

Dr. Sri Aurobindo College of Dentistry

Indore, Madhya Pradesh
INDIA



MODULE PLAN

- TOPIC : ORTHOGNATHIC SURGERY
- SUBJECT: ORAL SURGERY
- TARGET GROUP: UNDERGRADUATE DENTISTRY
- MODE: POWERPOINT – WEBINAR
- PLATFORM: INSTITUTIONAL LMS
- PRESENTER: DR. TEJAS MOTIWALE

ORTHOGNATHIC SURGERY

- REFERS TO ALIGNMENT OF THE JAWS
- AIM IS TO NORMALISE THE RELATIONSHIP OF THE JAWS BETWEEN THEMSELVES AND TO THE REST OF THE CRANIOFACIAL COMPLEX.
- ORTHOGNATHIC SURGERY MUST BE TAILORED TO THE GROWTH PATTERN OF EACH INDIVIDUAL
- Two phases when orthognathic surgery can be undertaken
 - DURING THE GROWTH PHASE(interceptive surgery)
 - AFTER THE GROWTH HAS CEASED(definitive surgery)
- Controversy.....

Common dentofacial deformities

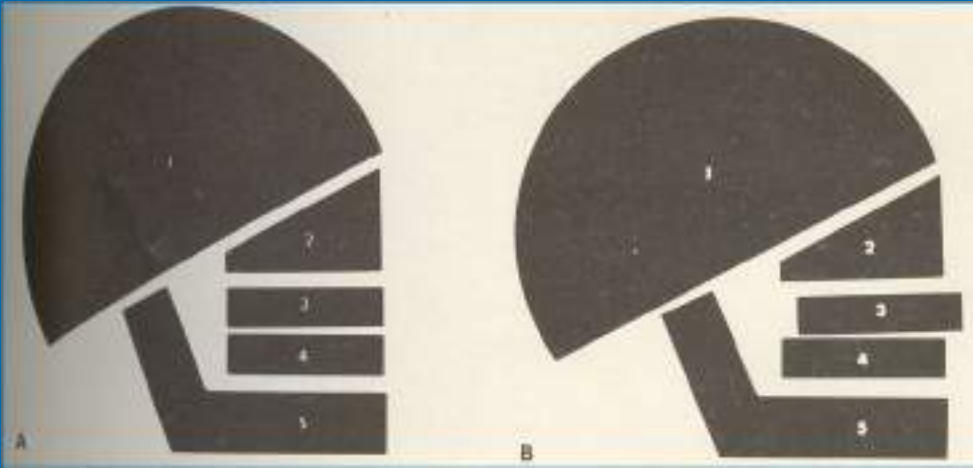
- it is important to consider the skeletal relationship and the dental relationship as orthognathic surgery is fundamentally used to correct the underlying skeletal base discrepancy.
- Maxillary deformities
 - Anteroposterior excess
 - Anteroposterior deficiency
 - Vertical excess
 - Vertical deficiency
 - Alveolar clefts
- Mandibular deformities
 - AP excess
 - AP deficiency
 - Mandibular assymetry

➤ Chin deformities

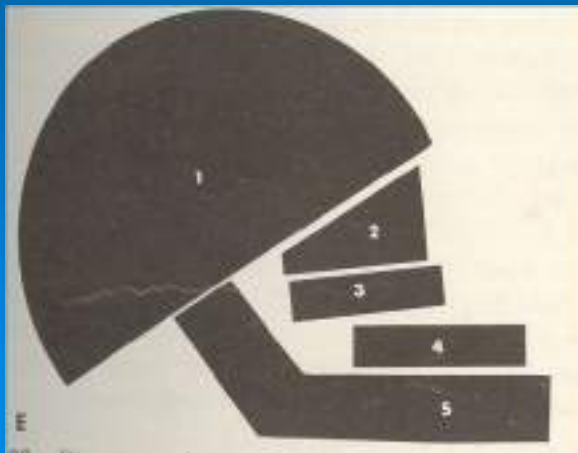
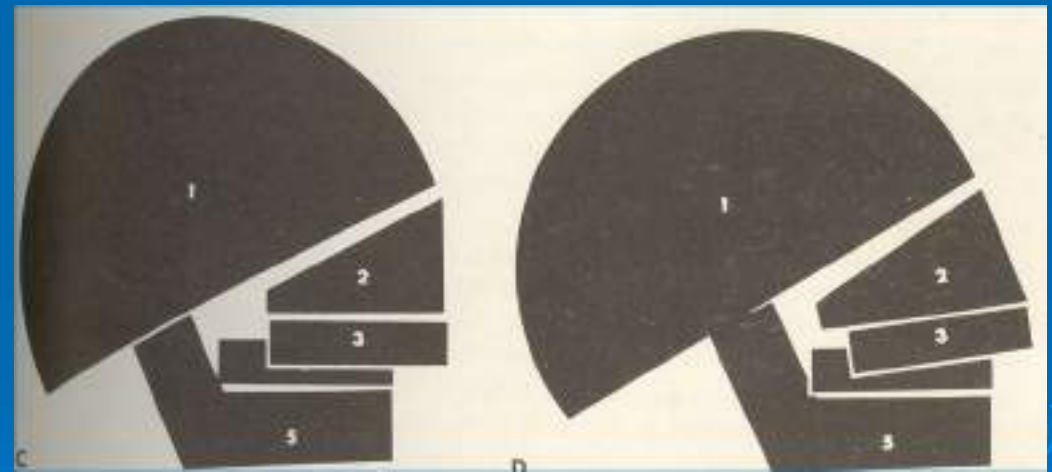
- Macrogenia-overgrowth in vertical and/ or anterior direction
- Microgenia-deficiency in vertical and /or anterior direction

➤ Combined maxillary mandibular deformities

- Short face syndrome(brachyfacial)
- Long face syndrome(dolicofacial)



MAXILLO MANDIBULAR RELATIONS WITH EACH OTHER AND SKELETAL BASE



PHILOSOPHY

To obtain functional occlusion with to aid stability and aesthetics

To correct underlying skeletal disharmony

A surgical plan with maximum aesthetics with out compromise on occlusion or skeletal stability

OBJECTIVES


1. Aesthetics
2. Function
3. Stability

Patient evaluation and diagnosis

- Patient concerns
- Clinical evaluation

DENTO – FACIAL DEFORMITIES CASE SELECTION AND PLANNING

SCIENTIFIC BASIS FOR SELECTION

- a. INPUT FROM THE PATIENT
 - b. INPUT FROM THE ORTHODONTIST
 - c. SURGEON'S INPUT
 - d. MEDICAL / SYSTEMIC EVALUATION
- 

DENTO – FACIAL DEFORMITIES CASE SELECTION AND PLANNING

THE PATIENT

-AWARENESS

-MOTIVATION

-EXPECTATIONS 'ESTHETIC DESIRES'



DENTO – FACIAL DEFORMITIES CASE SELECTION AND PLANNING

TREATMENT GOAL

- ACHIVE STABLE ALIGNMENT AND INTERCUSPATION, OPTIMUM FUNCTION AND AESTHETICS.

