

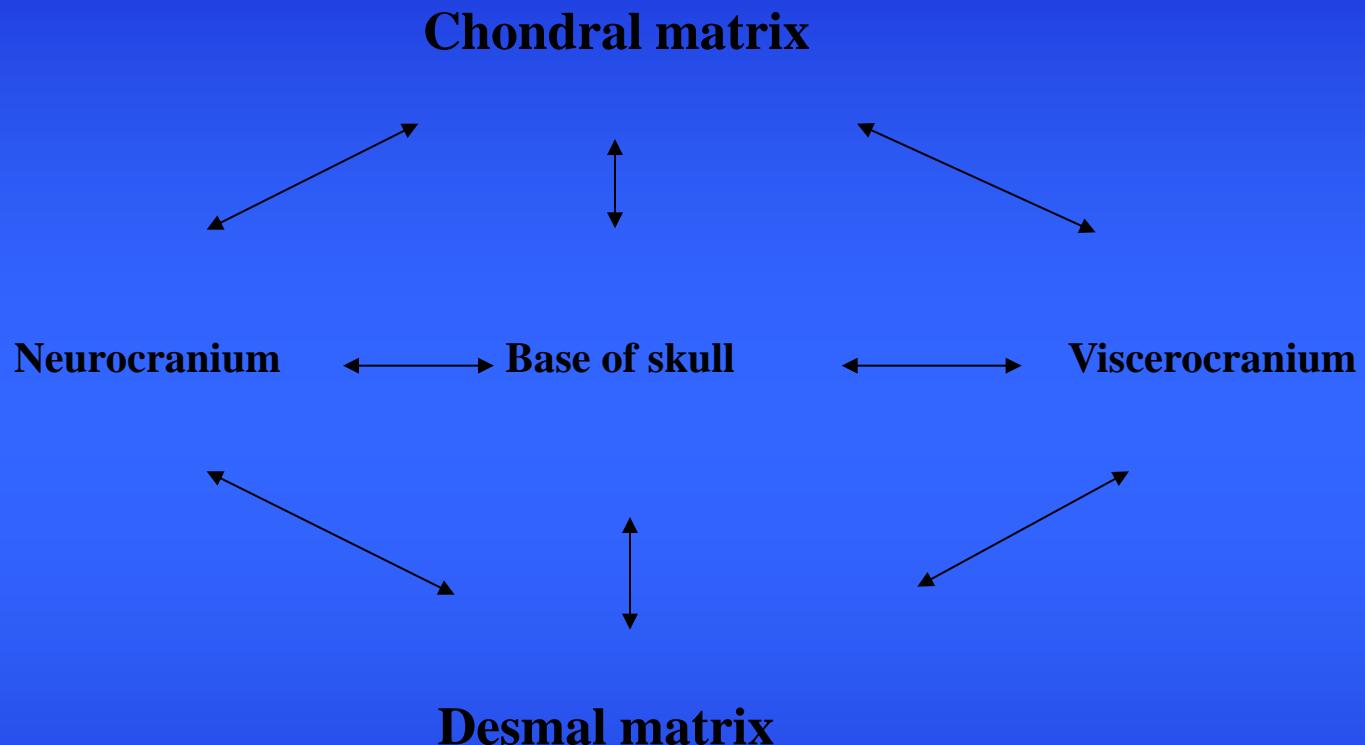
**Developmental disorders**

**Complex therapy of cleft lip and  
palate**

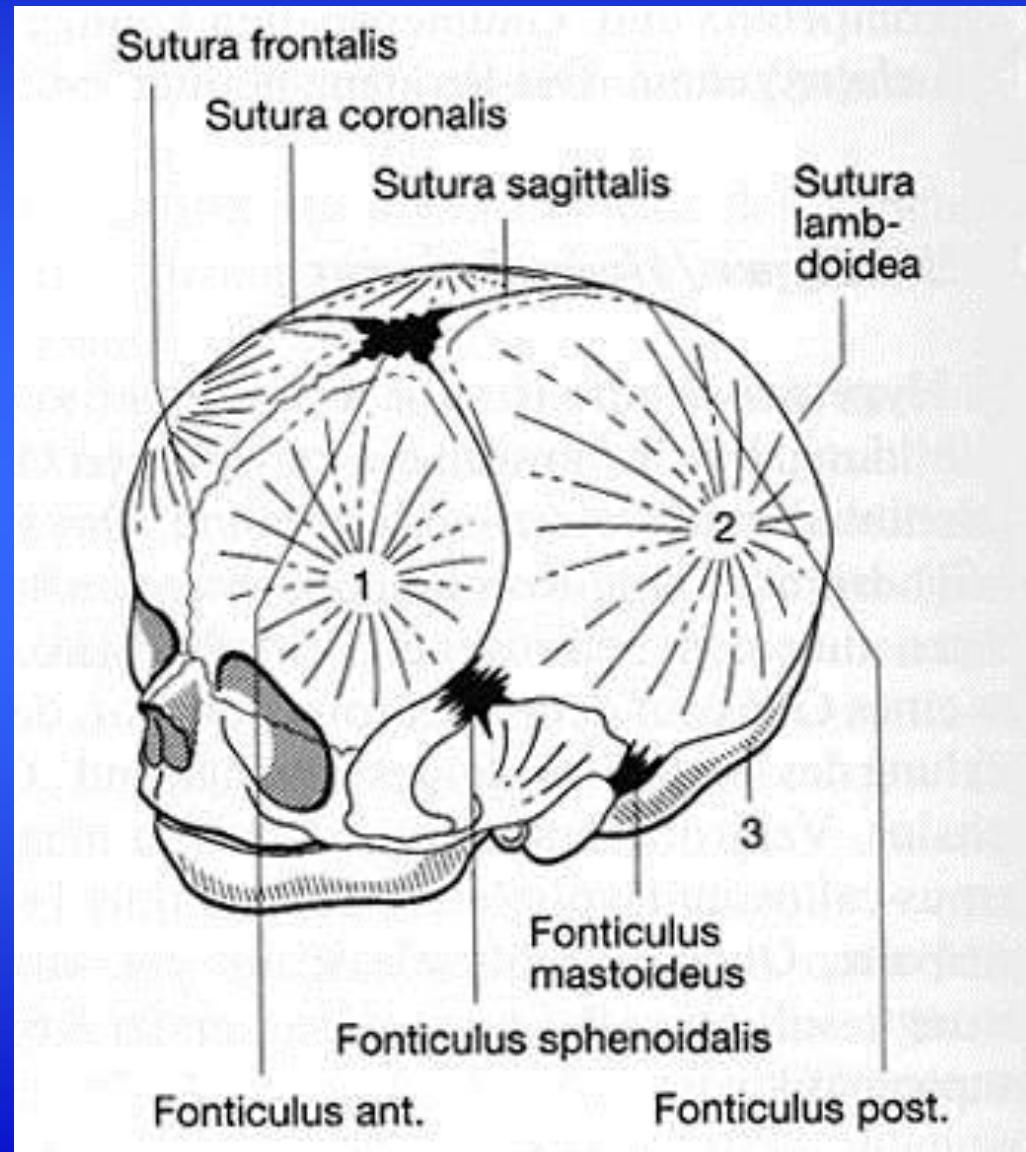
**Craniofacial malformities**

**Semmelweis University, Department of  
Maxillofacial Surgery**

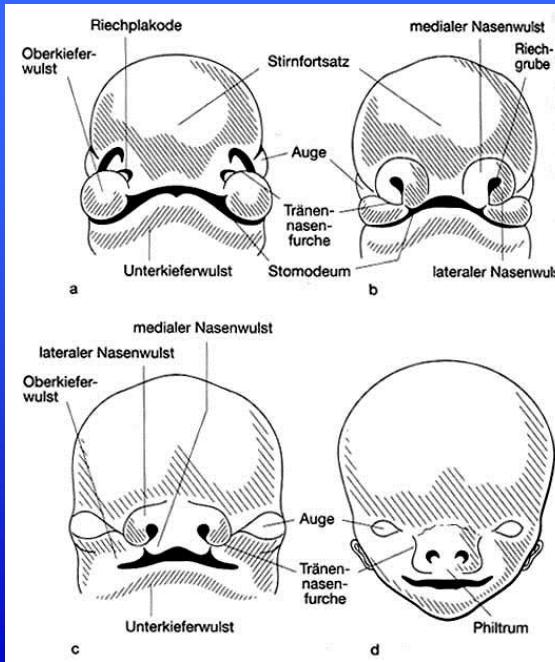
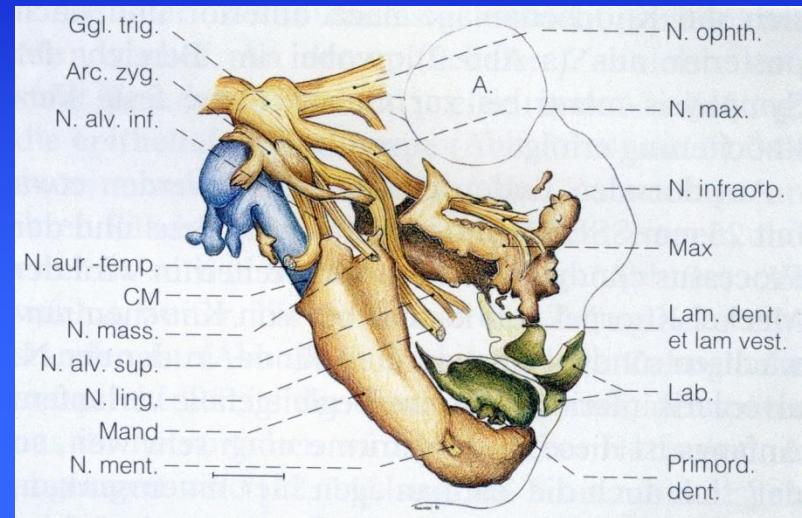
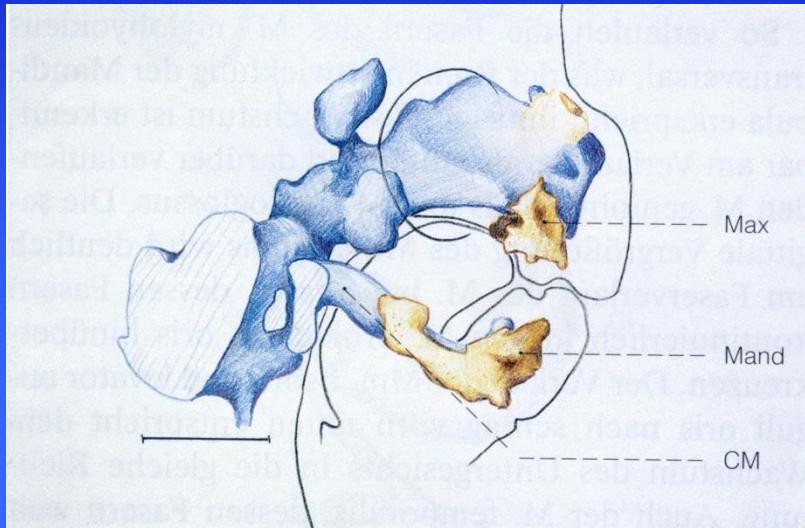
# **Development of skull**



# Development of skull



# Development of face



# Craniofacial malformities

# Development of the cranium

Closure of the sutures: end of sutural growth

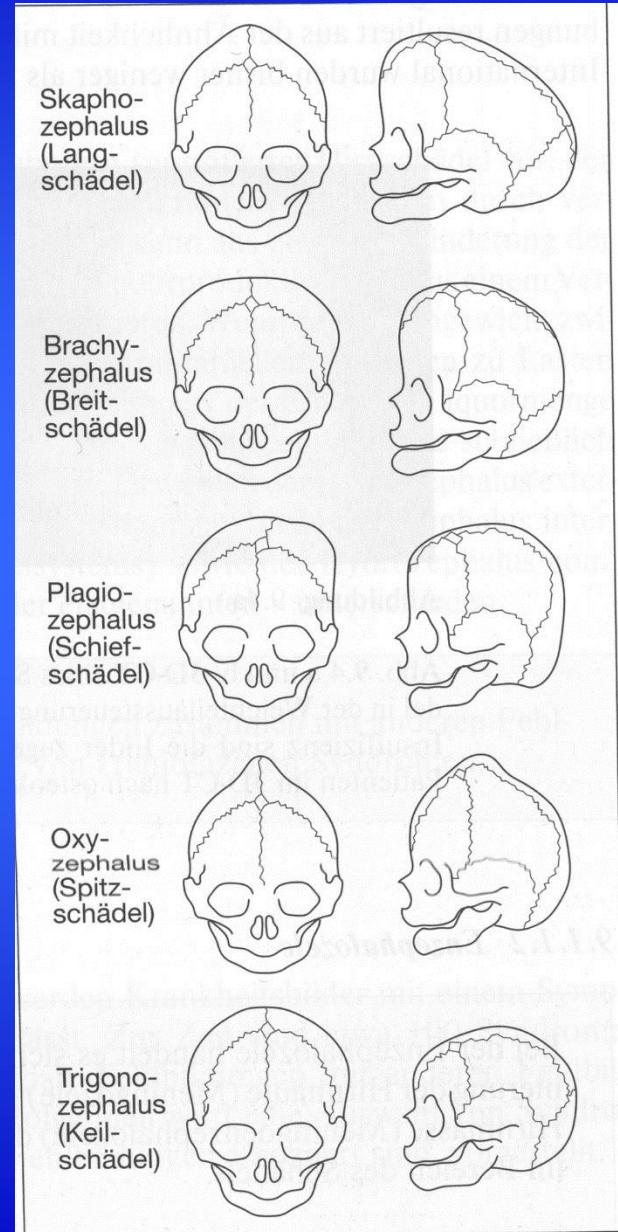
## Classification of sutural growth

lambda suture (growth of posterior skull)

coronal suture (longitudinal growth)

sagittal suture (width)

maxillary suture (midface growth)



