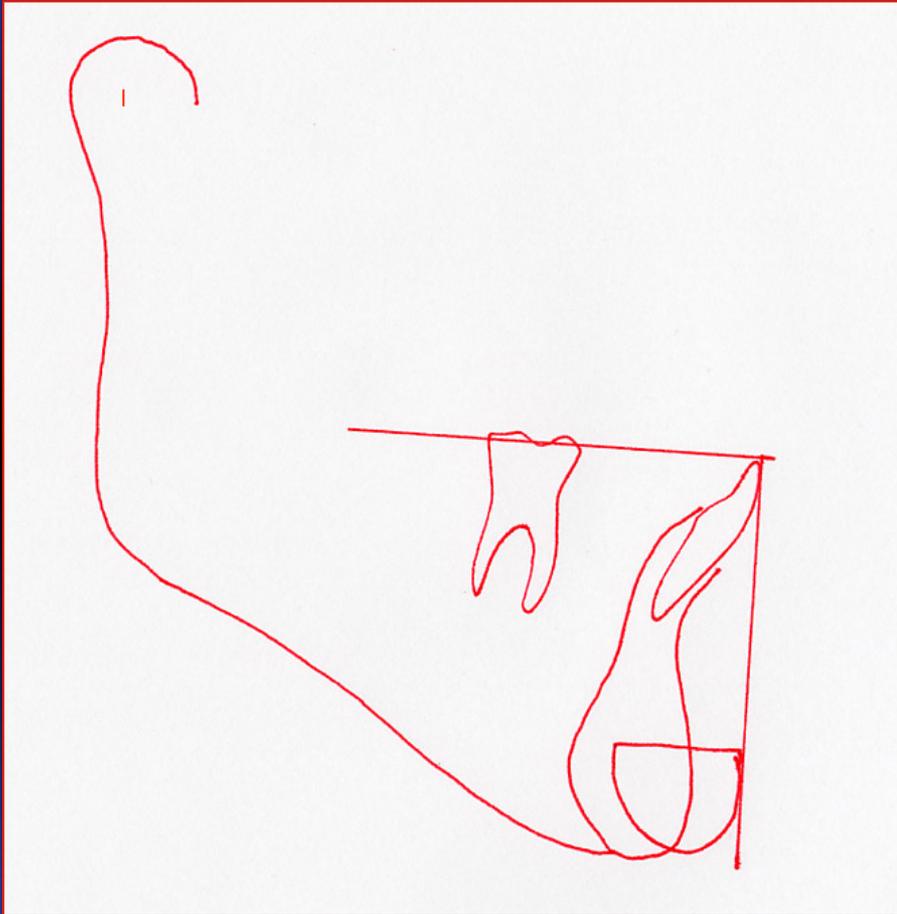
- Trace mandible
  - Body
  - Ramus and
  - Condyle
- Trace mandibular incisor and the first molar
- Mark the true hinge axis