SPECIFIC THERAPEUTIC GOAL

- CORRECTION OF MASTICATORY/
SWALLOWING ABNORMALITIES
- ASSOCIATED TMJ DYSFUNCTION
- RESPIRATORY ABNORMALITIES-SLEEP
APNOEA, NASAL OBSTRUCTIONS.
- CORRECTION OF GROWTH AND
DEVELOPMENTAL ABNORMALITIES.
- CORRECTION OF PSYCHOSOCIAL
IMPAIRMENT

DENTO – FACIAL DEFORMITIES CASE SELECTION AND PLANNING

THE PATIENT

- REALISTIC EXPECTATIONS ?
- SOCIAL / PSYCHOLOGICAL DIMENSION !



DENTO – FACIAL DEFORMITIES CASE SELECTION AND PLANNING

- WHO IS THE REFERING PHYSICIAN ?
- ARE YOU PART OF A SURGICAL / ORTHODONTIC TEAM ?
- DO ALL OF YOU SPEAK THE SAME LANGUAGE ?
- TREATMENT PLAN BASED ON THE ORTHODONTIST PERSPECTIVE

DENTO – FACIAL DEFORMITIES CASE SELECTION AND PLANNING

- **ROLE OF THE ORTHODONTIST IS TO ALIGN, DECOMPENSATE AND ACHIEVE STABILITY IN THE PRE OPERATIVE AND POST OPERATIVE PHASE OF THE TREATMENT.**

- THOROUGH SYSTEMIC EVALUATION TO ASSESS OTHER ASSOCIATED GROWTH AND DEVELOPMENTAL ABNORMALITIES.
- PERIOPERATIVE EVALUATION FOR BLEEDING, ALLERGY AND IMPAIRED HEALING.
- ASSESS HIS/HER PSYCHOLOGICAL COMPLIANCE AND PREVIOUS HISTORY OF SIMILAR PROCEDURES.

DENTO – FACIAL DEFORMITIES CASE SELECTION AND PLANNING

- ESTHETIC FACIAL EVALUATION
- CEPHALOMETRIC EVALUATION
- LIMITATIONS OF THE TECHNIQUE
- LIMITATIONS OF THE SURGEON
- THE 'F' WORD IS IT IMPORTANT ?

DENTO – FACIAL DEFORMITIES CASE SELECTION AND PLANNING

ESTHETIC TREATMENT OBJECTIVES



TYPE OF SURGERY



OCCLUSION

CEPHALOMETRIC ANALYSIS AND PREDICTION TRACING?



MODEL SURGERY

TREATMENT PLAN



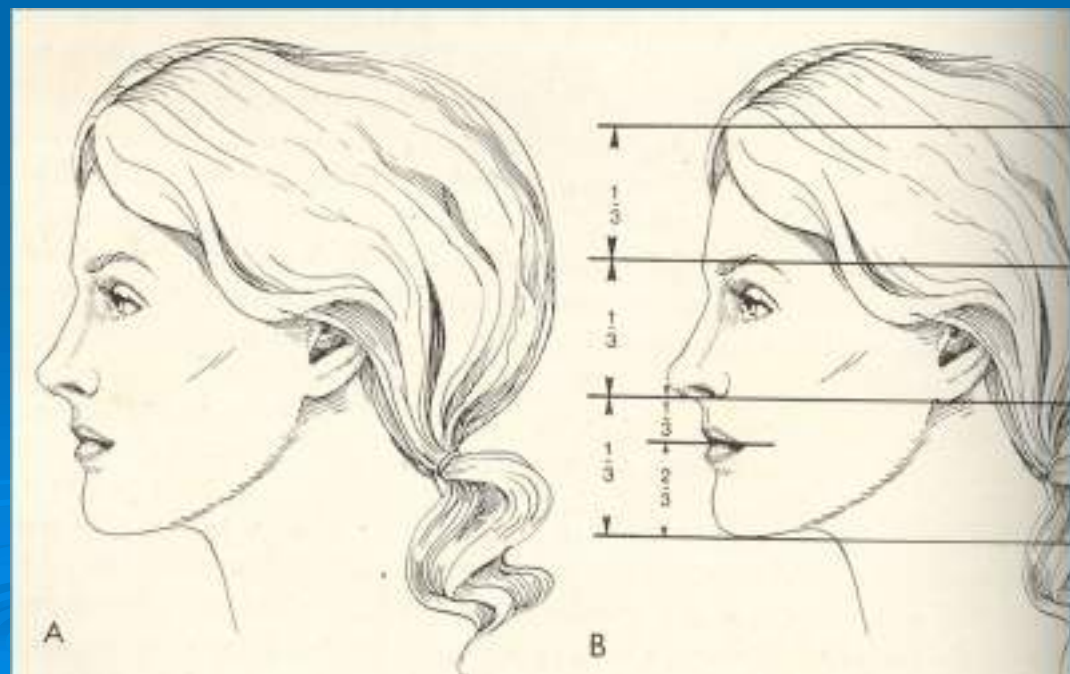
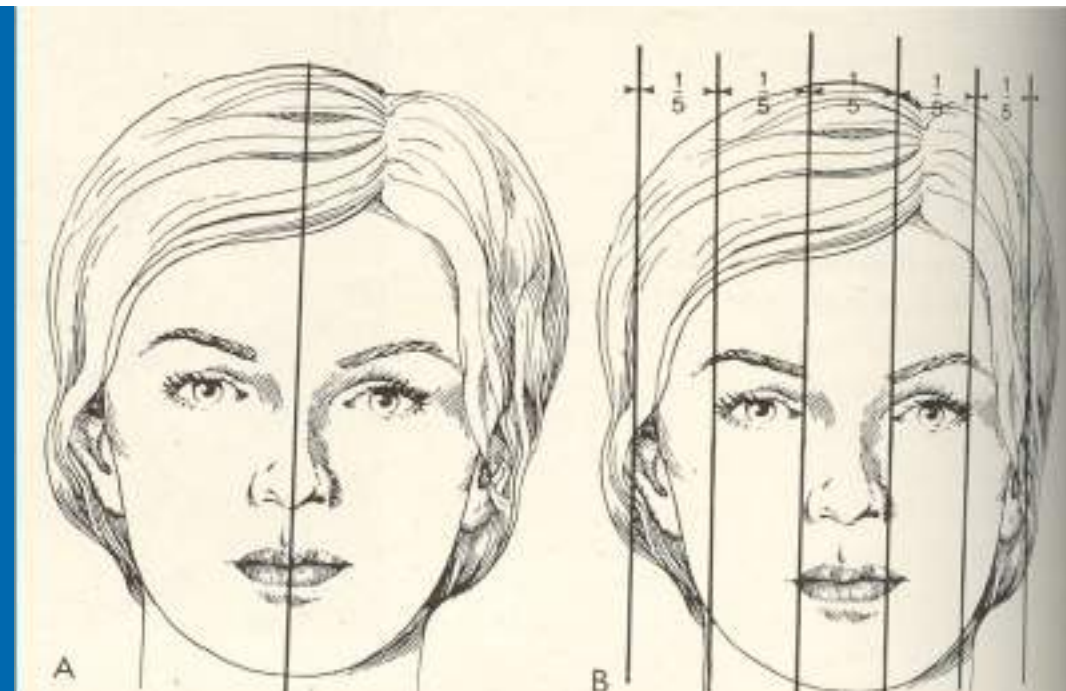
POST OP STABILITY
AND MORBIDITY