# **Classification of craniofacial developmental disorders**

- **Primer cranial malformities:** Craniosynostosis, Encefalocele
- **Secunder cranial malformities :** Microcephalia, Hydrocephalia
- **Craniofacial syndromes**

# Craniofacial syndromes

Def.: Craniofacial malformities together with developmental disorder of other organs (cca. 100 known syndromes)

- Acro-cephalo-syndactylia : Apert- syndrome  
Pfeiffer- syndrome  
Saethre-Chotzen syndrome
- Craniofacial microsomia (Dysostosis otomandibularis)
- Franceschetti-Zwahlen-Klein syndrome
- Morbus Crouzon
- Apert-syndrome
- Goldenhar syndrome (Oculo-auriculo-vertebrális dysplasia)
- Pierre- Robin-sequencia
- Romberg syndrome (Hemiatrophia faciei progressiva)
- Klippel-Feil syndrome
- Hyper/hypotelorizmus

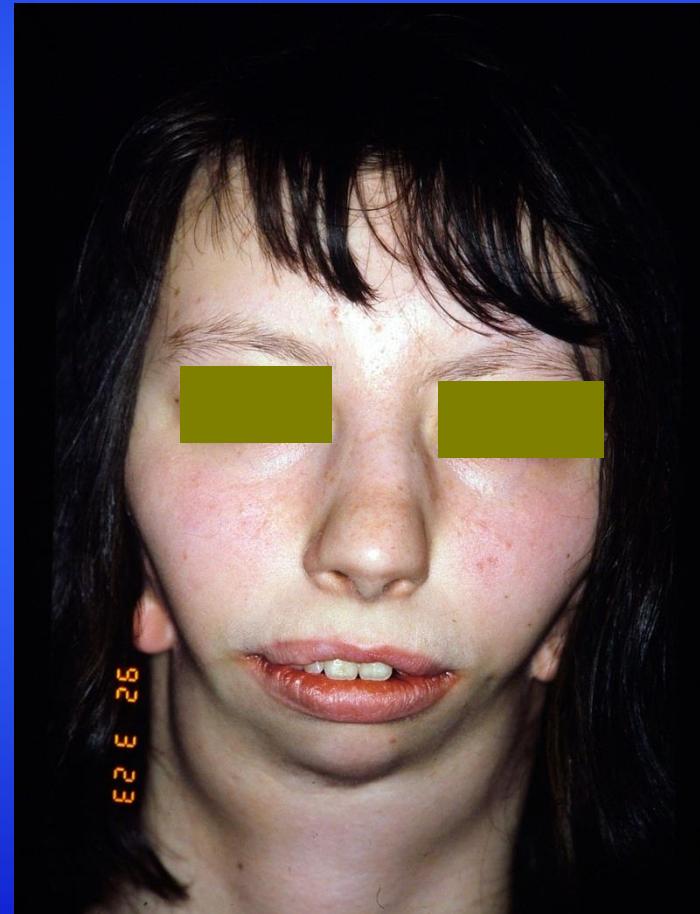
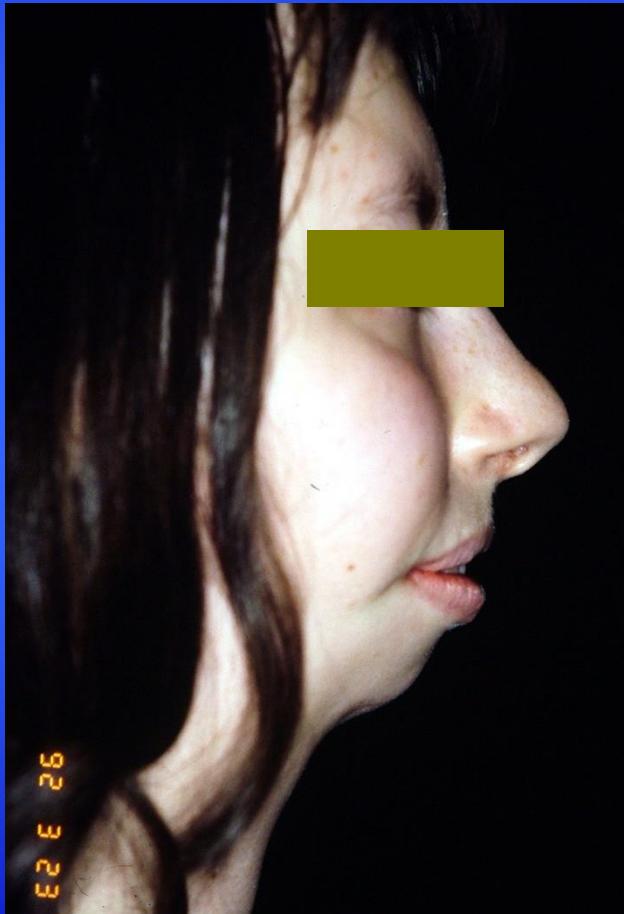
# Morbus Crouzon



# Dysostosis otomandibularis



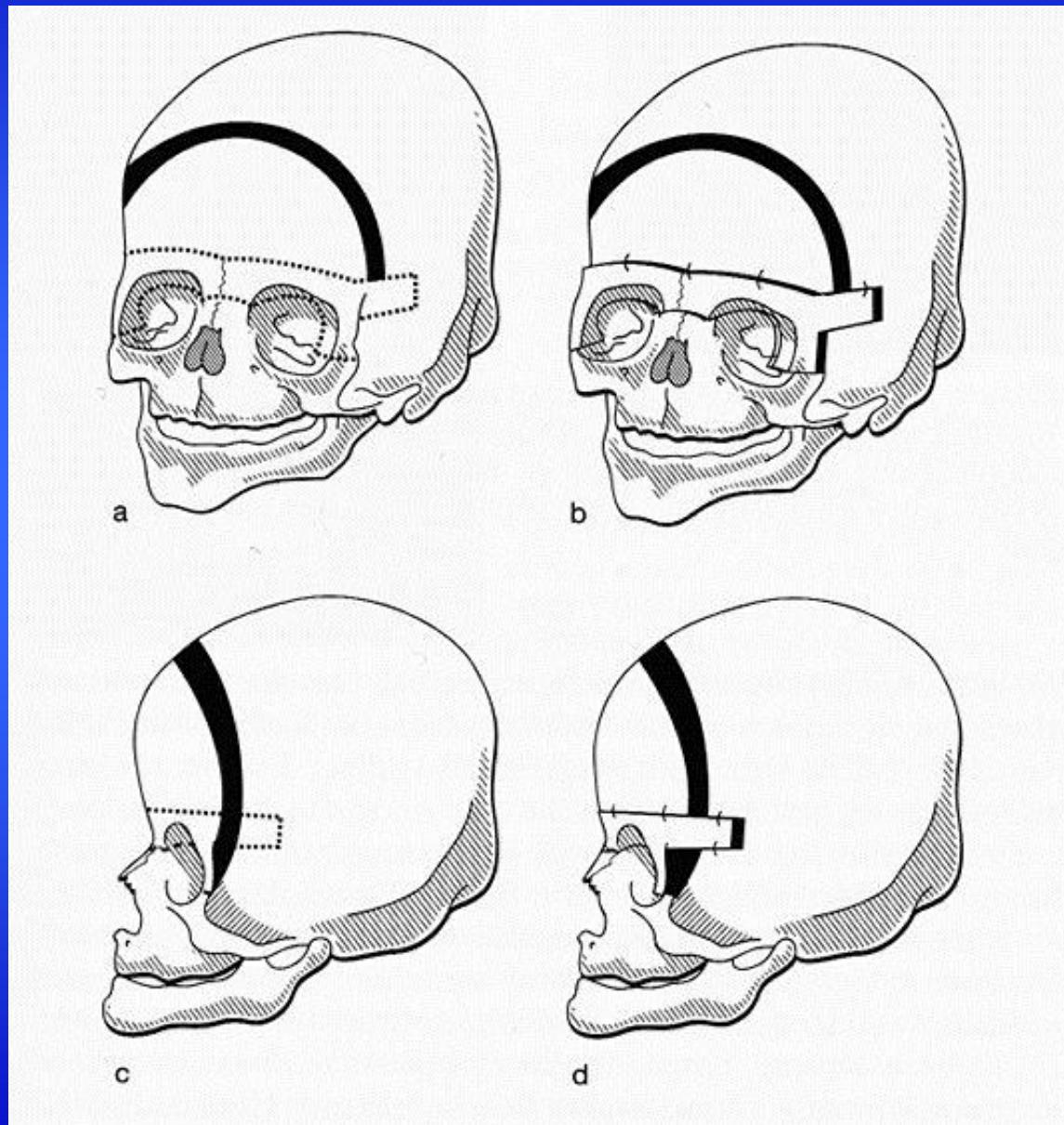
# Dysostosis mandibulofacialis (Treacher-Collins-szindróma, Franceschetti-Zwahlen-Klein-syndrome)



# Dysostosis cleidocranialis



# Frontal-advancement



# **cleft lip and palate**

- Cleft {
- 1. Lip**
  - 2. Alveolar process**
  - 3. Hard palate**
  - 4. Soft palate**