# Mandible and Chin

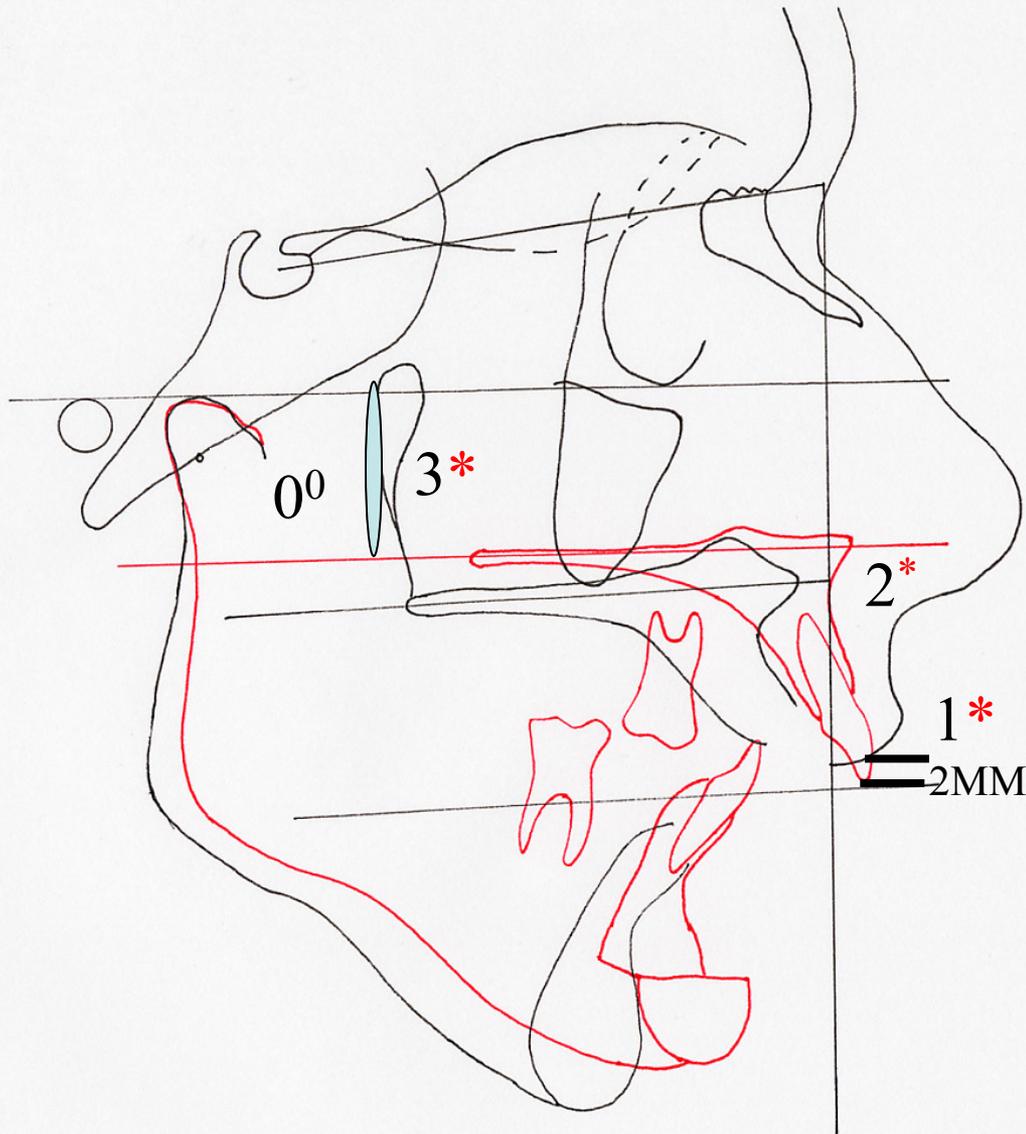


- On the tracing of the mandible
  - Construct occlusal plane
  - Draw a line perpendicular to the occlusal plane passing through the labial aspect of the incisor

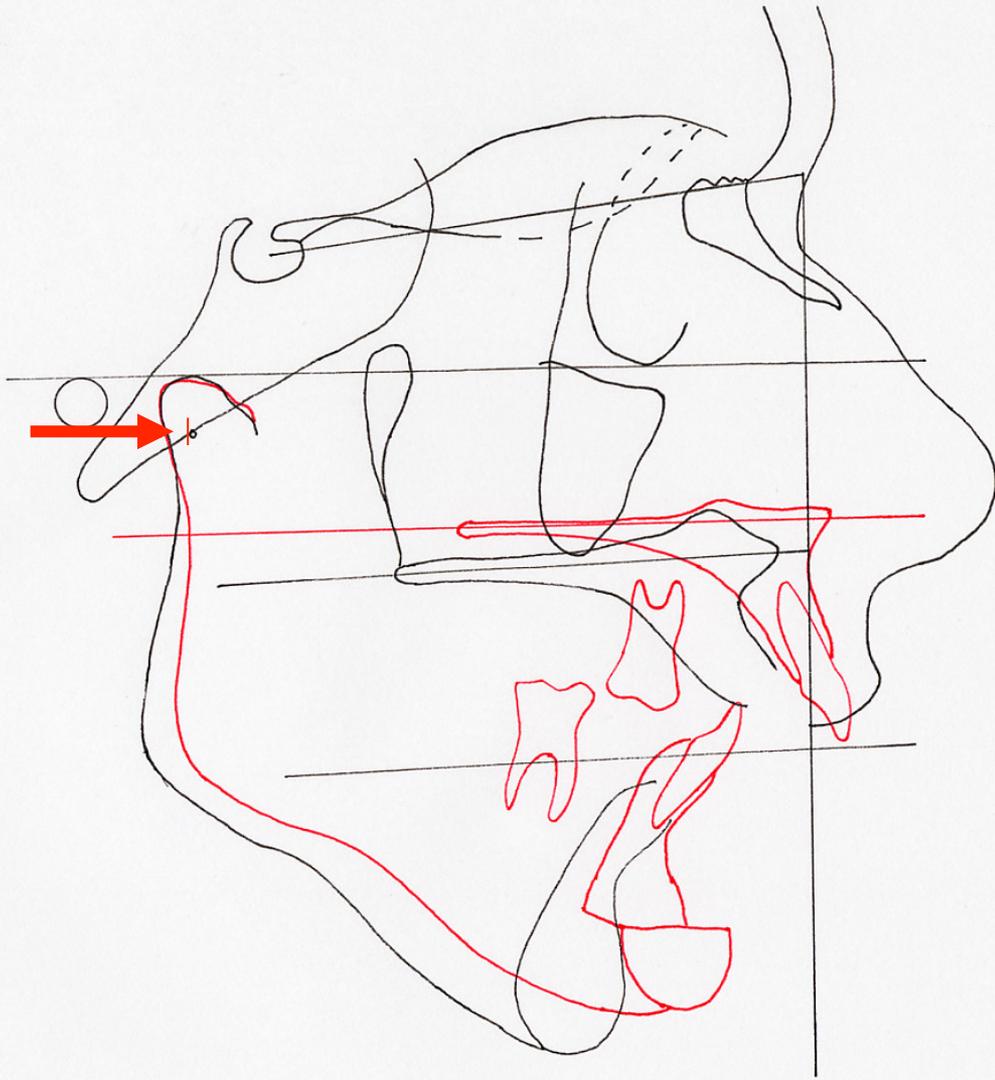
# Mandible and Chin



- Move the chin to this plane
- This approximately gives a 1:1 Holdaway ratio
- Adjust the vertical such that the distance from the incisal edge to menton is 47mm(F) 53mm (M)