DENTO – FACIAL DEFORMITIES CASE SELECTION AND PLANNING

FRONTAL ANALYSIS

- SYMMETRY
- BALANCE
- MORPHOLOGY





DENTO – FACIAL DEFORMITIES CASE SELECTION AND PLANNING

ESTHETIC FACIAL EVALUATION

UPPER THIRD



DENTO – FACIAL DEFORMITIES CASE SELECTION AND PLANNING

MIDDLE THIRD (EYE BROWS – SUB NASALE)

- INTER CANTHAL / INTER PUPILLARY DISTANCE
- VERTICAL SYMMETRY OF INNER & OUTER CANTHII
- PRESENCE OF SCLERAL SHOW



DENTO – FACIAL DEFORMITIES CASE SELECTION AND PLANNING

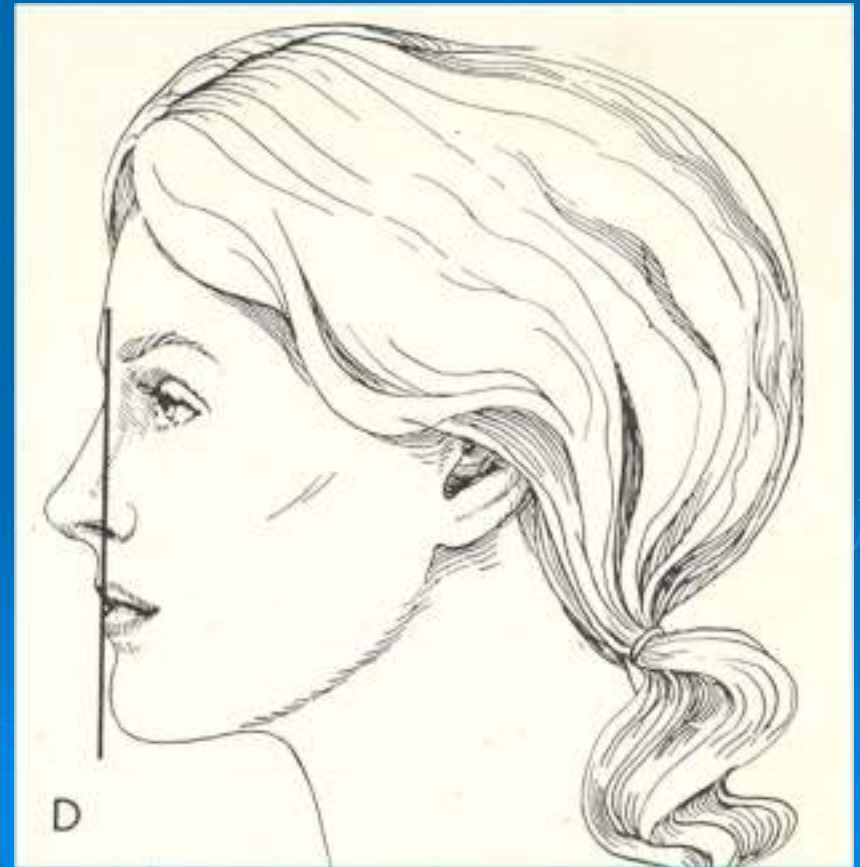
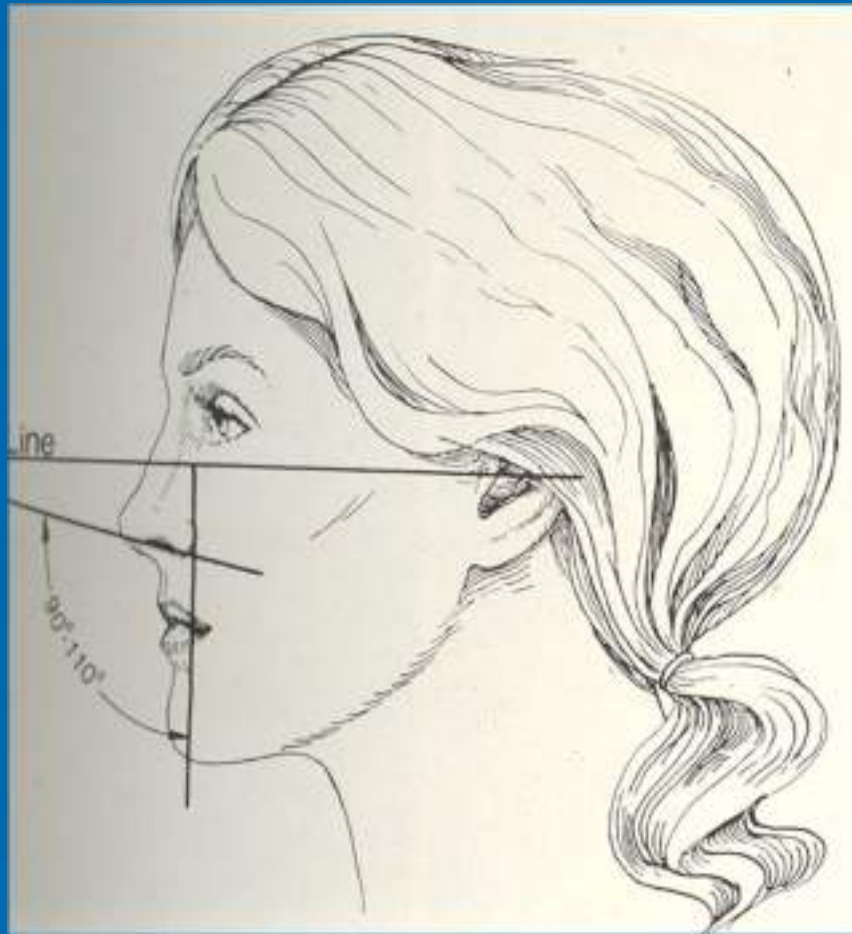
THE NOSE