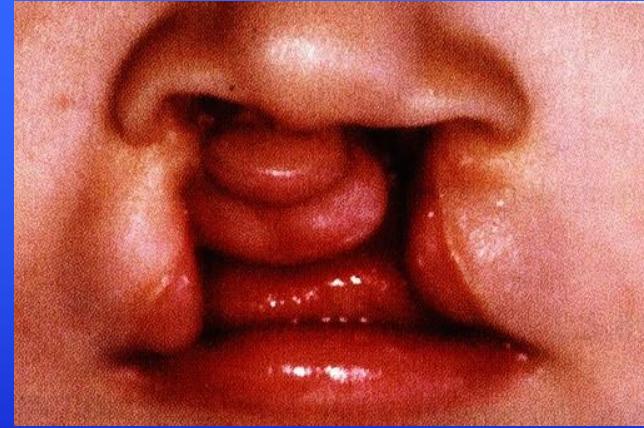
# Cleft lip



Lip coloboma



Partial cleft lip



Total cleft lip

Bilateral cleft lip

# Defect of alveolar process of maxillae and cleft lip



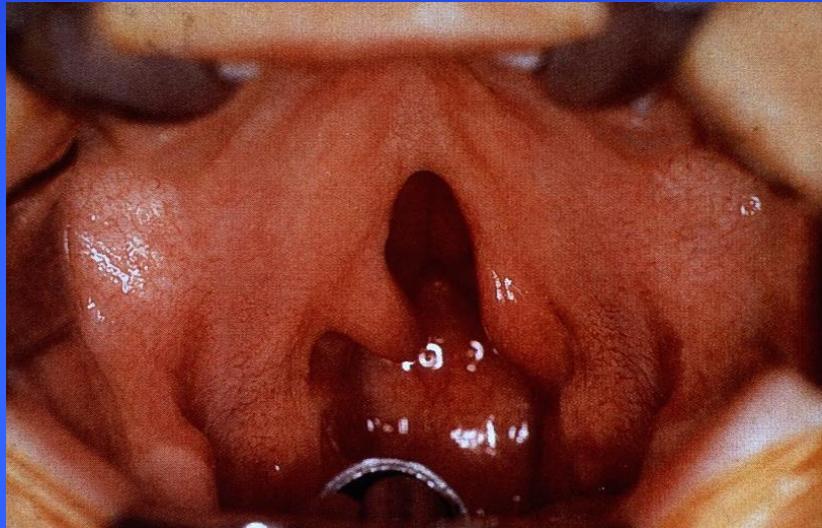
Unilateral



Bilateral

# **Isolated cleft palate**

## **Bilateral cleft palate (hard and/or soft)**



**Submucosal cleft**

**total cleft palate**

# Unilateral total cleft lip cleft palate and alveolar process cleft



# **THERAPY**

## **DEFINITIONS**

### **1) Primery treatment:**

**First interventions in ideal time based on the normal biological development of the skull**

### **2) Secundery treatment:**

**the first intervention is delayed (timing is not ideal)**

**correction of first intervention (result was not optimal)**

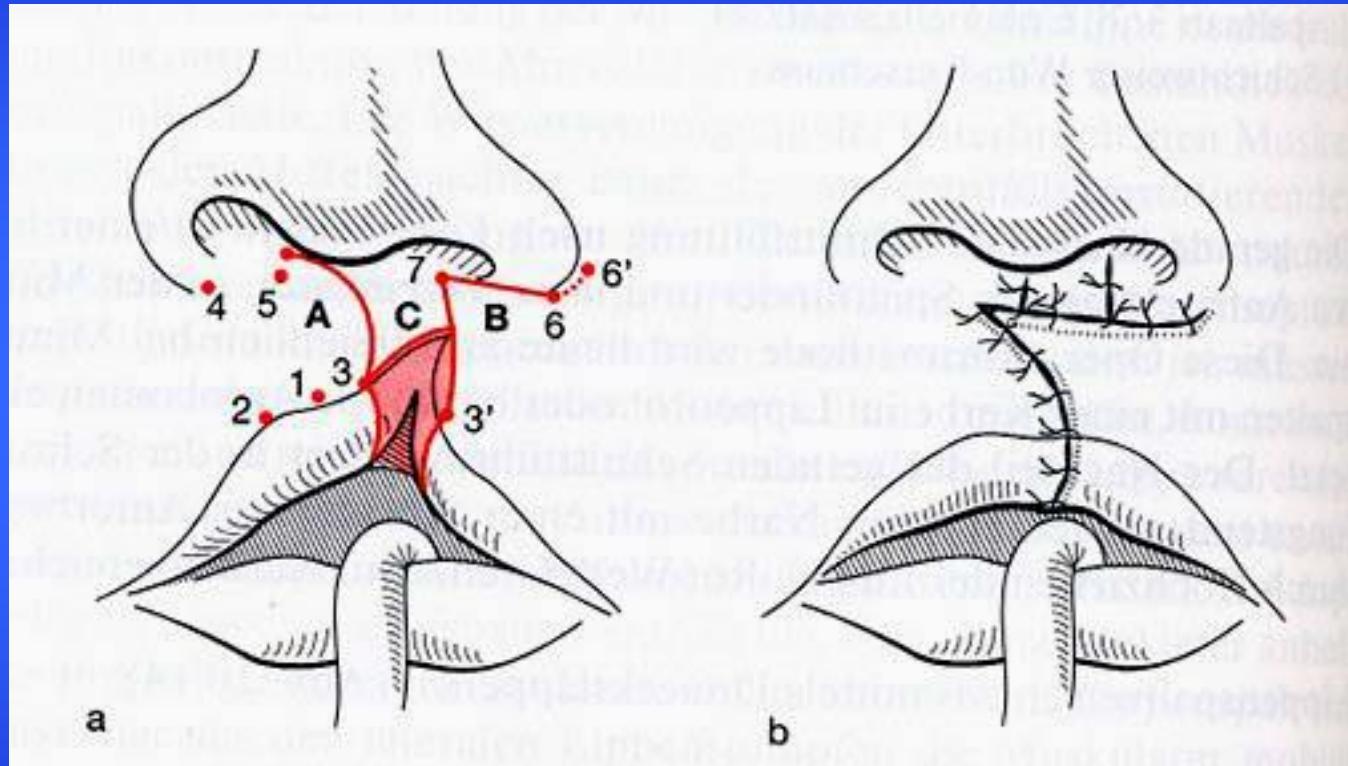
# Primery treatment

# Complex therapy of cleft lip and palate

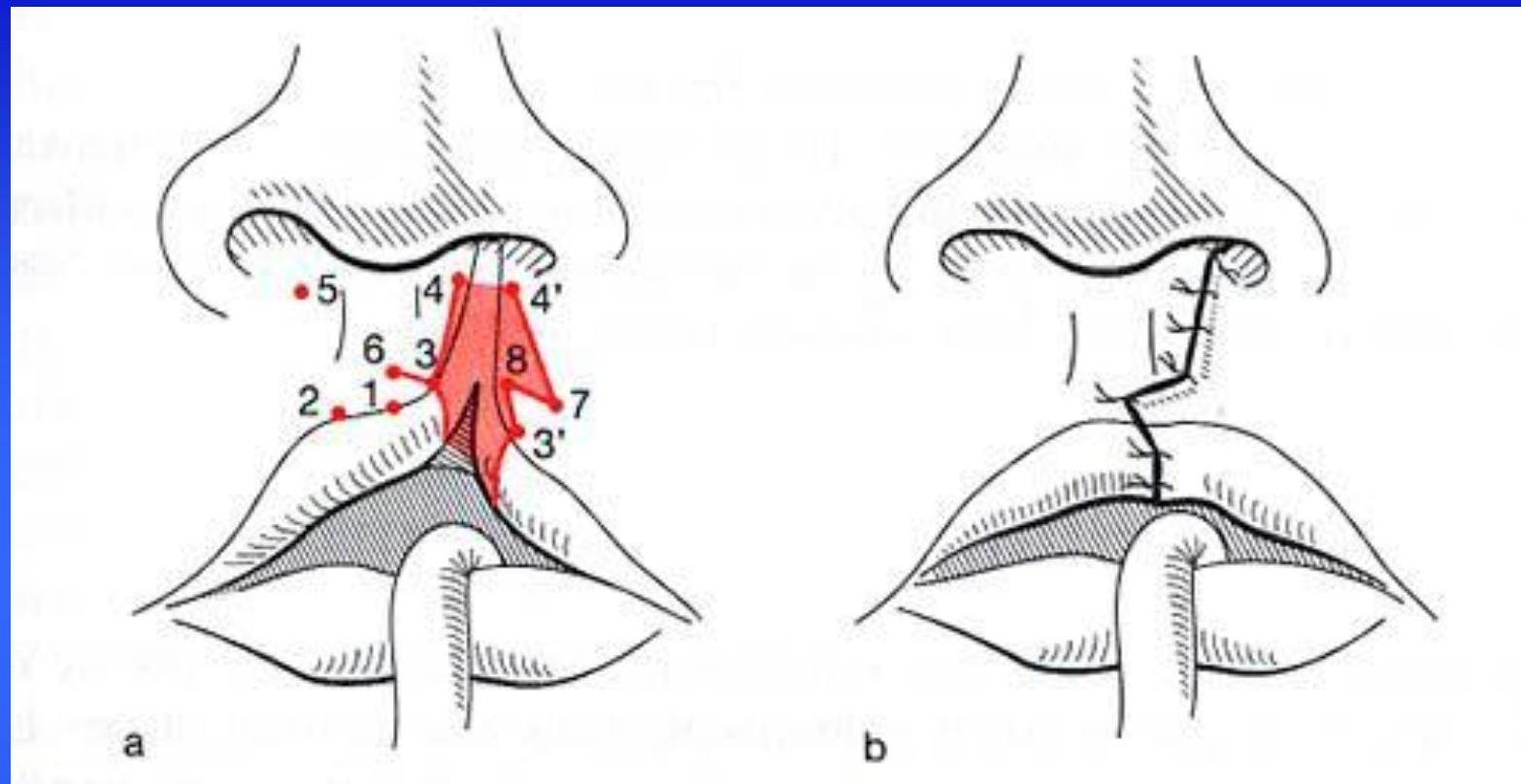
Time	Therapy	Examination
1./2. week	First examination/obturator	photo, modell (plaster)
3./4. month	Cleft lip closure (one side)	X-ray, photo
7./8. month	In case of bilateral cleft lip closure of the other side	X-ray, photo
1. year	Closure of cleft palate (soft and hard)	Photo, oto-laryngieal examination
From 3. year	Start of logopedic therapy	Logopedic test, oto- laryngeal examination
5-6. year	In case of logopedic indication intraoral plasty	
8. year	Orthodontic therapy (transversal dilatation)	X-ray, logopedy, oto- laryngeal exam.
9-12. year	Alveolar osteoplasty (Time of operation depends on the eruption of canine teeth)	Modell, photo
12-16. year	Orthodontic preparation	X-ray, logopedy, oto- laryngeal exam, modell
16-17. year	Osteotomies (in case of need)	X-ray, logopedy, oto- laryngeal exam, modell, photo
17-18. year	Orthodontic follow-up	

Team work!

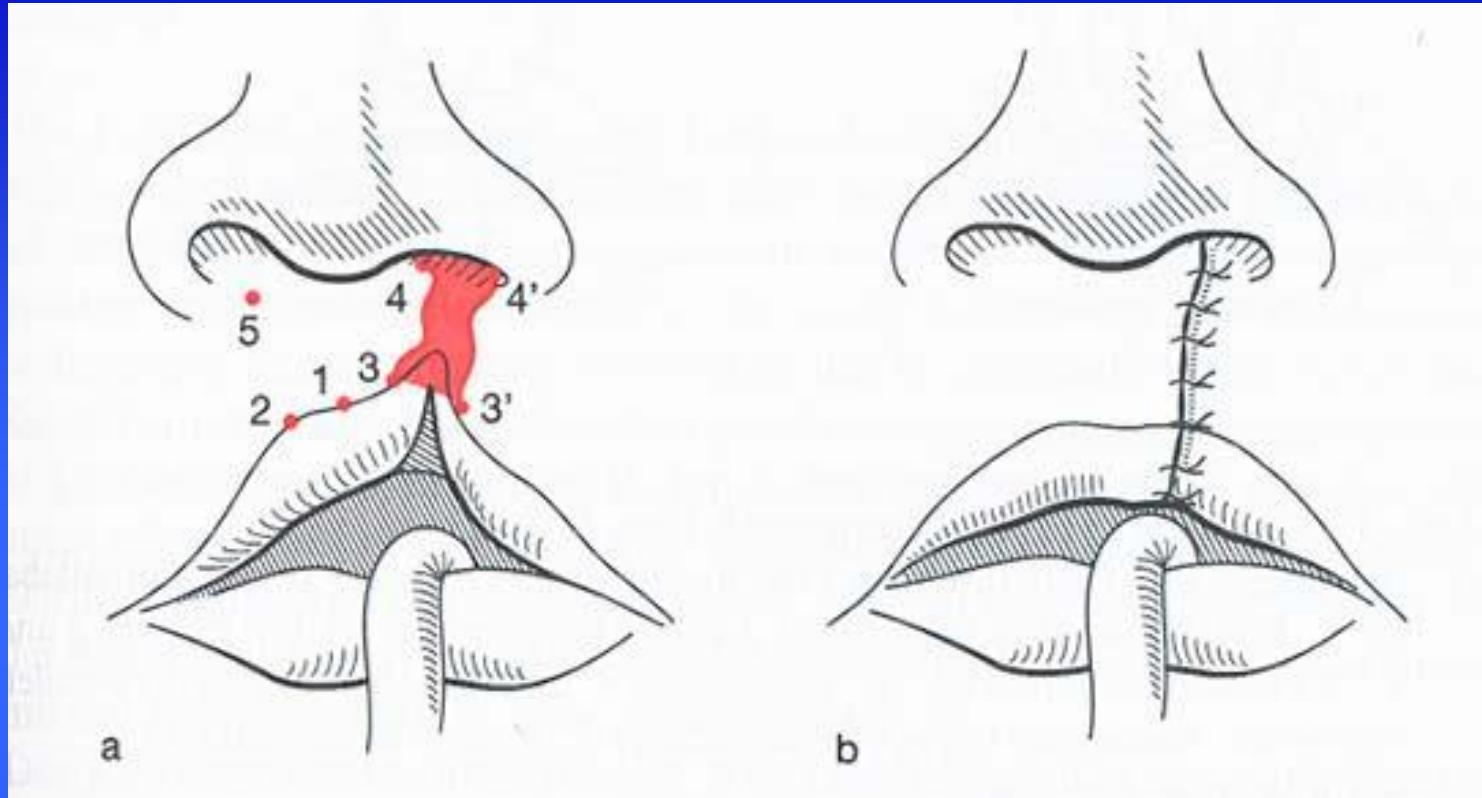
# Surgical treatment of cleft lip



Millard plasty



## Tennison plasty

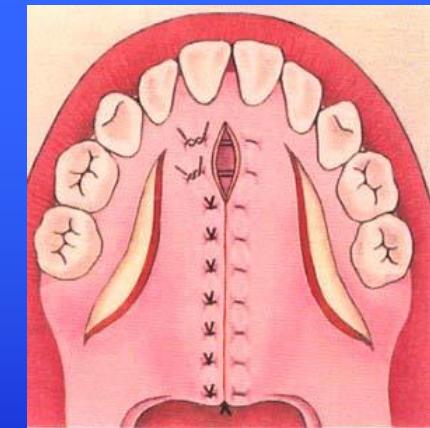
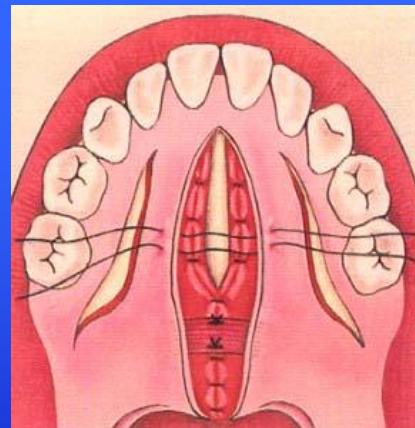
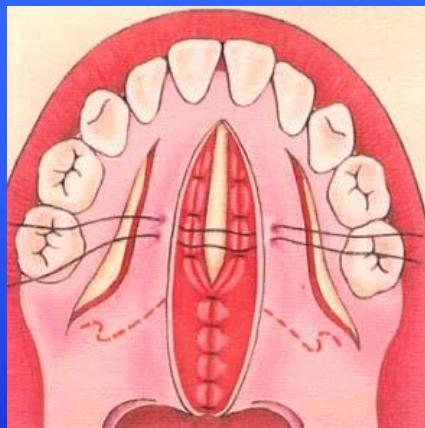
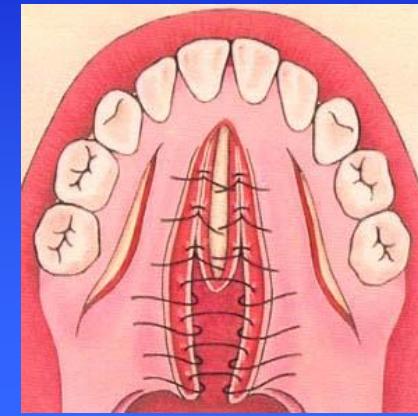
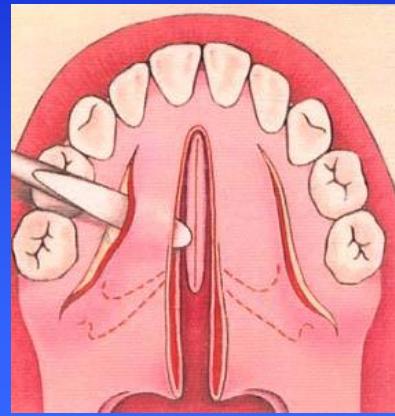
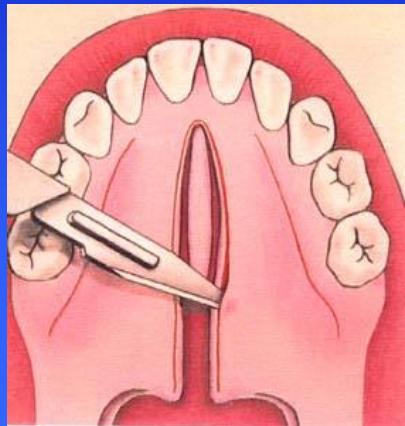