- Place the red tracing of the maxilla on the main tracing
  - Align the incisal edge to be 2mm below the upper lip
  - Align 'A' point on the true facial plane (N perp FH)
  - Rotate 'PNS' such that the palatal plane is parallel to the FH.& secure tracing

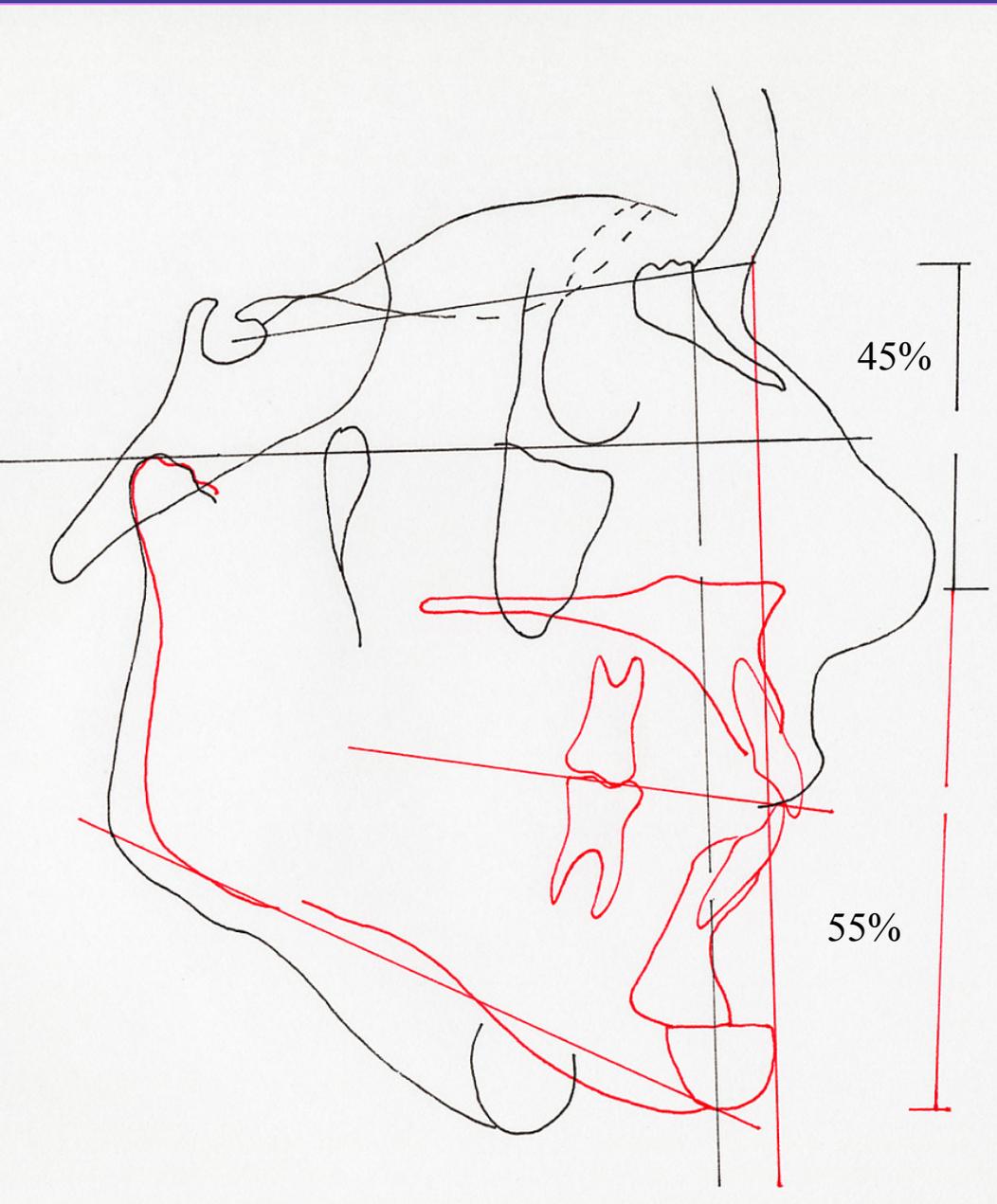


- Pivot on the true hinge axis, and
- Autorotate the mandible until there is a first point of contact