FORM & SYMMETRY

LOCATION OF DEFORMITY

- a. GLABELLA
- b. DORSUM
- c. TIP
- d. ALAR BASES





DENTO – FACIAL DEFORMITIES CASE SELECTION AND PLANNING

CHEEK

- MALAR EMINENCE
- INFRA ORBITAL RIM
- PARA NASAL AREA



DENTO – FACIAL DEFORMITIES CASE SELECTION AND PLANNING

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DENTO – FACIAL DEFORMITIES CASE SELECTION AND PLANNING

UPPER LIP LENGTH

SUB NASALE – STOMION :

STOMION - MENTON

SUB NASALE – LOWER LIP

VERMILION : LOWER LIP

VERMILION - MENTON



DENTO – FACIAL DEFORMITIES CASE SELECTION AND PLANNING

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- UNDERLYING SKELETAL PROBLEM



DENTO – FACIAL DEFORMITIES CASE SELECTION AND PLANNING



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COMMISSURE DISTANCE

- EXPOSURE OF TEETH

DENTO – FACIAL DEFORMITIES CASE SELECTION AND PLANNING



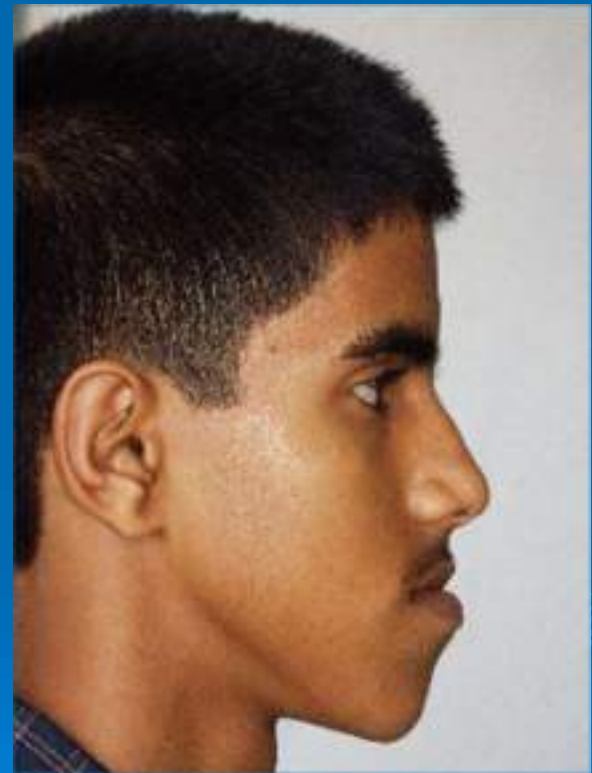
DENTO – FACIAL DEFORMITIES CASE SELECTION AND PLANNING



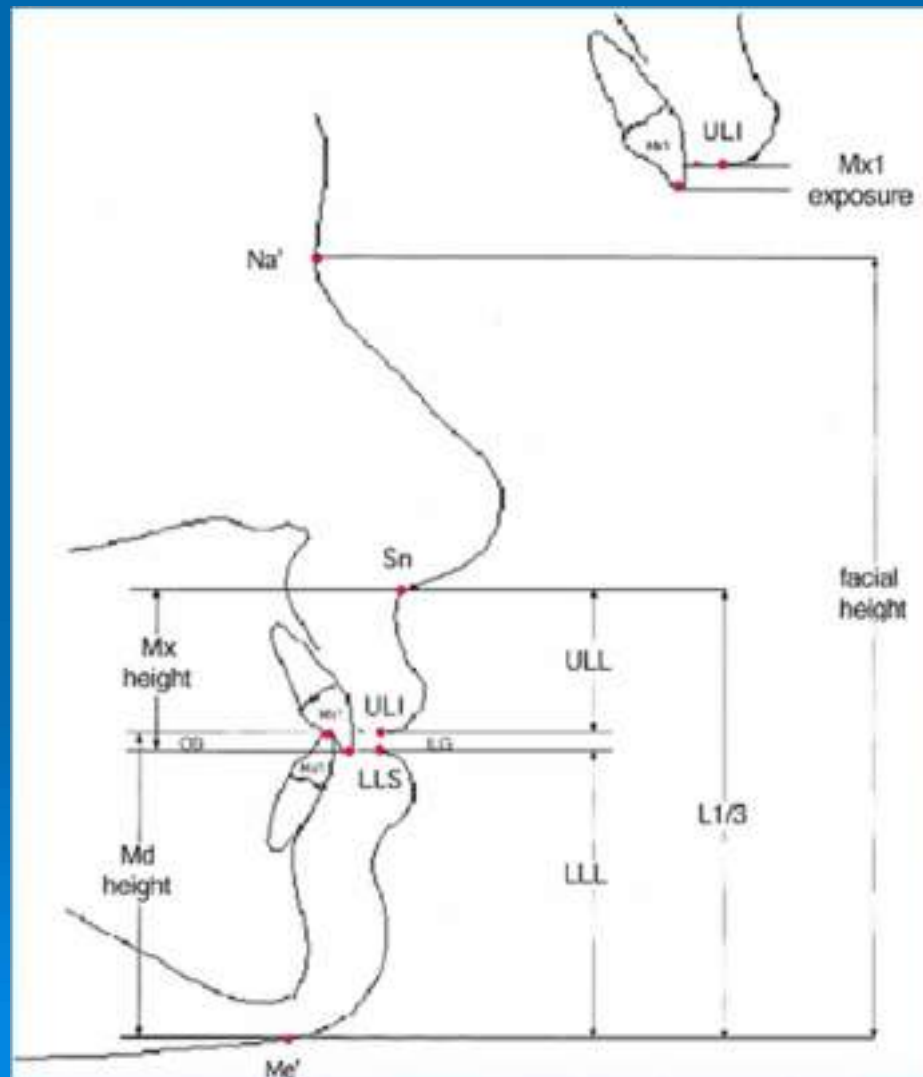
MANDIBULAR ANGLE

DENTO – FACIAL DEFORMITIES CASE SELECTION AND PLANNING