Pfeiffer plasty



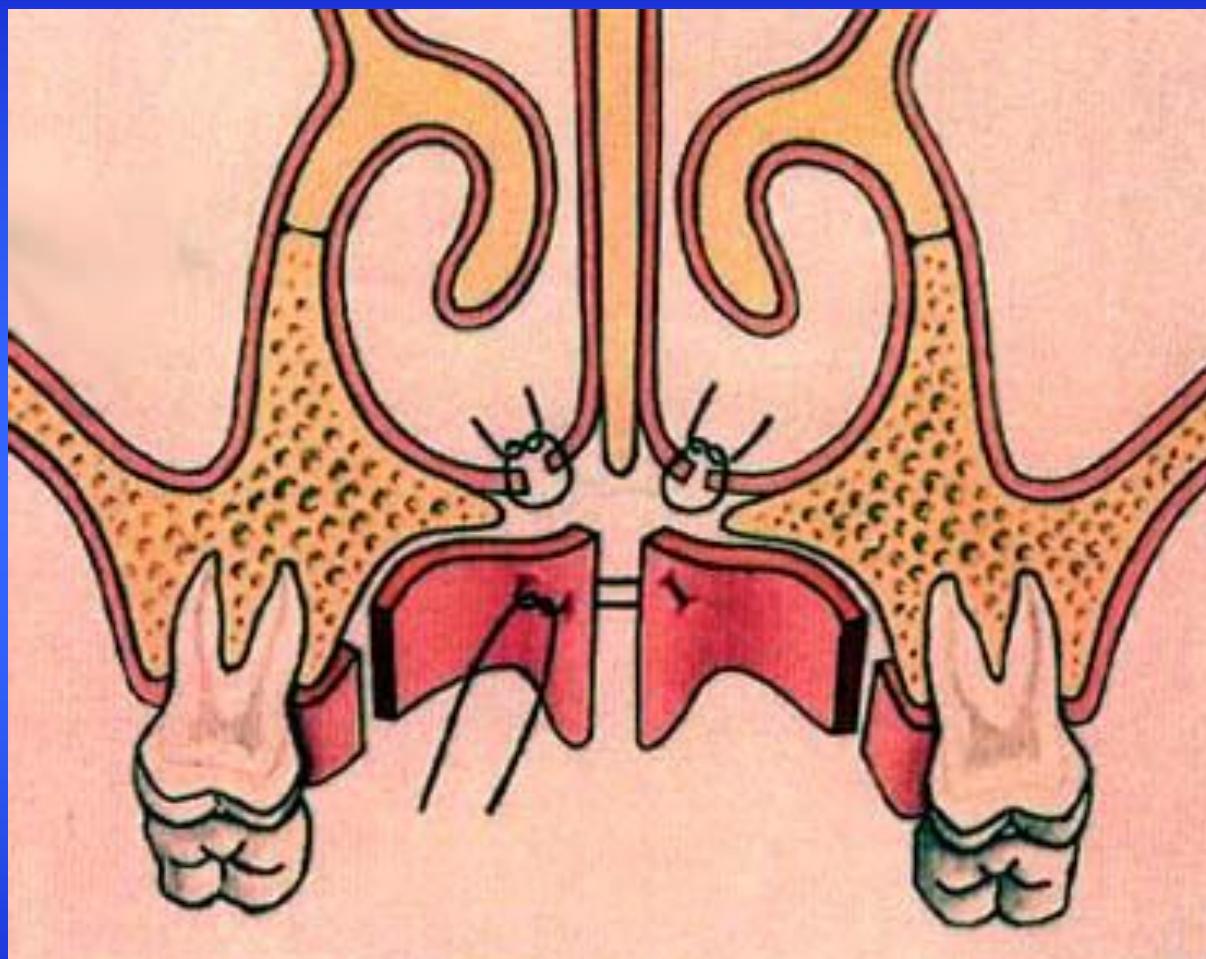


# Surgical treatment of cleft palate



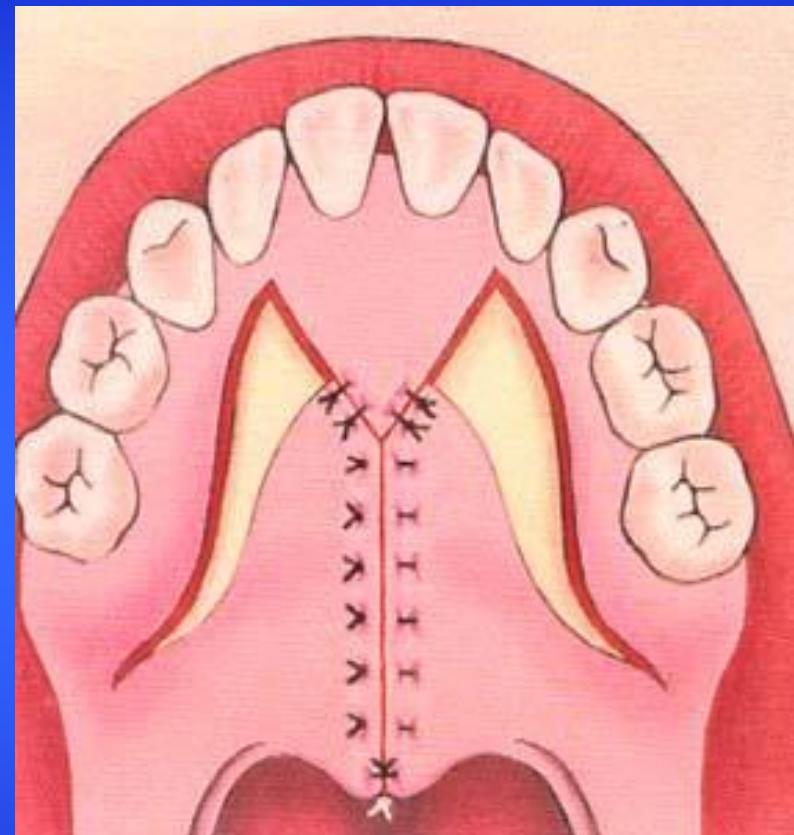
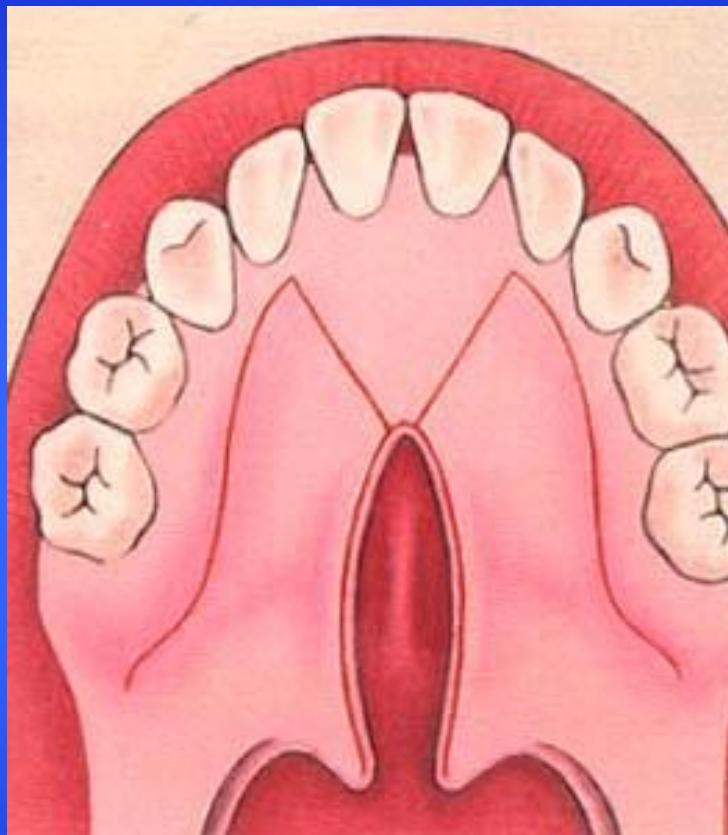
Flap-plasty / Langenbeck-Veau-Kriens plasty/