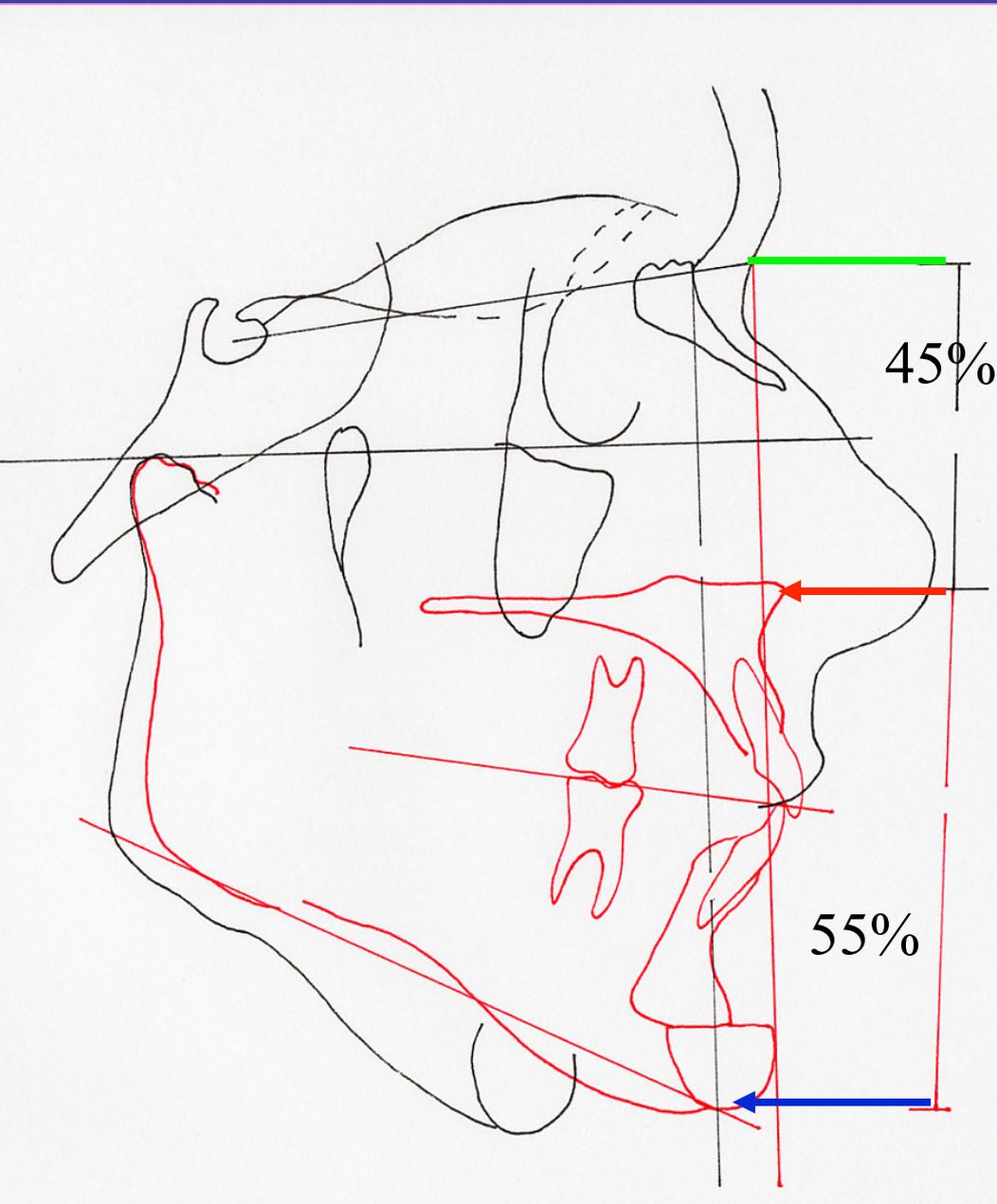


## At first point of contact

- There should be at least 2mm of vertical overlap at the incisors. If this is not present, impact the maxilla at the expense of the occlusal plane or consider doing a total alveolar osteotomy