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DENTO – FACIAL DEFORMITIES CASE SELECTION AND PLANNING



DENTO – FACIAL DEFORMITIES CASE SELECTION AND PLANNING

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- NASO-LABIAL ANGLE



DENTO – FACIAL DEFORMITIES CASE SELECTION AND PLANNING



- HORIZONTAL PLANE
- NASAL TIP – SUB NASALE :
SUB NASALE – ALAR BASE

DENTO – FACIAL DEFORMITIES CASE SELECTION AND PLANNING



CHIN PROJECTION

NECK CHIN AREA

POGONION – NECK CHIN ANGLE



Plane of Reference for comparison

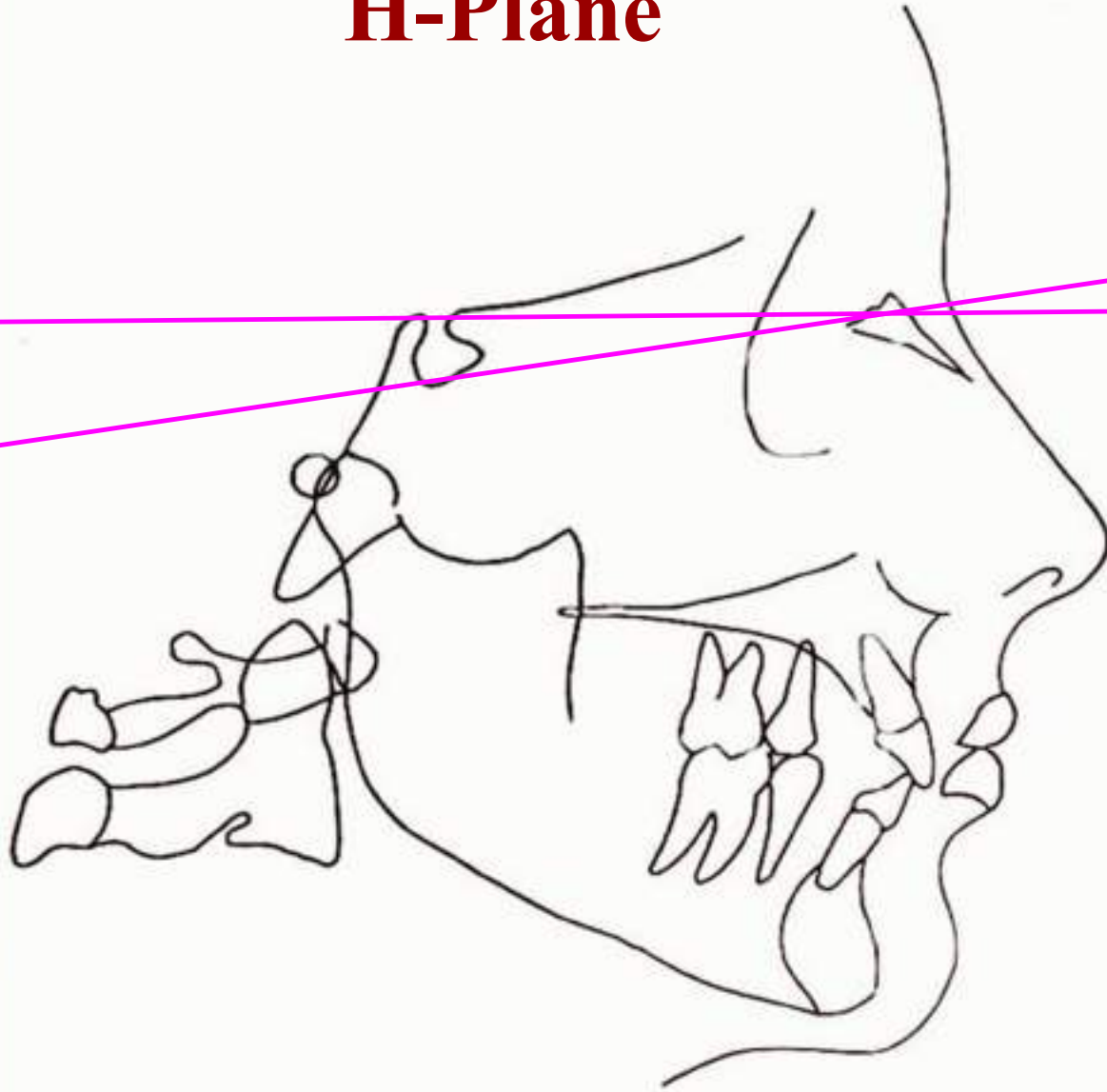
- A constructed plane called **Horizontal Plane** which is surrogate Frankfurt Horizontal plane constructed by drawing a line 7° from SN plane
- Most measurements will be made from projections either parallel or perpendicular to the **Horizontal Plane**

- ❑ Chosen landmarks and measurements can be altered by various surgical procedures.
- ❑ The appraisal includes all facial bones and a cranial base reference.
- ❑ Rectilinear measurements can be readily transferred to a study cast for mock surgery.