# Surgical treatment of cleft palate

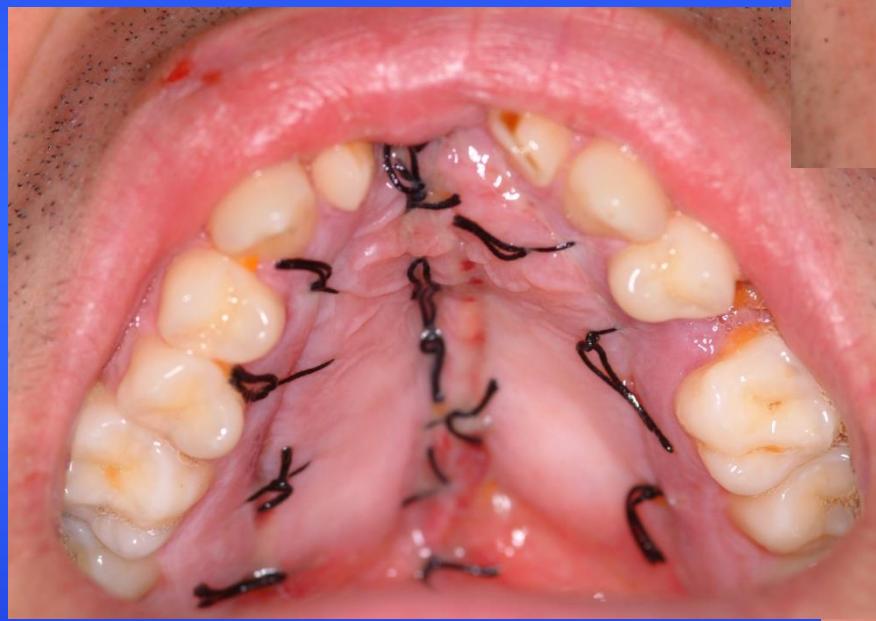


Flap-plasty / Langenbeck-Veau-Kriens plasty/

# Surgical treatment of cleft palate

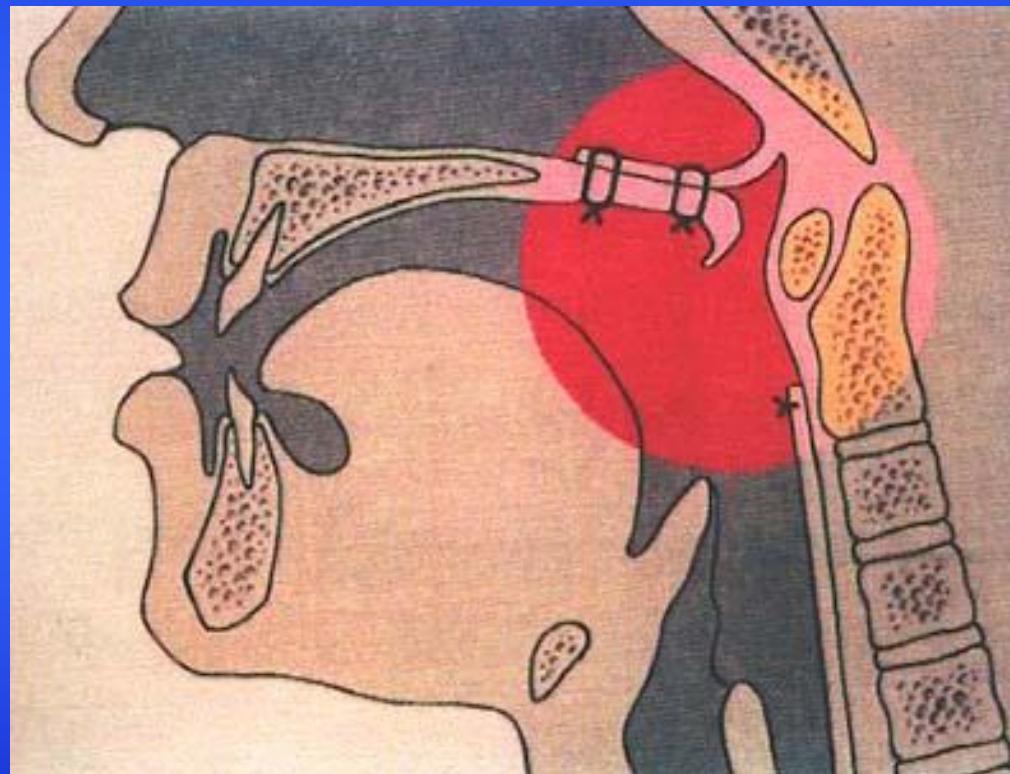


**,,PUSH-BACK” OPERATION**



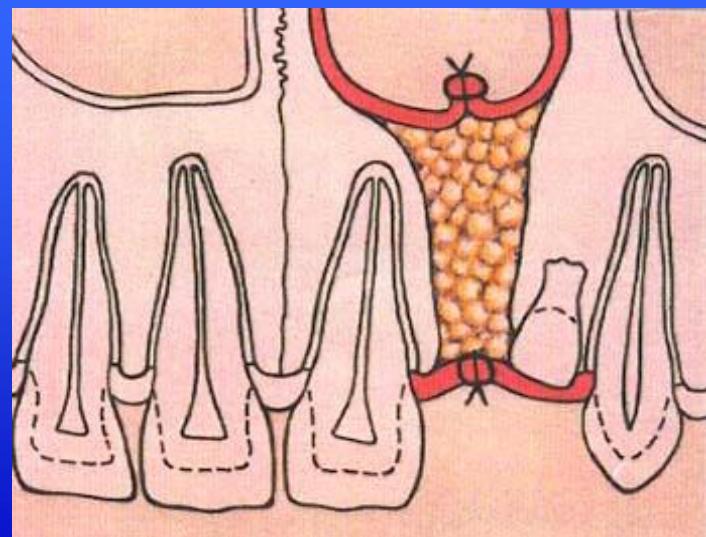
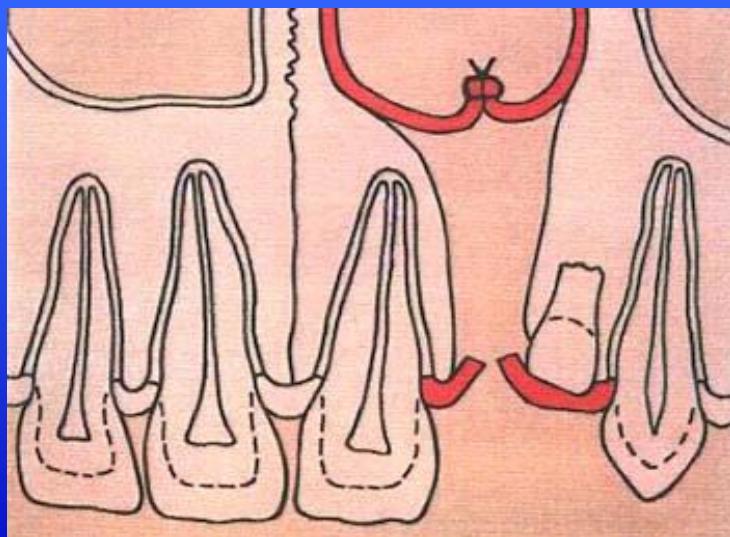
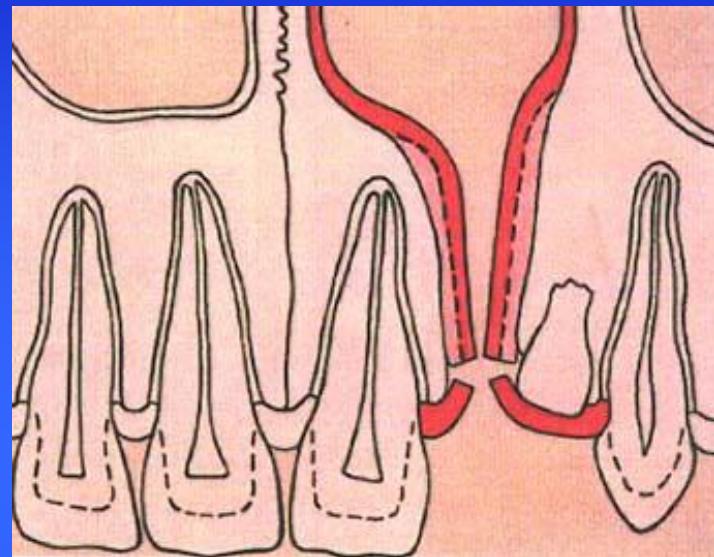
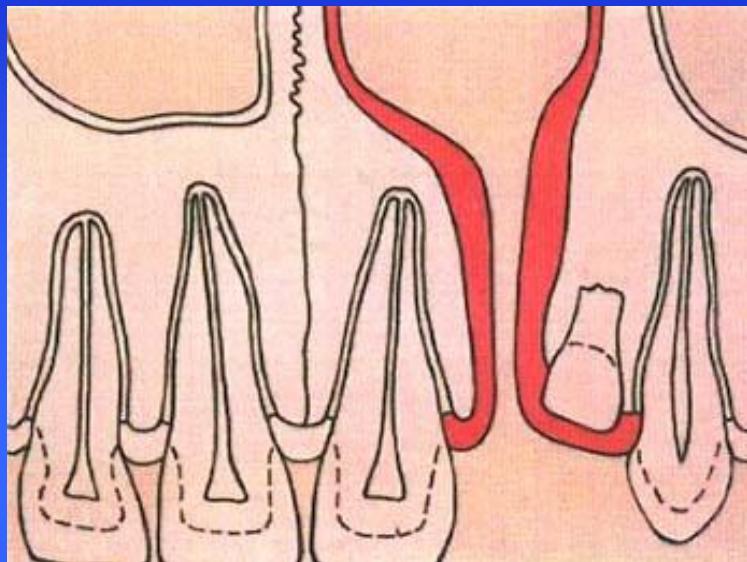
# Pharyngeal plasty

## /logopedic indication/



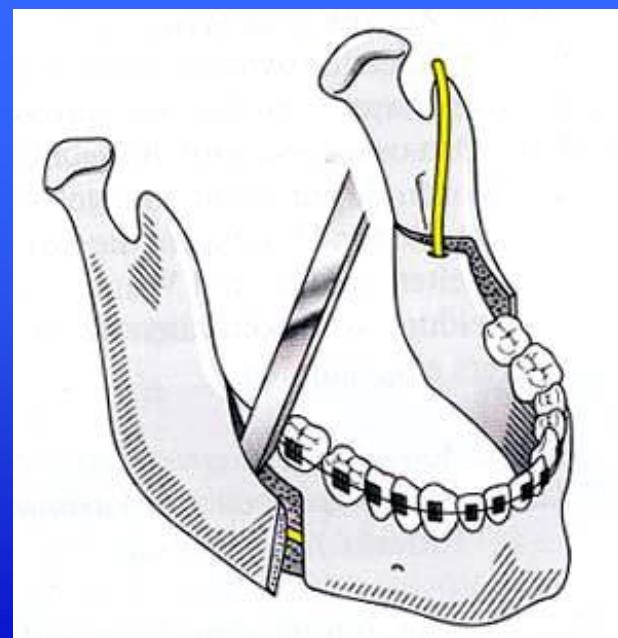
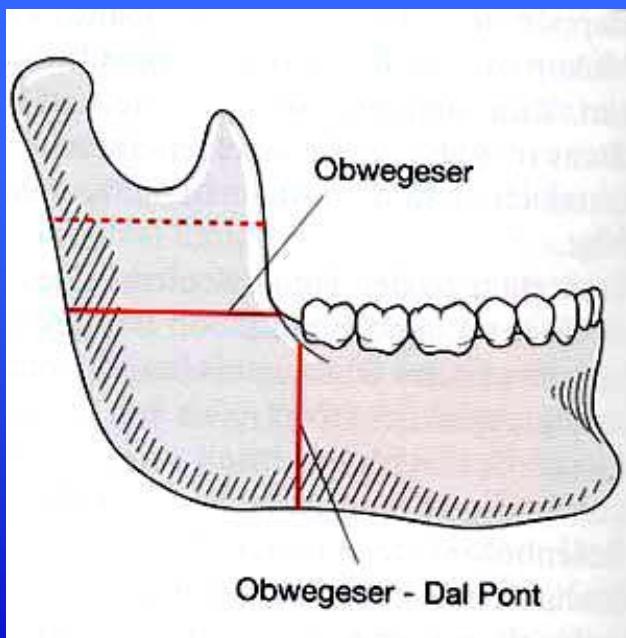
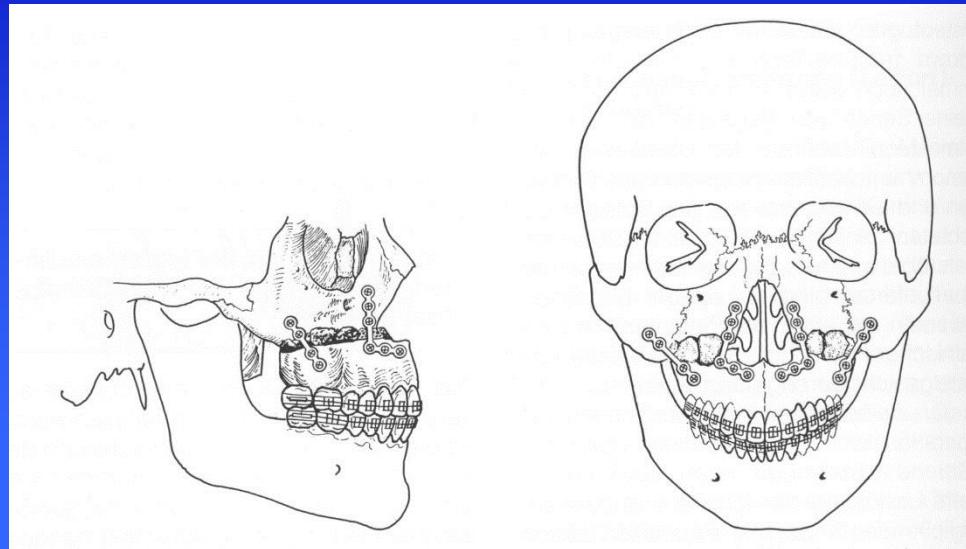
Sanvenero-Rosseli operation

# Alveolar process plasty



# Secundery treatment

# Bimaxillary osteotomy



# Cleft lip and palate

Secunder  
treatment



# Cleft lip and palate

Secunder  
treatment!



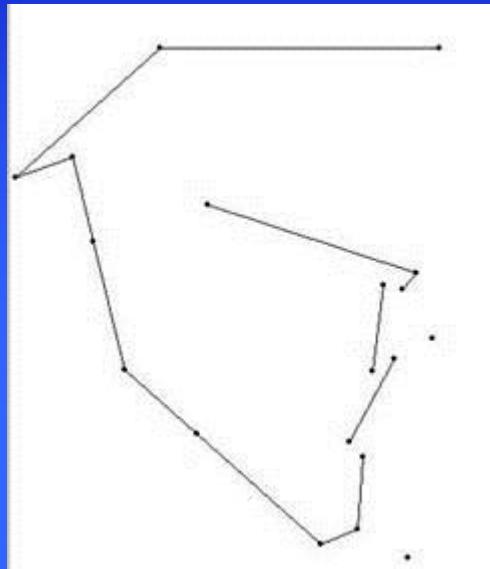
# Cleft lip and palate



Secunder  
treatment!

# Cleft lip and palate

The jaws are in anterior position and there is open occlusion compared to the skull base



	1996.09.27.
SNA	82
SNB	80
ANB	2
SNPg	81
NSBa	130
Gn-tgo-Ar	126
N szög	58
H szög	8
ML-NSL	32
NL-NSL	8,5
ML-NL	23,5
N-Sp <sup>1</sup> (mm)	58,1
Sp <sup>1</sup> -Gn (mm)	75,5
N-Sp <sup>1</sup> /Sp <sup>1</sup> -Gn (79%)	77,8
T-†	131
T-NA (szög)	22
T-NB (szög)	25
†-NA (mm)	4
T-NB (mm)	4
Pg-NB	1,9
T-NPg	2,7
Tweed	

# Cleft lip and palate

Orthodontic  
preparation



# Cleft lip and palate

Orthodontic preparation



Alveolar process  
osteoplasty after  
transversal  
dilatation



# Cleft lip and palate

Before Le Fort I.  
osteotomia



# Cleft lip and palate

After Le Fort I.  
osteotomy



# Cleft lip and palate

Le Fort I.  
osteotomy



# Cleft lip and palate

Secunder lip plasty  
(Tennison-Randall)



# Cleft lip and palate

Secunder lip plasty  
(Tennison-Randall)



# Cleft lip and palate



Secunder lip plasty  
(Tennison-Randall)

# Cleft lip and palate

Volume deficiency  
of the upper lip is  
substituted with  
bridge flap from  
the lower lip



# Cleft lip and palate

Volumen  
deficiency of the  
upper lip is  
substituted with  
bridge flap from  
the lower lip