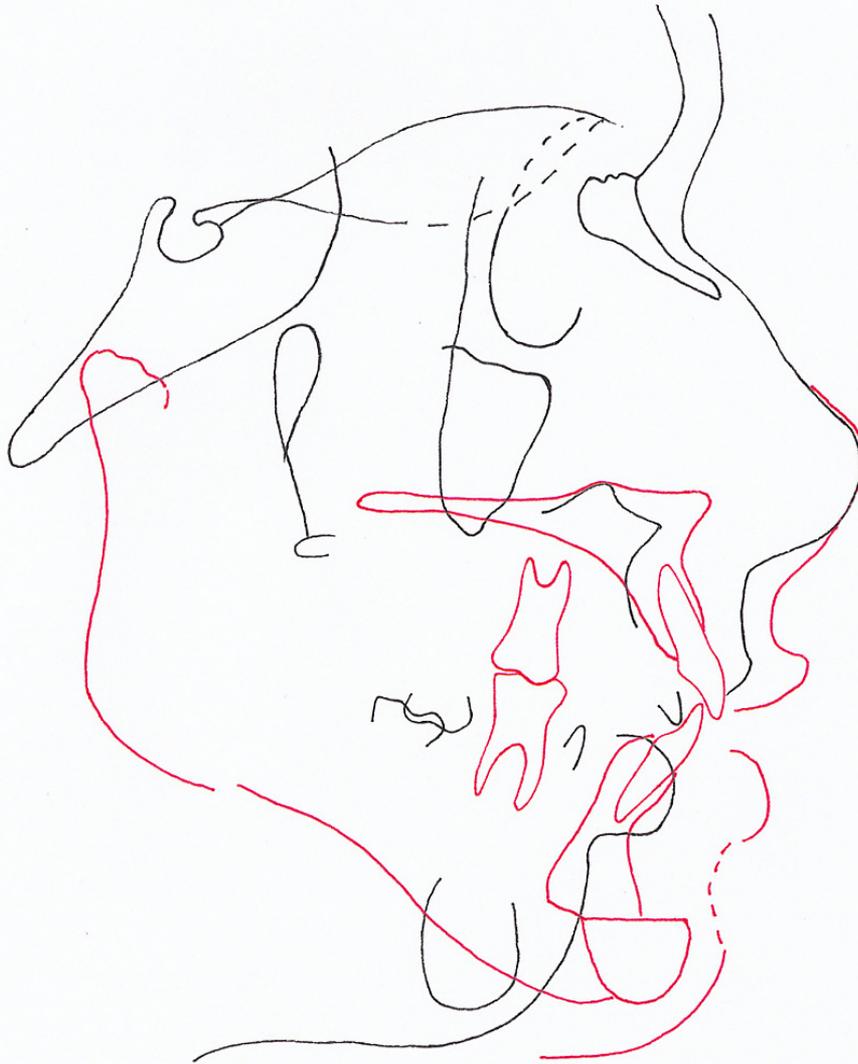


- Advance the mandible along the new maxillary occlusal plane, to a position of ideal overjet and overbite.
- The molars and cuspids should be Class I and there should be good interdigitation of teeth.



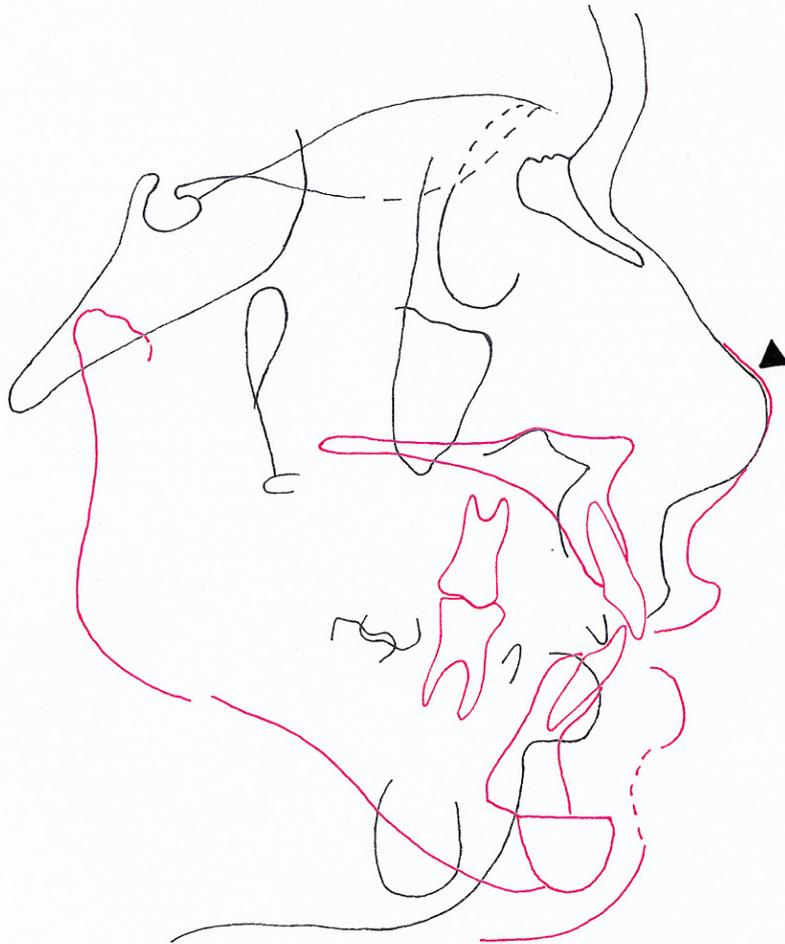
- Check the vertical facial height
  - Adjust the facial height to be in proportion by moving the chin in the appropriate direction as required
  - To calculate lower facial height:  
Upper facial height x 2 divided by 9, this value is to be added to the upper facial height to get value of the new lower facial height