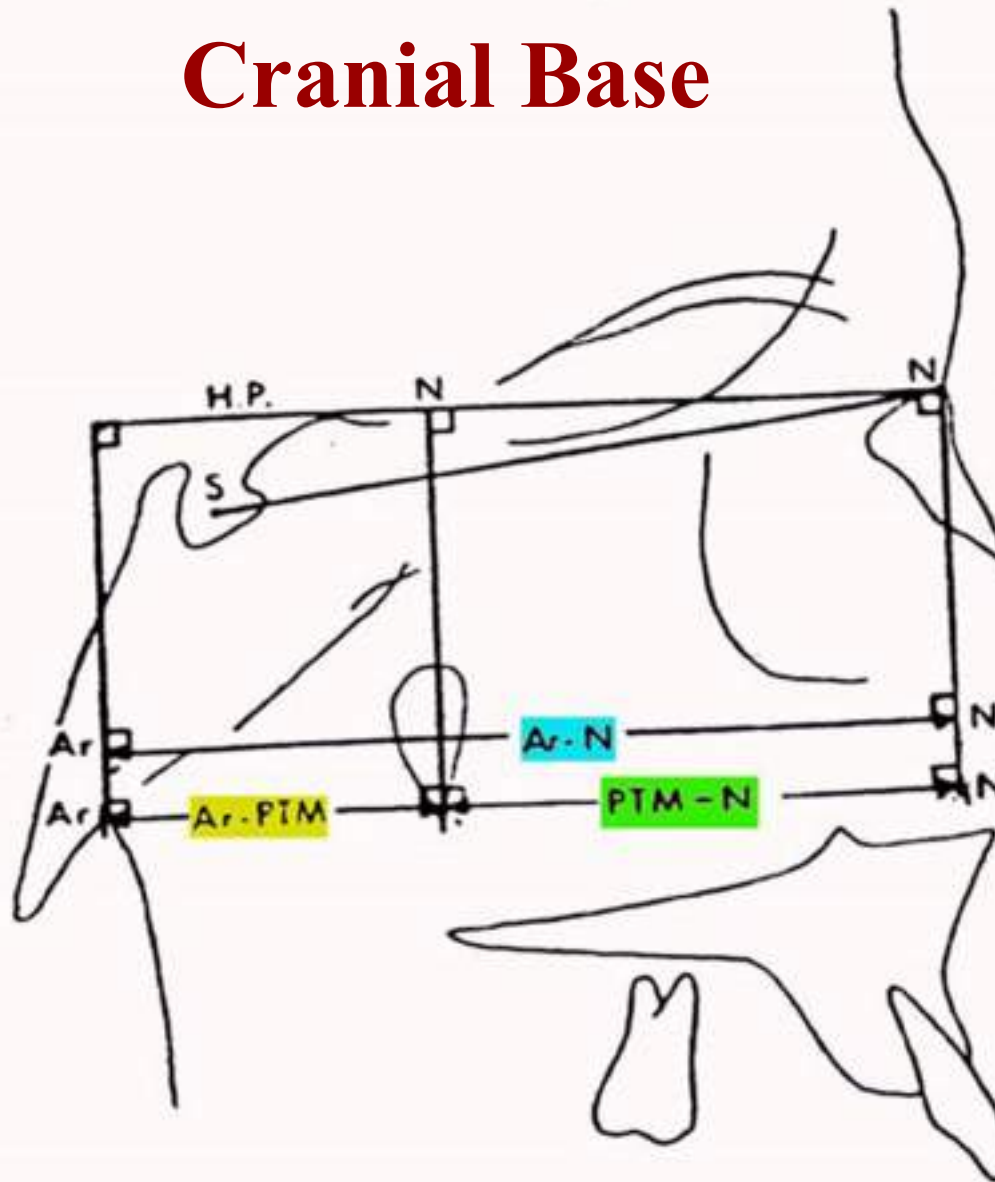
Critical facial components can be examined.

- Standards and statistics are available for variations in age and sex from 5 to 20
- Consists of a series of measurements that can be computerised.