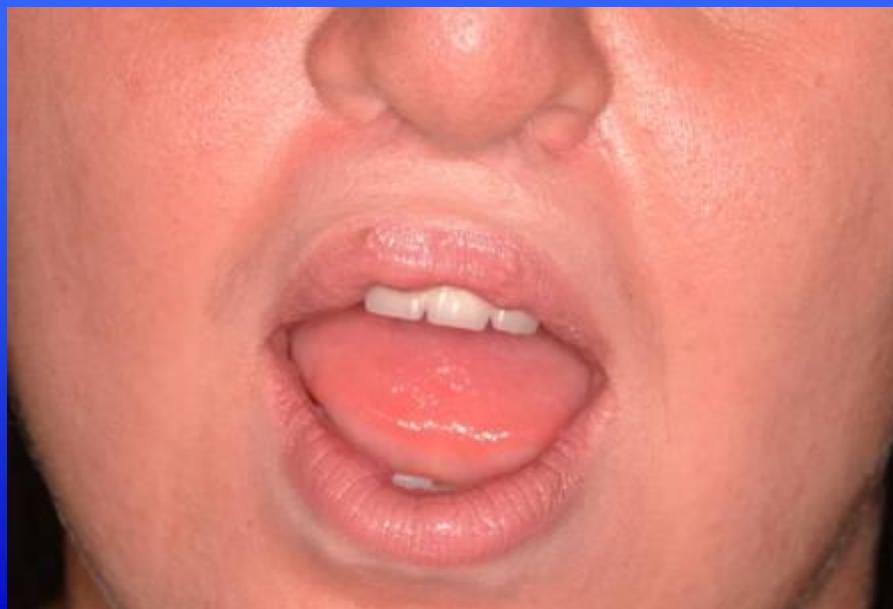
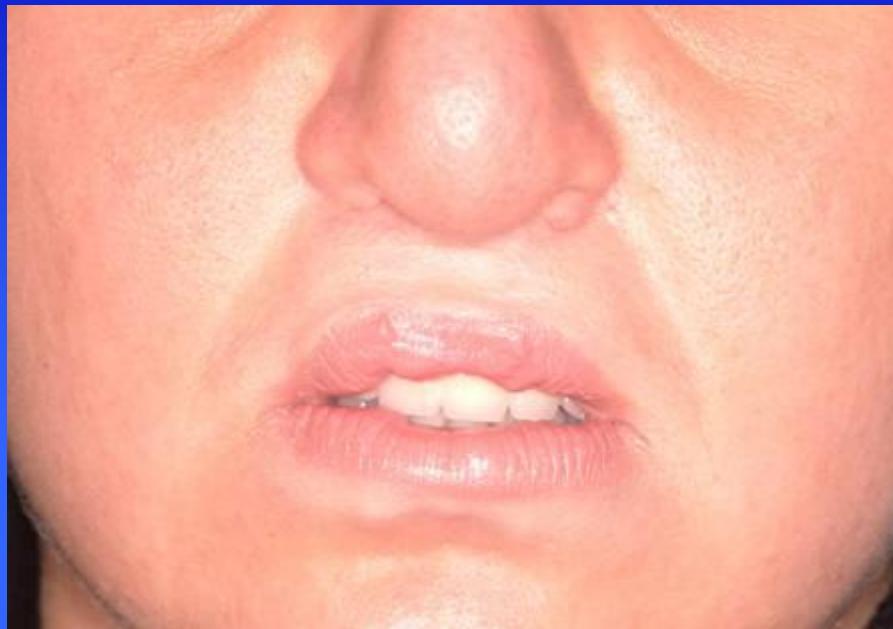


# Cleft lip and palate

Volumen  
deficiency of the  
upper lip is  
substituted with  
bridge flap from  
the lower lip



# Cleft lip and palate



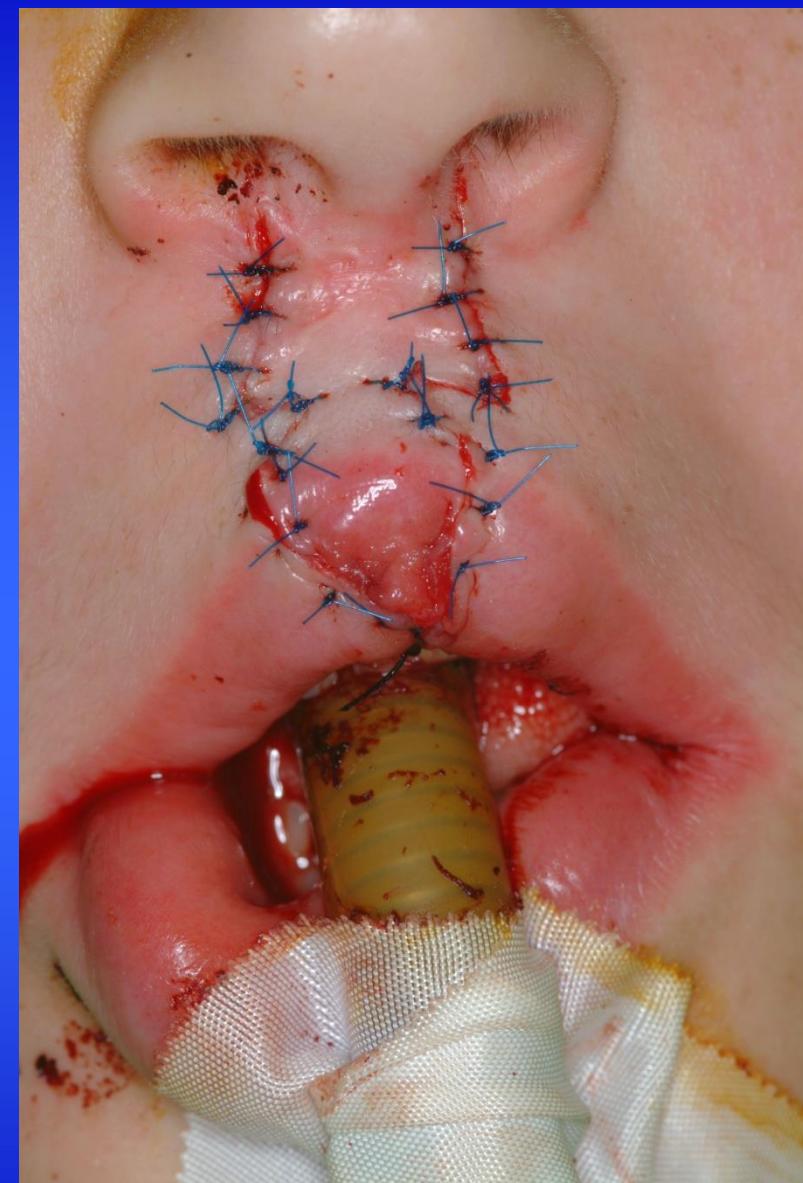
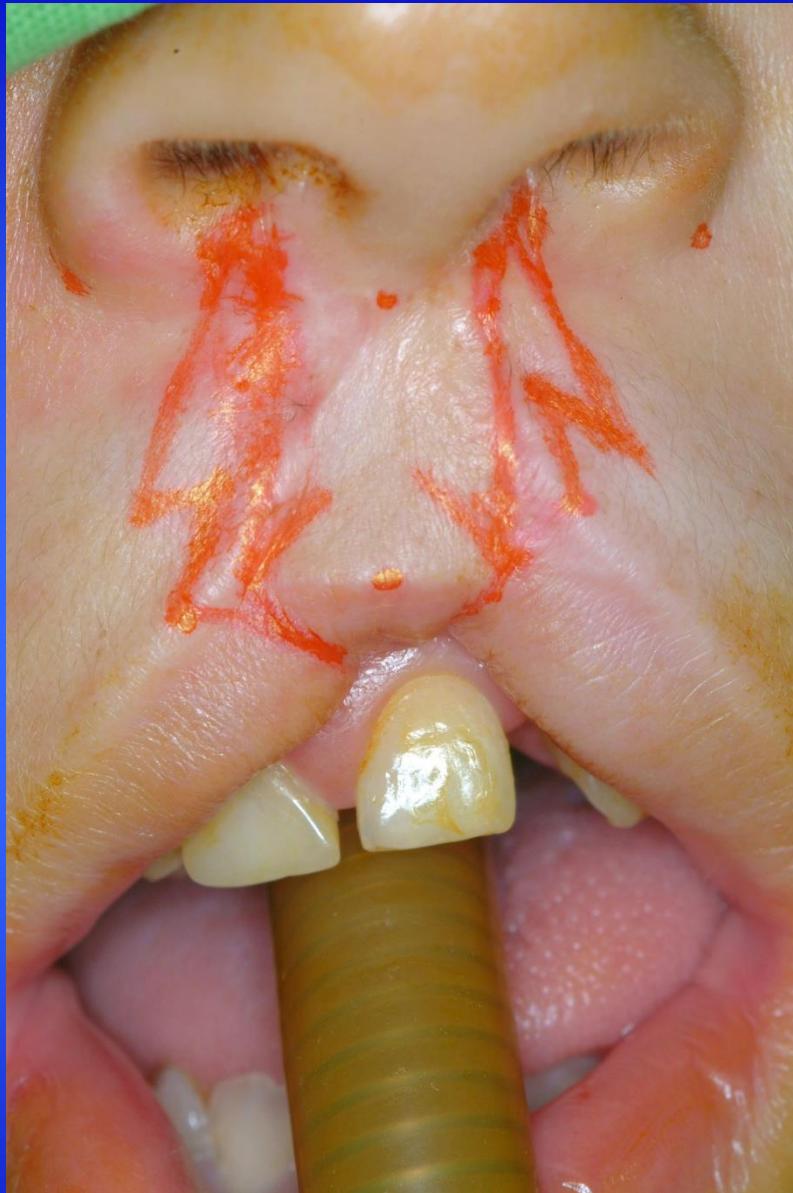
# Cleft lip and palate



# Cleft lip and palate









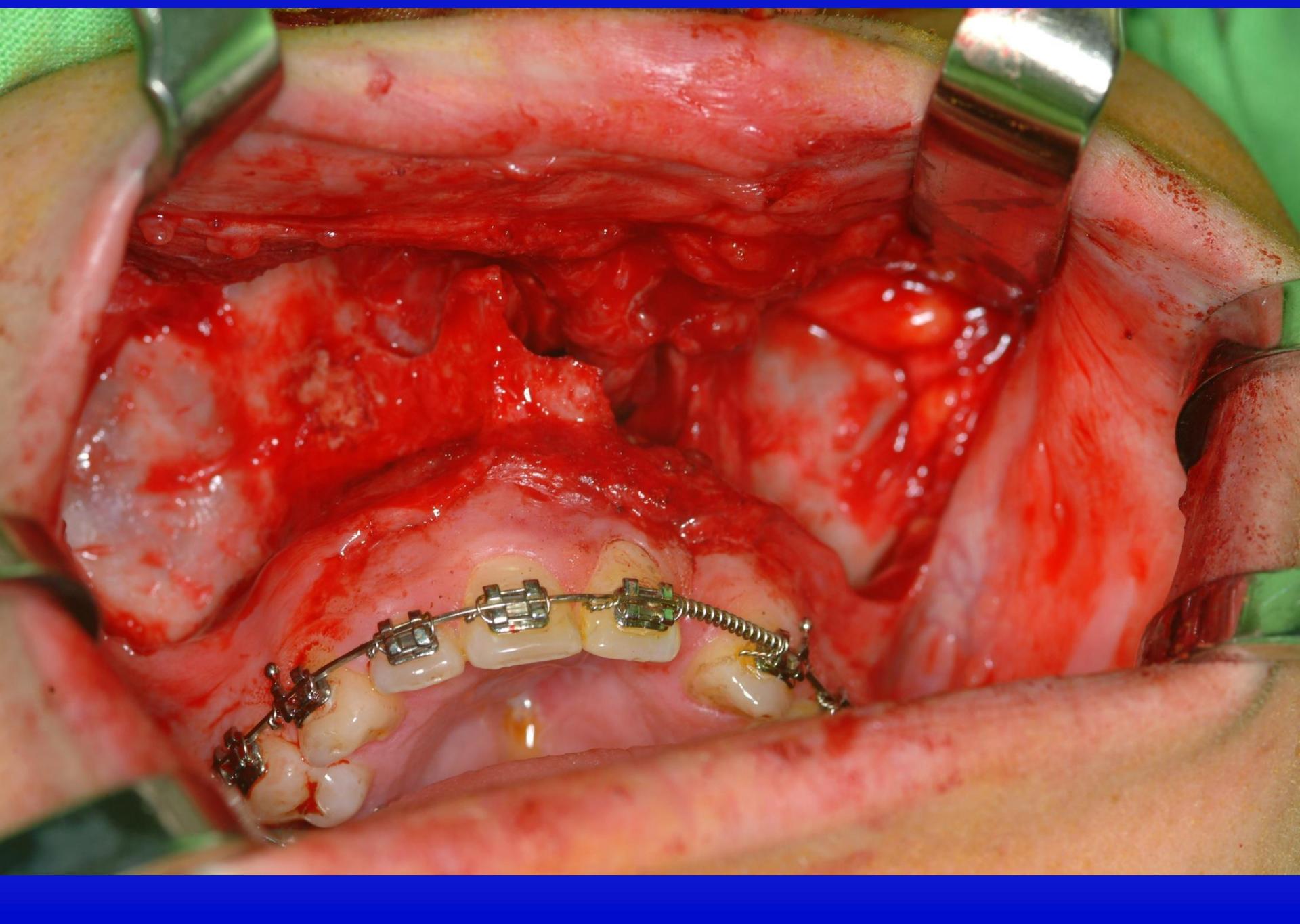




2004. 10. 18.