# Soft Tissue



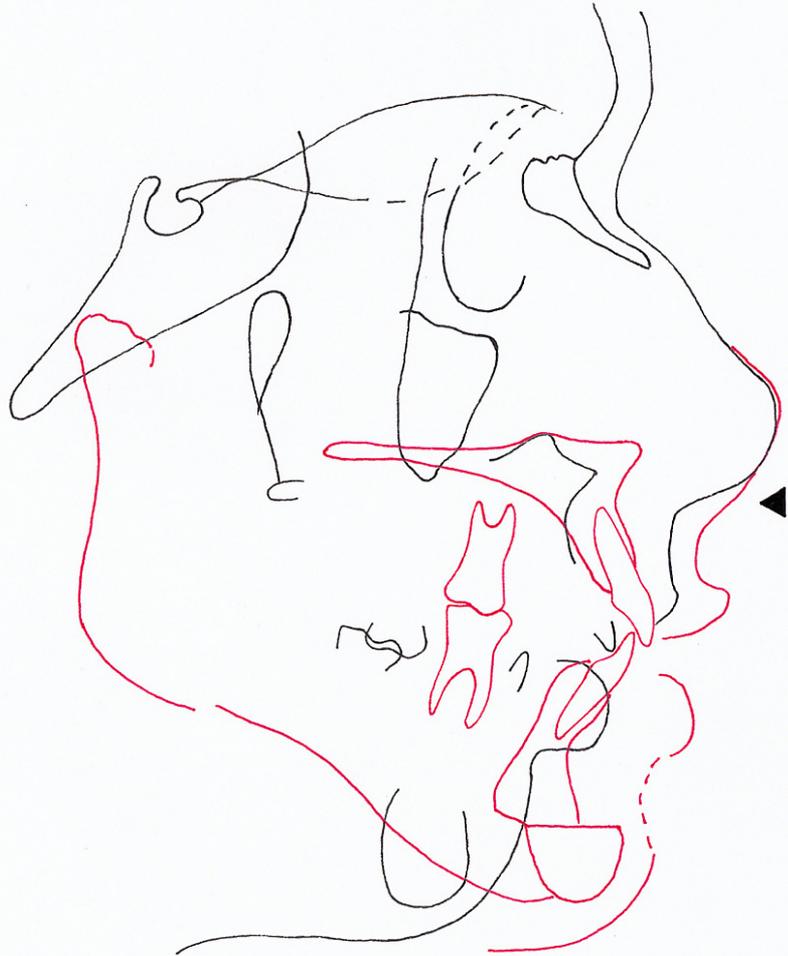
- Draw the soft tissue using the following hard to soft tissue ratios

# Nose Tip



- Nasal tip goes up 1mm for every 5mm of maxillary impaction

# Subnasale



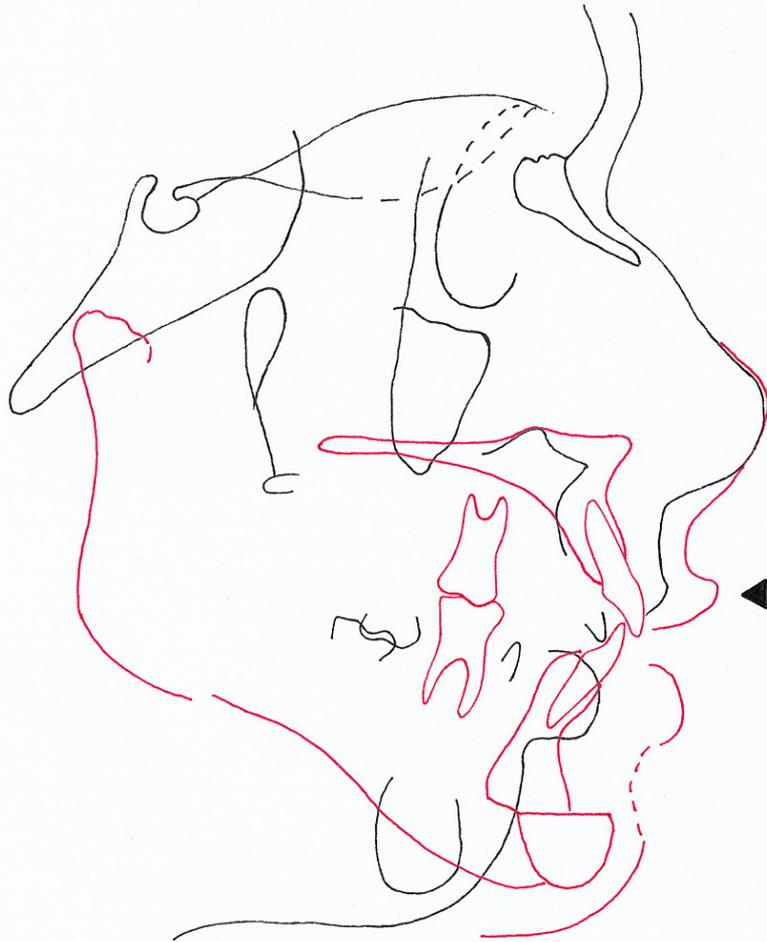
- Subnasale moves forward in a ratio of 1 : 0.3mm to ANS
- ie - For every 1mm ANS moves forward Subnasale moves forward 0.3MM
- Predictability  $r^2 = .06$