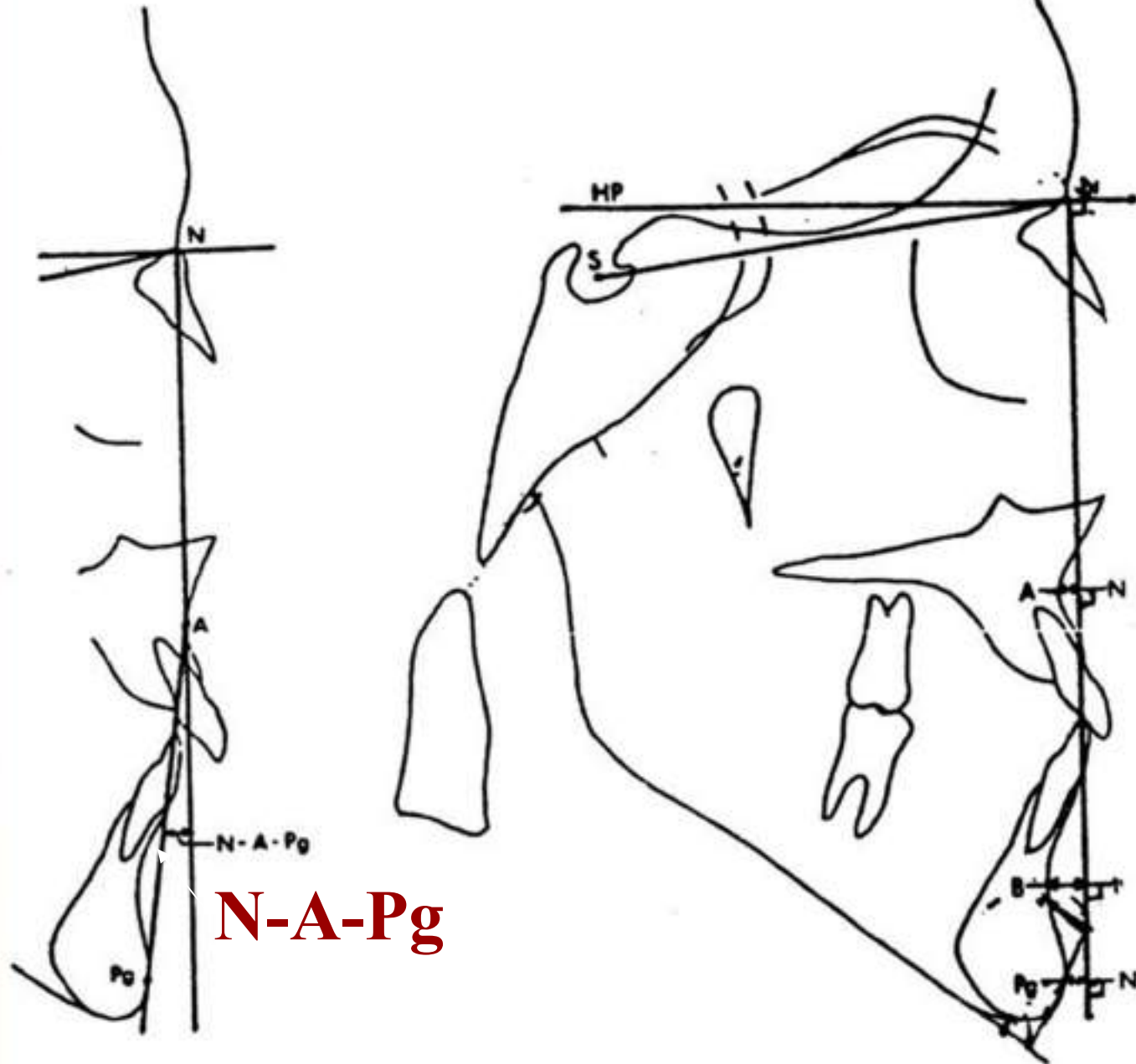
H-Plane



Cranial Base

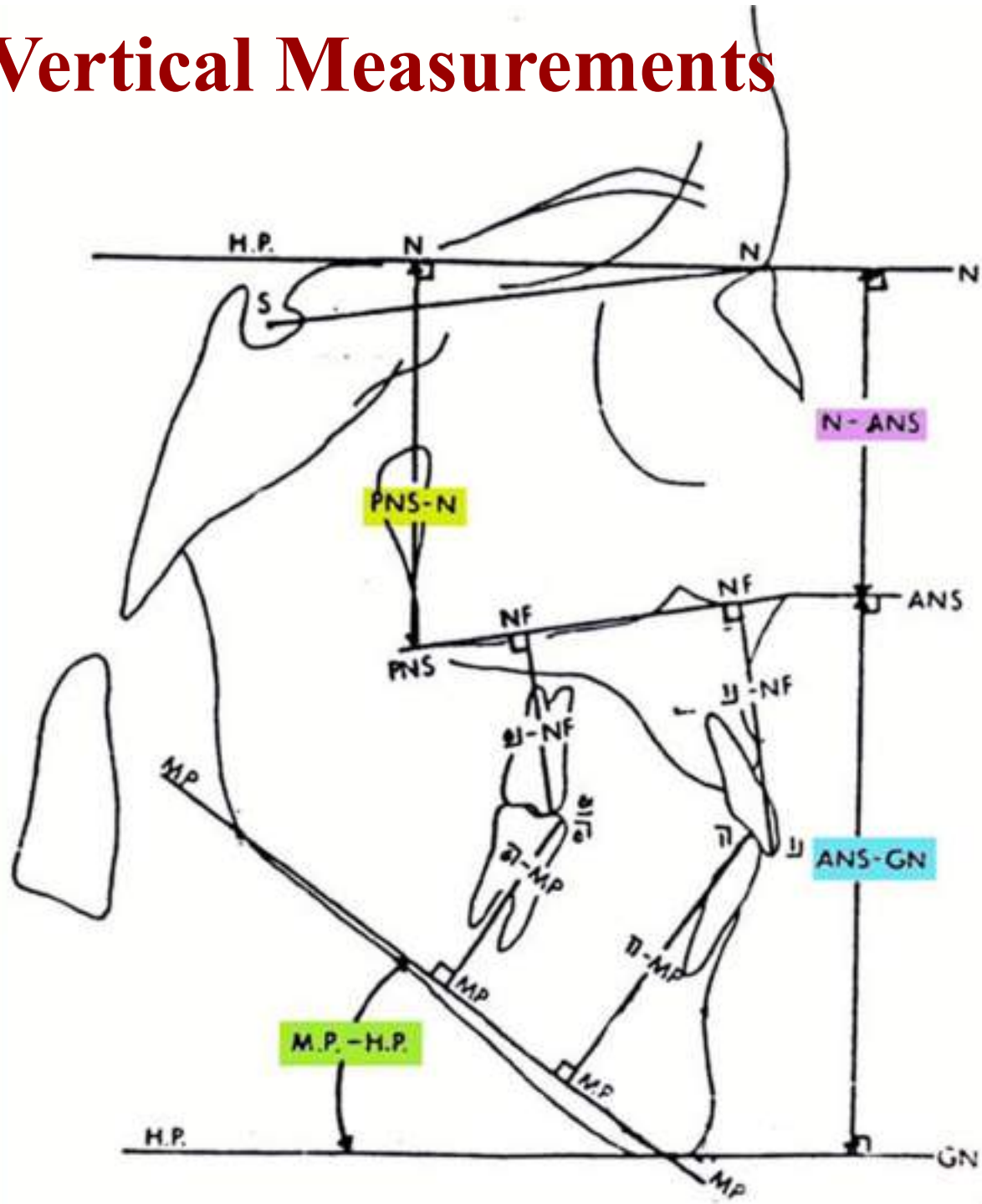


Horizontal Measurements