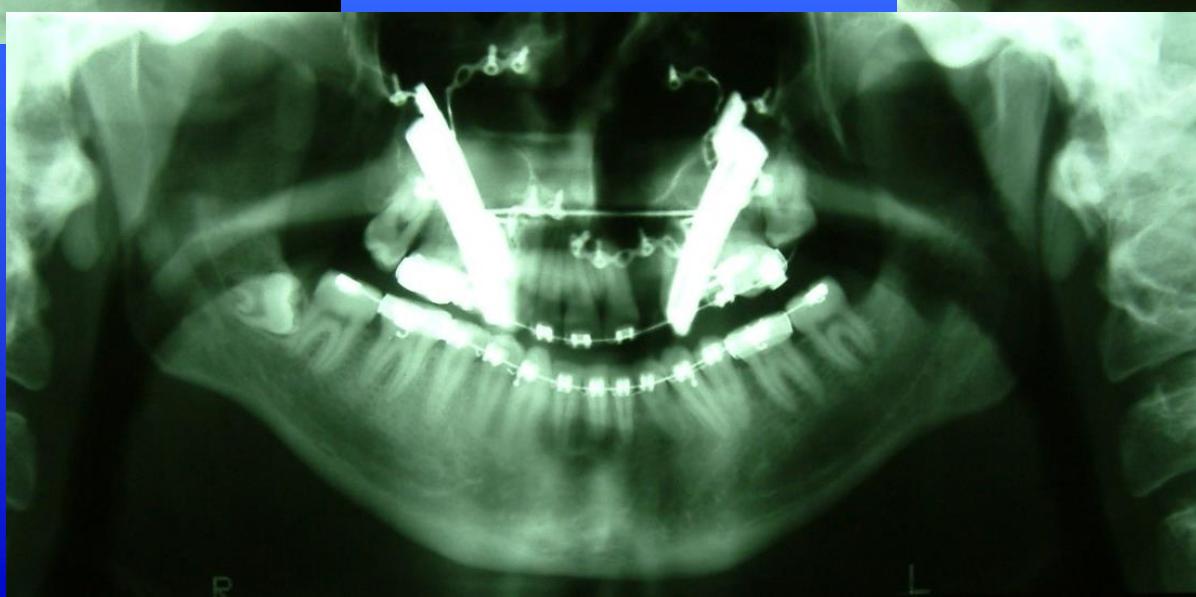


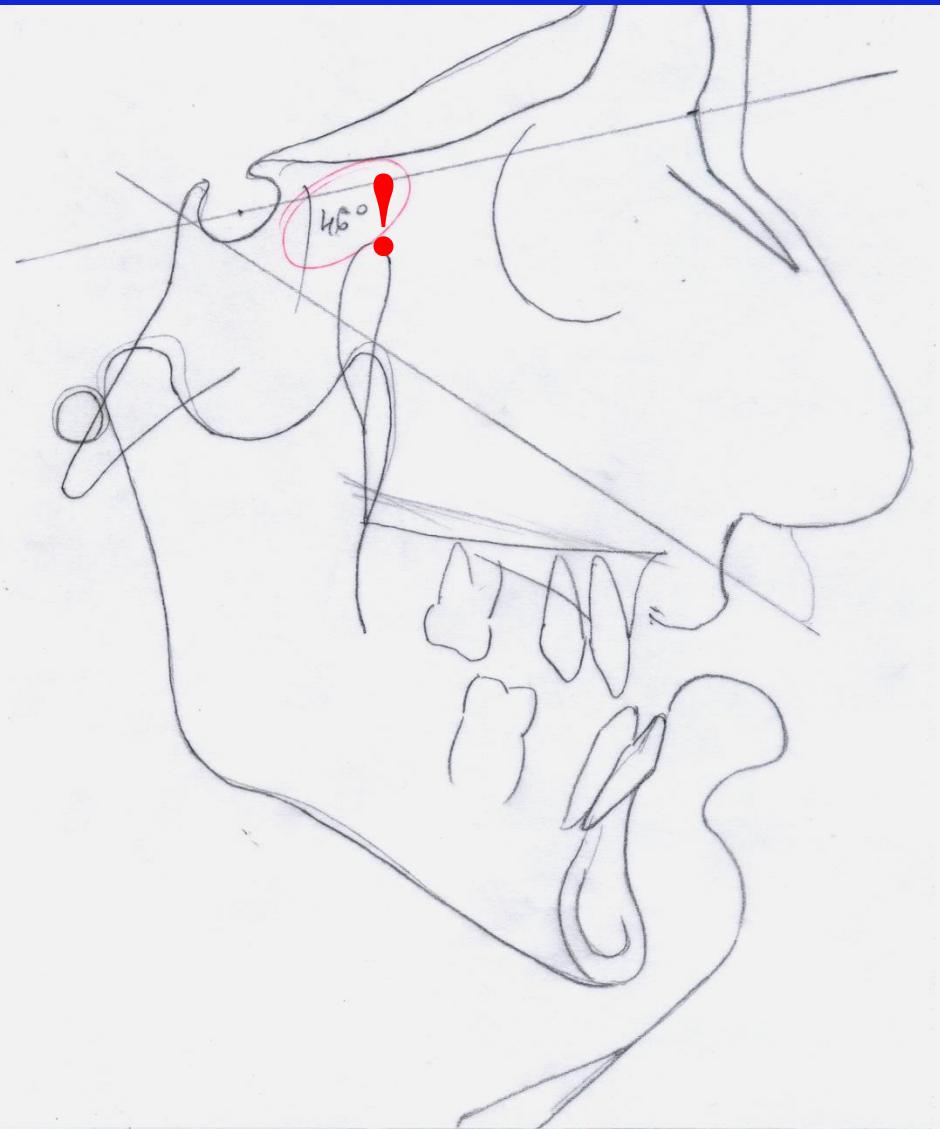


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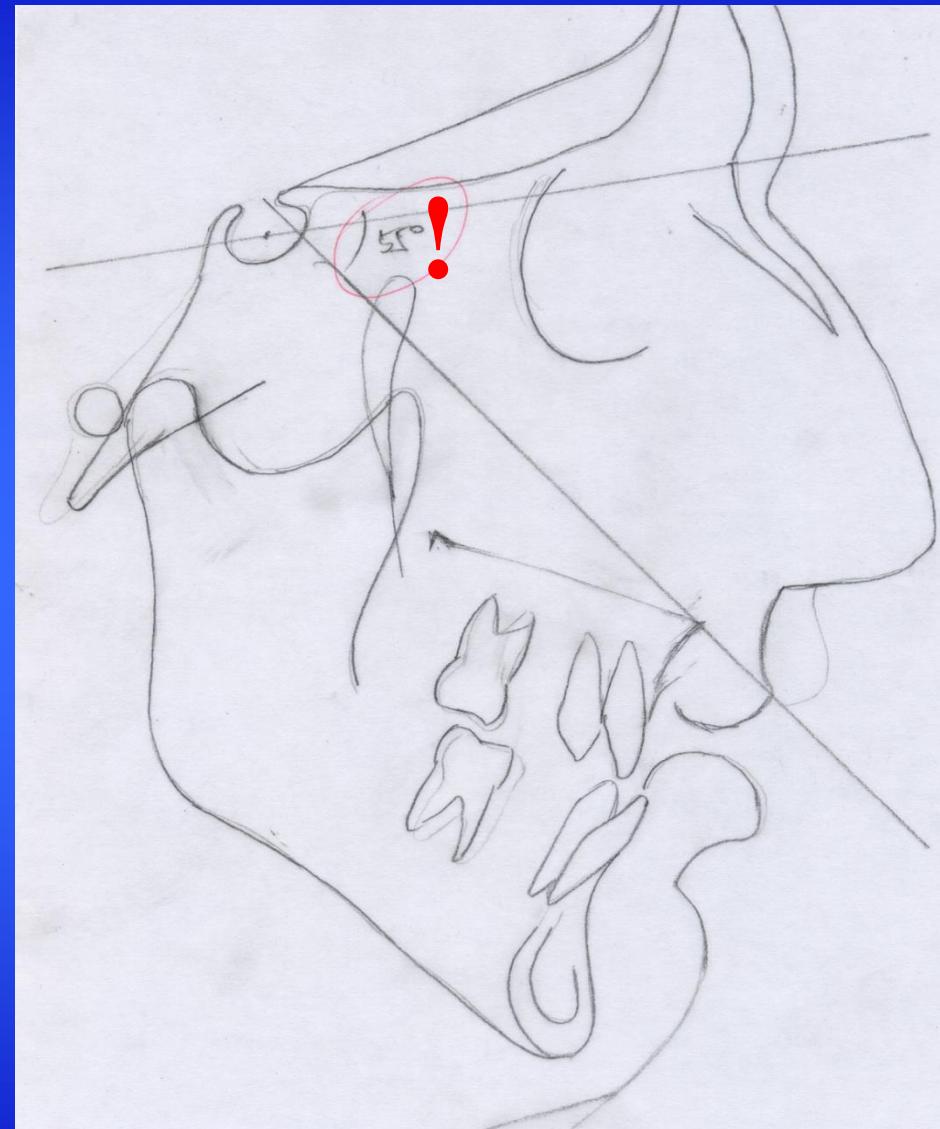


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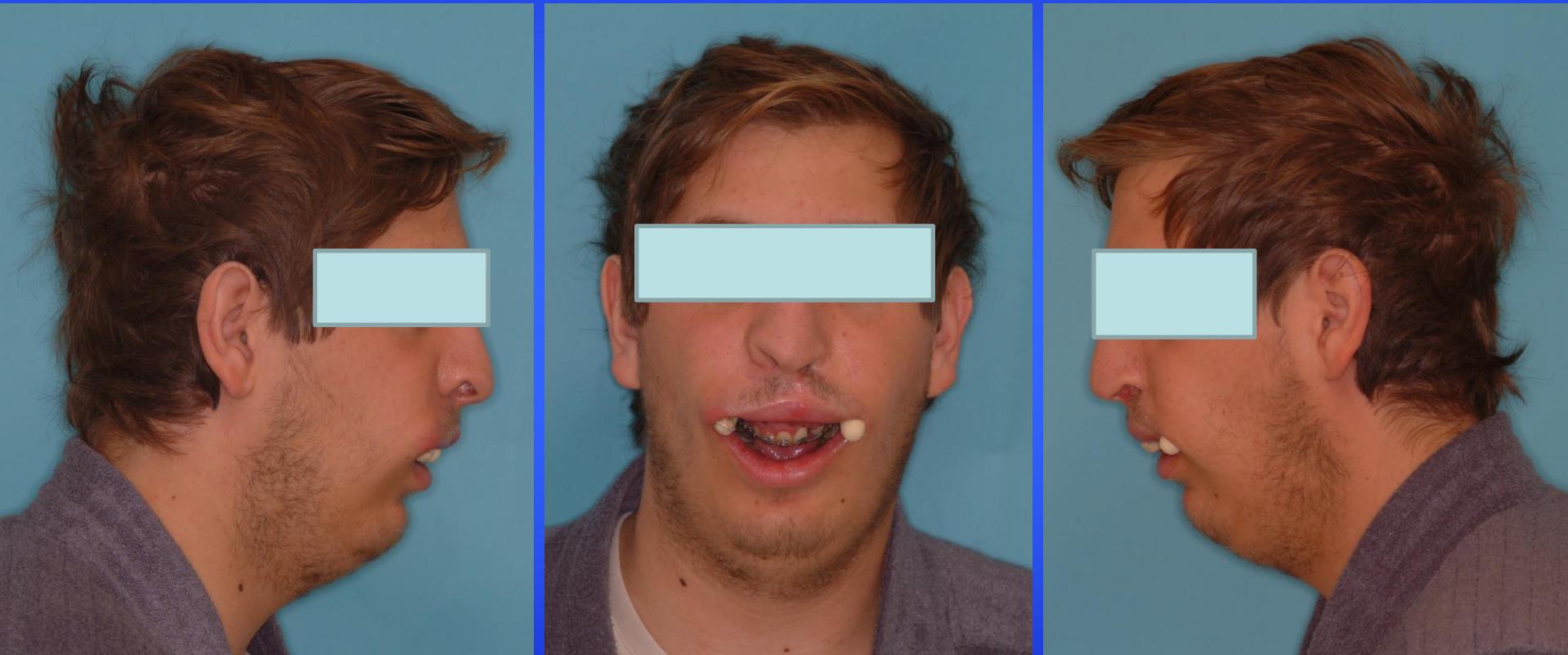




2004. 10. 20.



2004. 10. 29.



2004. 11. 03.



2004. 11. 03.



H.G.2004.11.08.



H.G.2004.11.15

**DELAIRE-MASZK**

**FLOATING BONE  
TECHNIC**



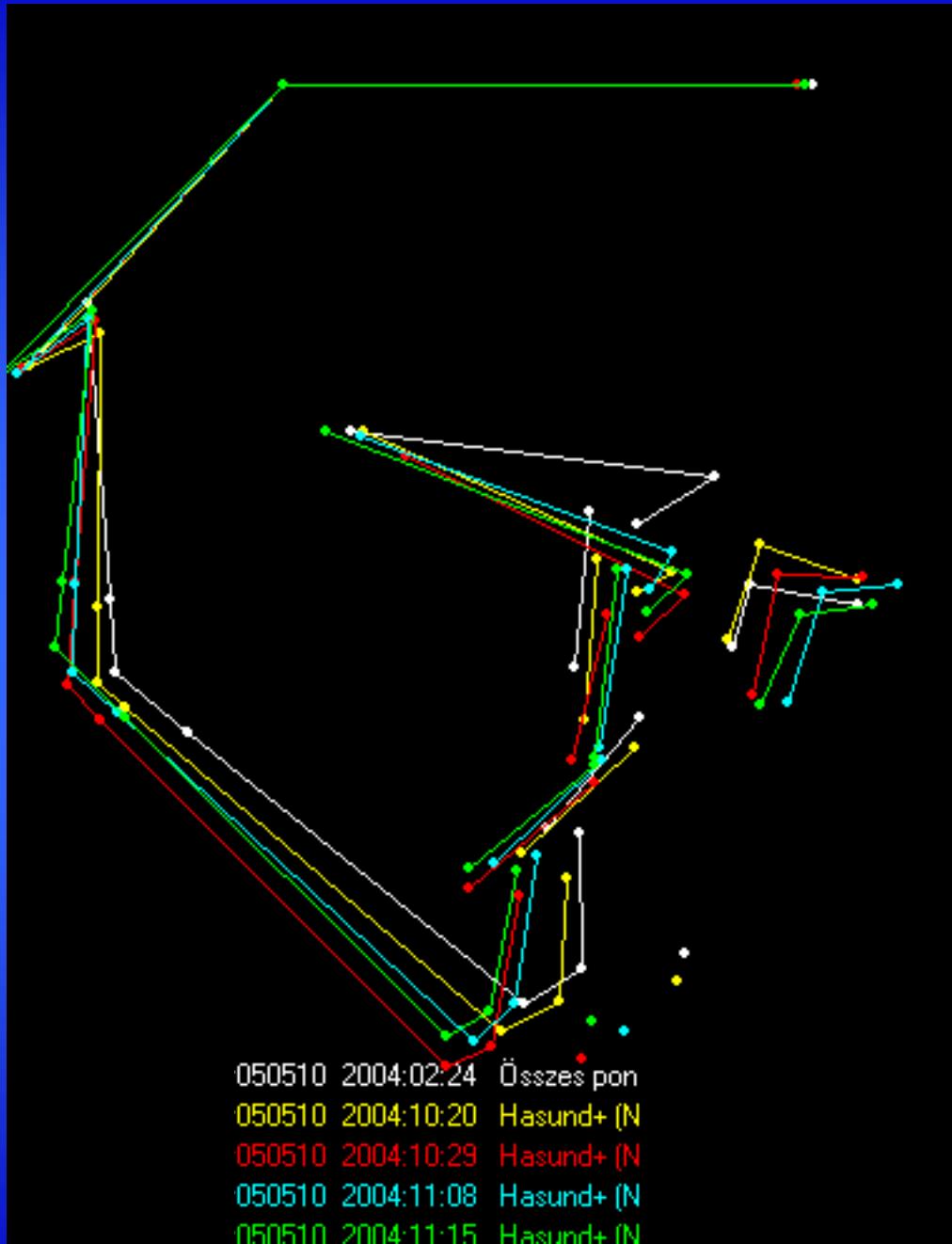
H.G.2004.11.16.