# Soft Tissue 'A' Point



- Advances 0.5mm for every 1mm of hard tissue 'A' point advancement

# Upper Lip



- Advances 0.67mm for every 1mm of upper incisor advancement
- Upper lip shortens **20%-30%** vertically
- 20%-30% the distance maxilla goes up

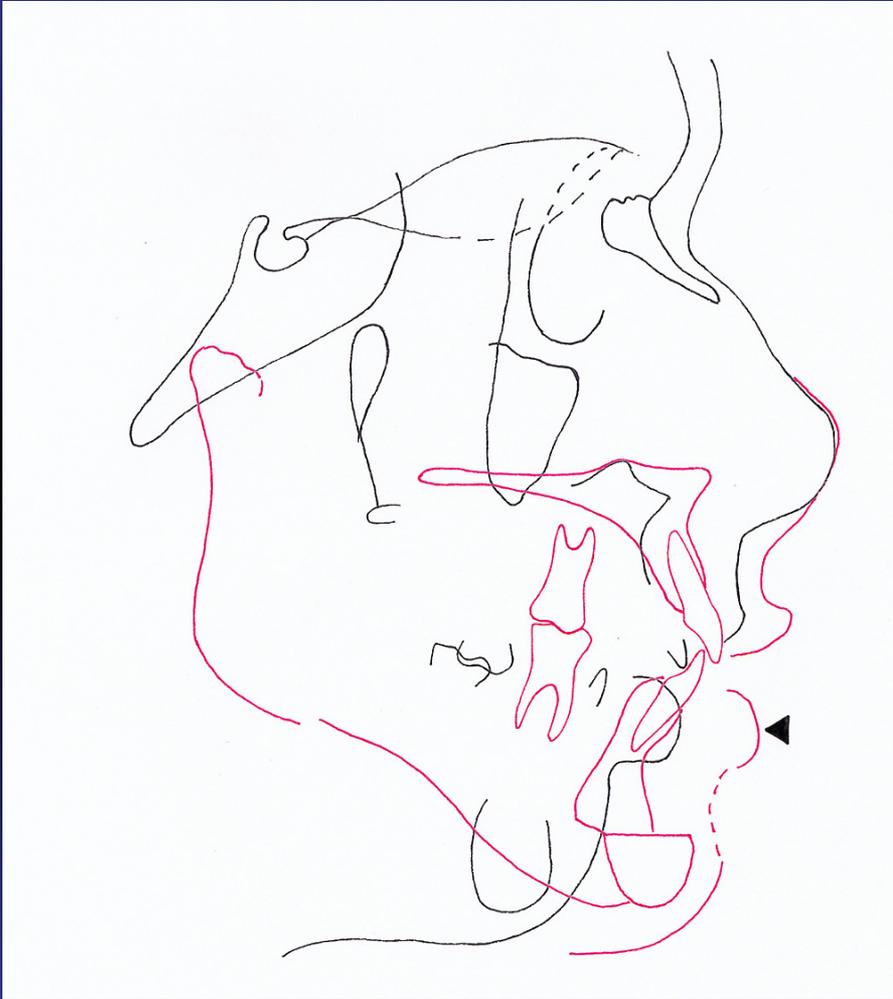
# VERTICAL POSITION OF INCISOR

## EPKER AND FISH

$$X = \frac{Y-3}{0.8}$$

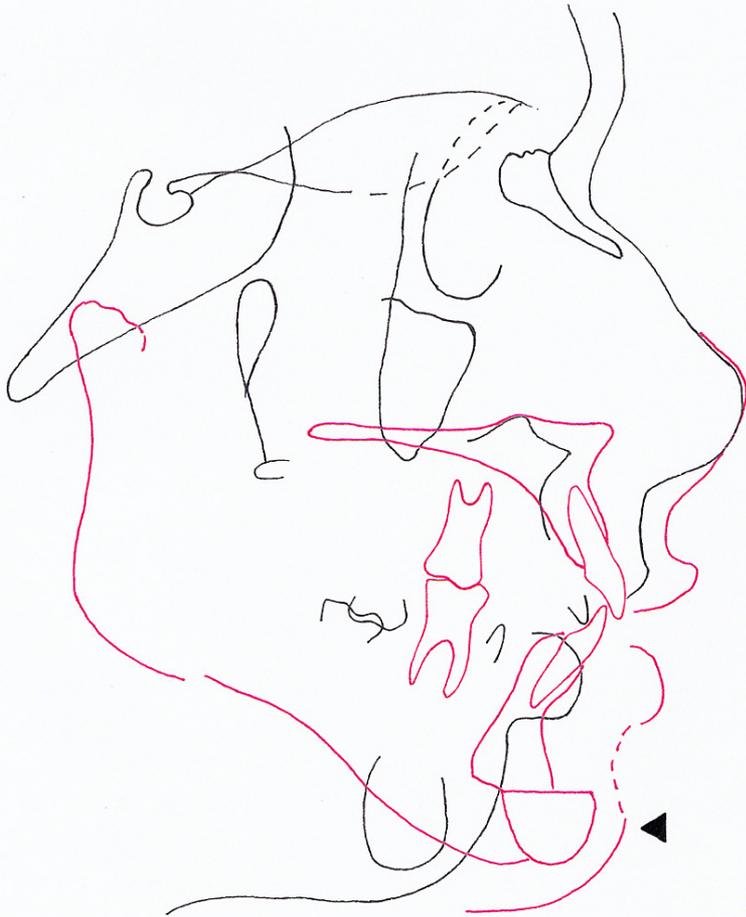
“X” REPRESENTS THE  
ASCENDING NEEDS  
AND “Y” THE EXISTING  
DENTAL EXPOSURE

# Lower Lip



- Advances 1mm for every 1mm of lower incisor advancement

# Soft Tissue Chin



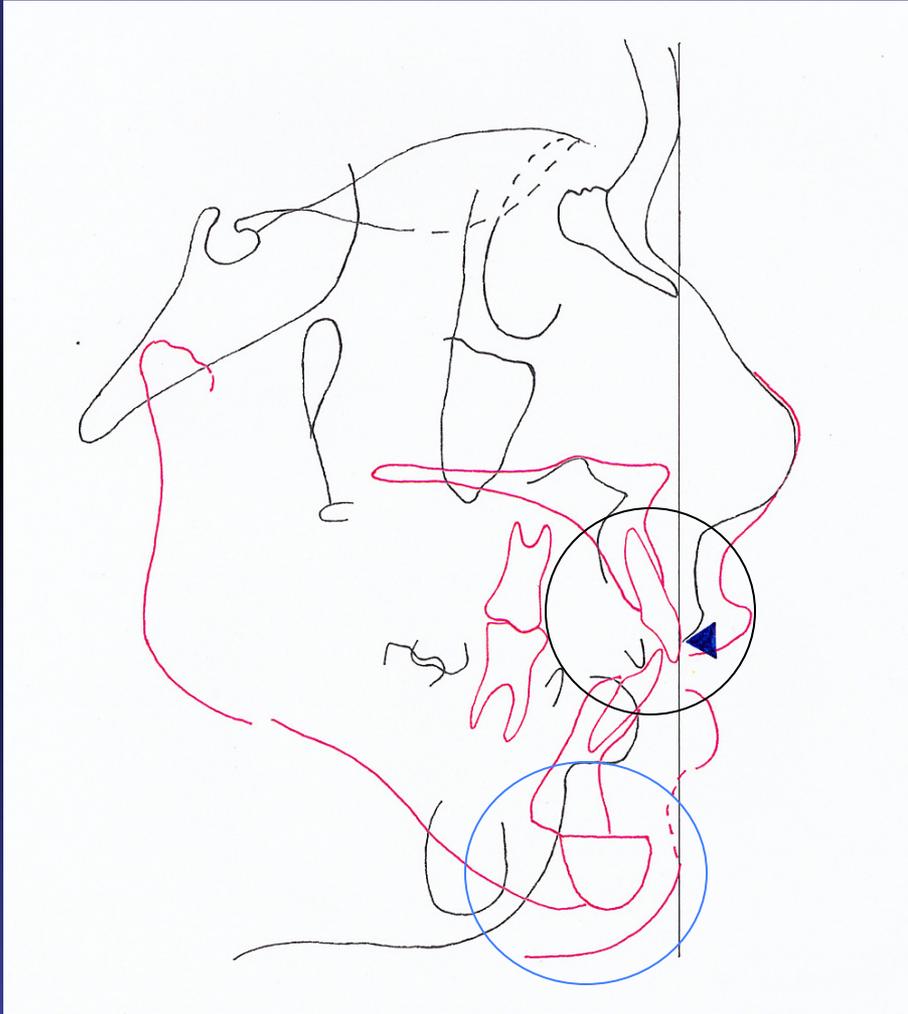
- Soft tissue Pogonion advances 0.67mm for 1mm of hard tissue Pogonion advancement
- Lower face changes 1: 1 for vertical change in chin height

# Labiomental Sulcus



- Soft tissue over the chin relaxes to give a smooth contour to the labiomental sulcus
- Depth directly related to Holdaway ratio and lower incisor proclination

# Labial Aspect Of Upper Incisor To Glabella Perpendicular and Chin



- For an aesthetically pleasing smile (to avoid a toothy look) the maxillary incisors should not extend beyond Glabella perpendicular
- Confirm Holdaway Ratio

This completes the S.T.O.