H.G.2004.11.16.



H.G.2004.11.16.



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SNA	82	<b>68,2</b>	<b>71,7</b>	<b>74,0</b>	<b>72,7</b>
SNB	80	<b>72,6</b>	<b>73,2</b>	<b>70,9</b>	<b>70,7</b>
ANB	2	<b>-4,4</b>	<b>-1,5</b>	<b>3,1</b>	<b>2,1</b>
SNPg	81	<b>75,3</b>	<b>74,9</b>	<b>72,3</b>	<b>72,3</b>
NSBa	130	<b>132,5</b>	<b>131,9</b>	<b>132,8</b>	<b>132,4</b>
Gn-tgo-Ar	126	<b>133,4</b>	<b>130,5</b>	<b>130,6</b>	<b>130,3</b>
N szög	58	<b>49,7</b>	<b>52,5</b>	<b>54,7</b>	<b>56,2</b>
H szög	8	<b>-8,7</b>	<b>-8,3</b>	<b>5,9</b>	<b>7,2</b>
ML-NSL	32	<b>39,0</b>	<b>40,8</b>	<b>45,2</b>	<b>42,7</b>
NL-NSL	8,5	<b>6,8</b>	<b>24,3</b>	<b>26,3</b>	<b>20,4</b>
ML-NL	23,5	<b>32,2</b>	<b>16,4</b>	<b>18,9</b>	<b>22,2</b>
N-Sp' (mm)		<b>57,7</b>	<b>71,2</b>	<b>72,5</b>	<b>69,0</b>
Sp'-Gn (mm)		<b>79,2</b>	<b>70,1</b>	<b>75,7</b>	<b>75,2</b>
N-Sp'/Sp'-Gn (79%)		<b>72,8</b>	<b>101,5</b>	<b>95,7</b>	<b>91,8</b>
T-†	131	<b>146,0</b>	<b>136,9</b>	<b>142,8</b>	<b>142,5</b>
†-NA (szög)	22	<b>15,5</b>	<b>14,2</b>	<b>2,7</b>	<b>8,1</b>
T-NB (szög)	25	<b>22,8</b>	<b>30,4</b>	<b>31,4</b>	<b>27,4</b>
†-NA (mm)	4	<b>-1,0</b>	<b>-1,4</b>	<b>-4,3</b>	<b>-0,3</b>
T-NB (mm)	4	<b>3,5</b>	<b>4,0</b>	<b>5,1</b>	<b>4,2</b>
Pg-NB		<b>6,1</b>	<b>4,1</b>	<b>3,5</b>	<b>3,9</b>
T-NPg		<b>-0,9</b>	<b>1,1</b>	<b>2,5</b>	<b>1,4</b>
NasoLab	110	<b>96,0</b>	<b>89,1</b>	<b>100,1</b>	<b>112,9</b>
Tweed		<b>91,3</b>	<b>96,5</b>	<b>95,3</b>	<b>94,0</b>
					<b>95,5</b>



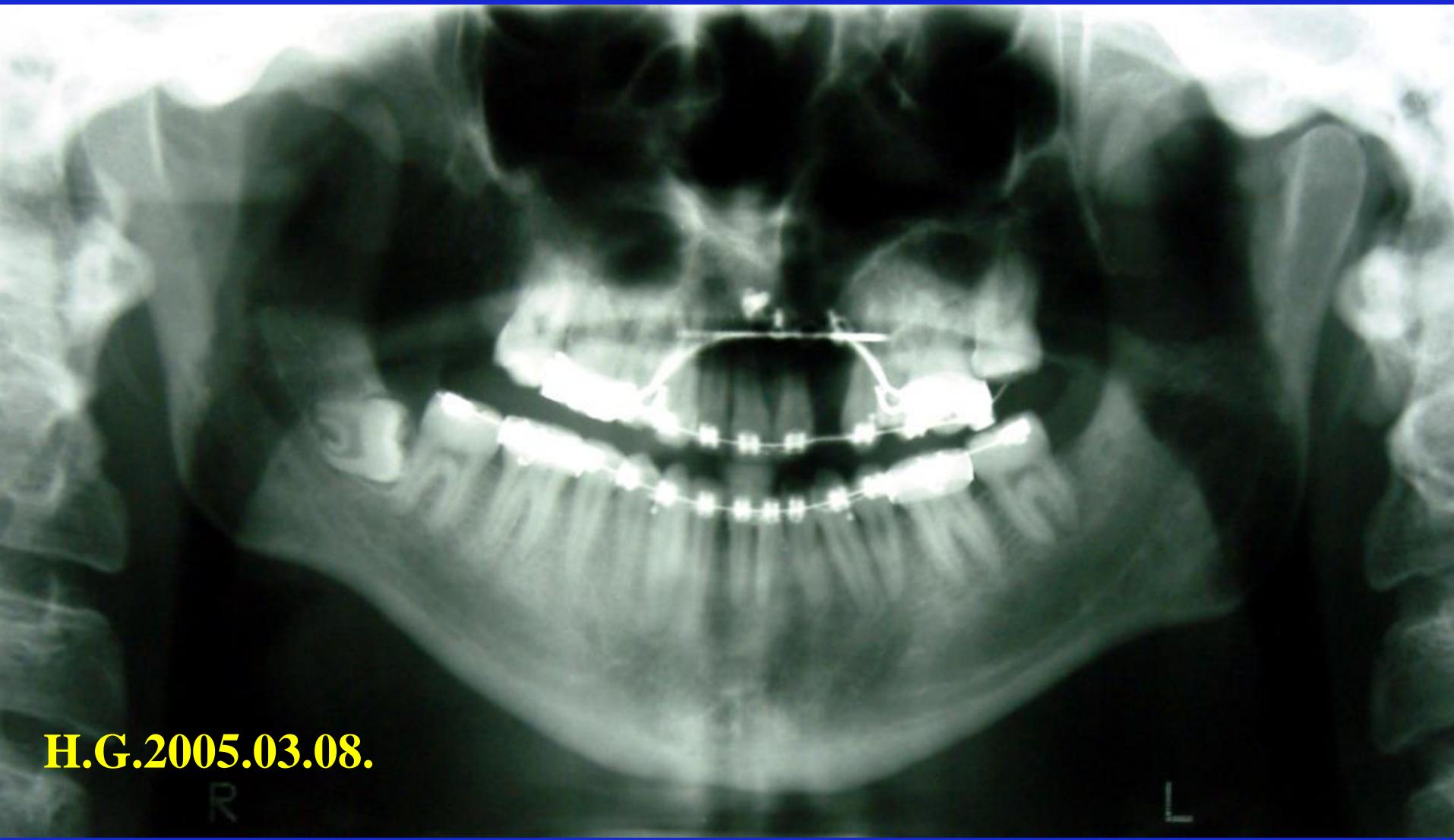
**KEZDŐ  
DISZTRAKCIÓ  
KÖZBEN  
DISZTRAKCIÓ  
VÉGE, LEMEZ  
LEMEZZEL  
LEMEZZEL**



H.G.2005.03.08.



H.G.2004.12.07.

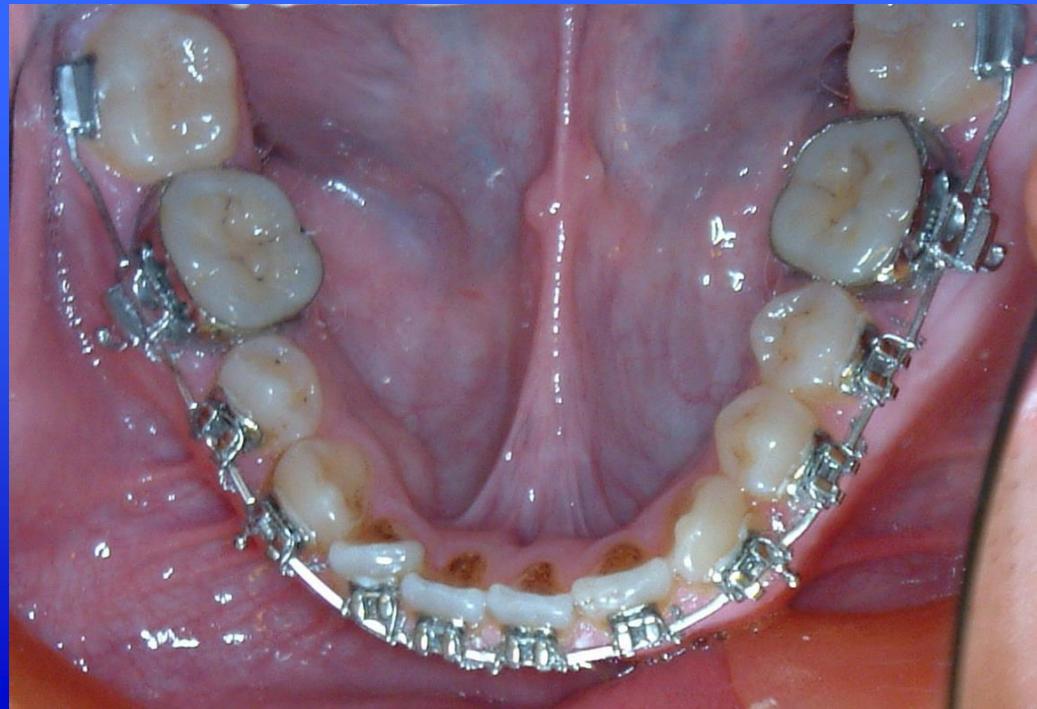
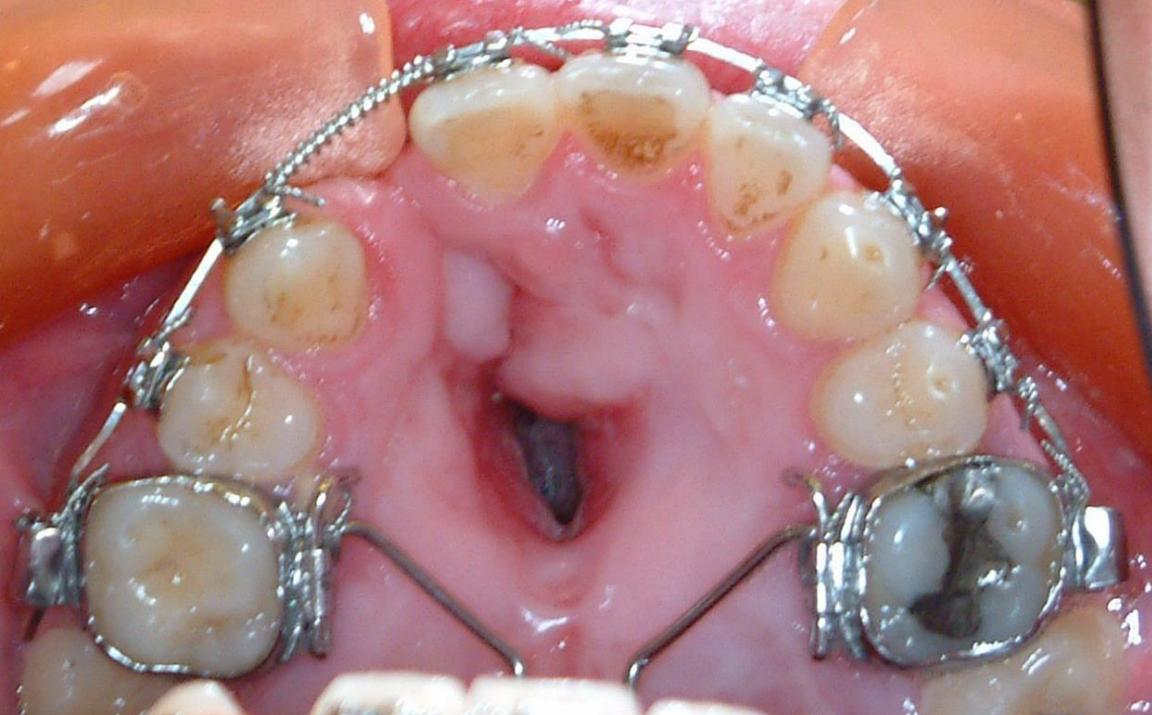


H.G.2005.03.08.

R

L





H.G.2005.03.08.



H.G. 2005.03.08.