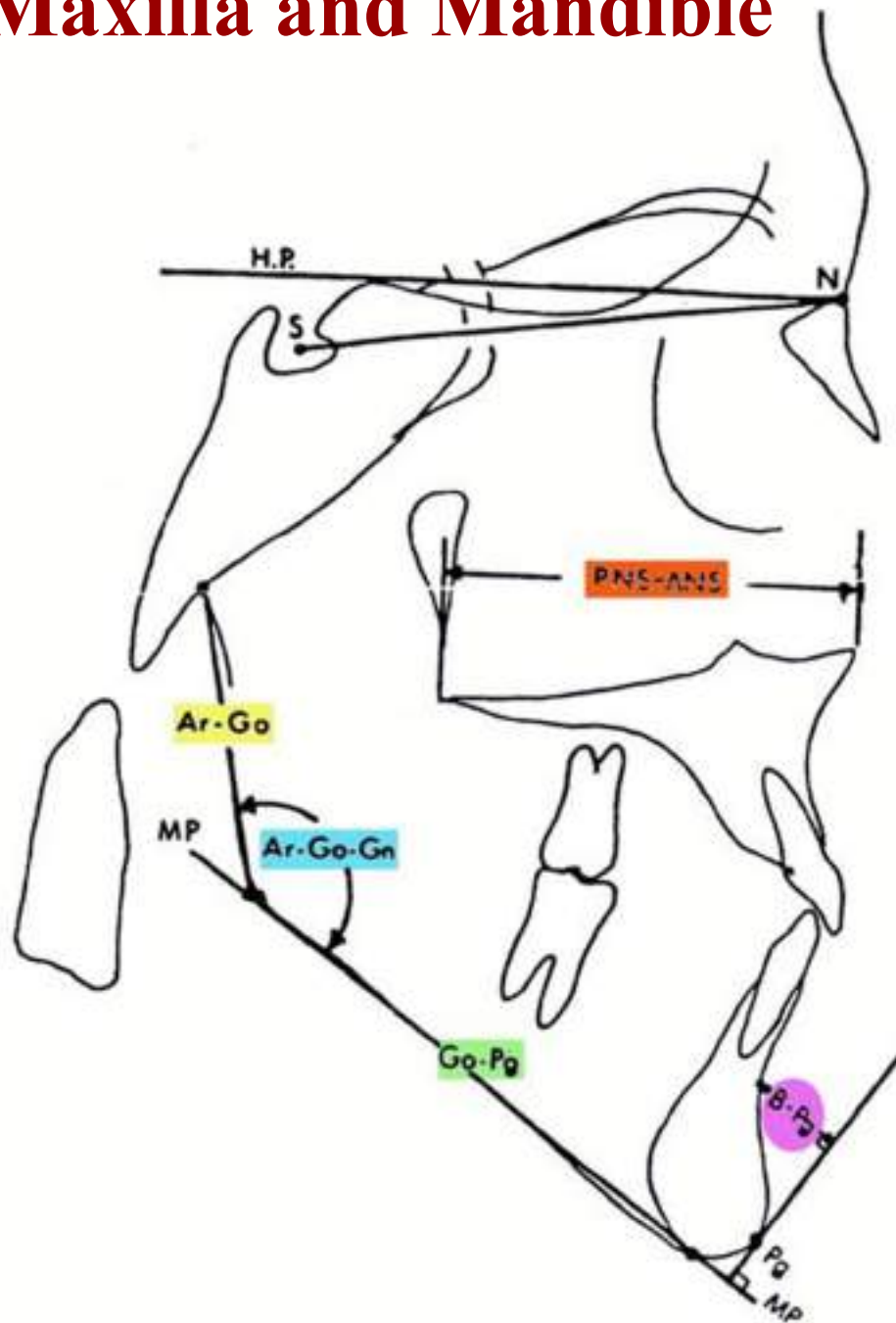




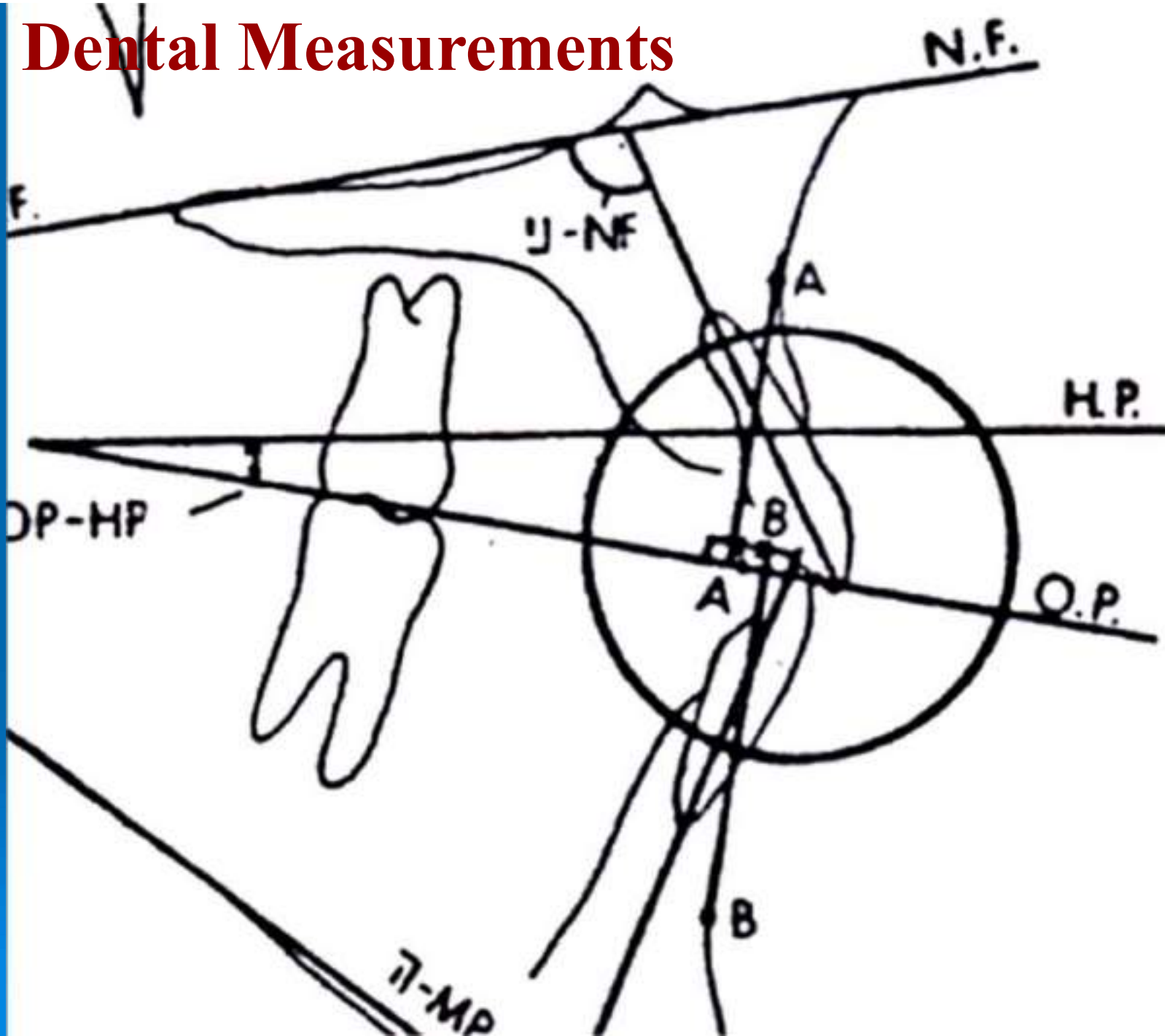
Vertical Measurements



Maxilla and Mandible




Dental Measurements

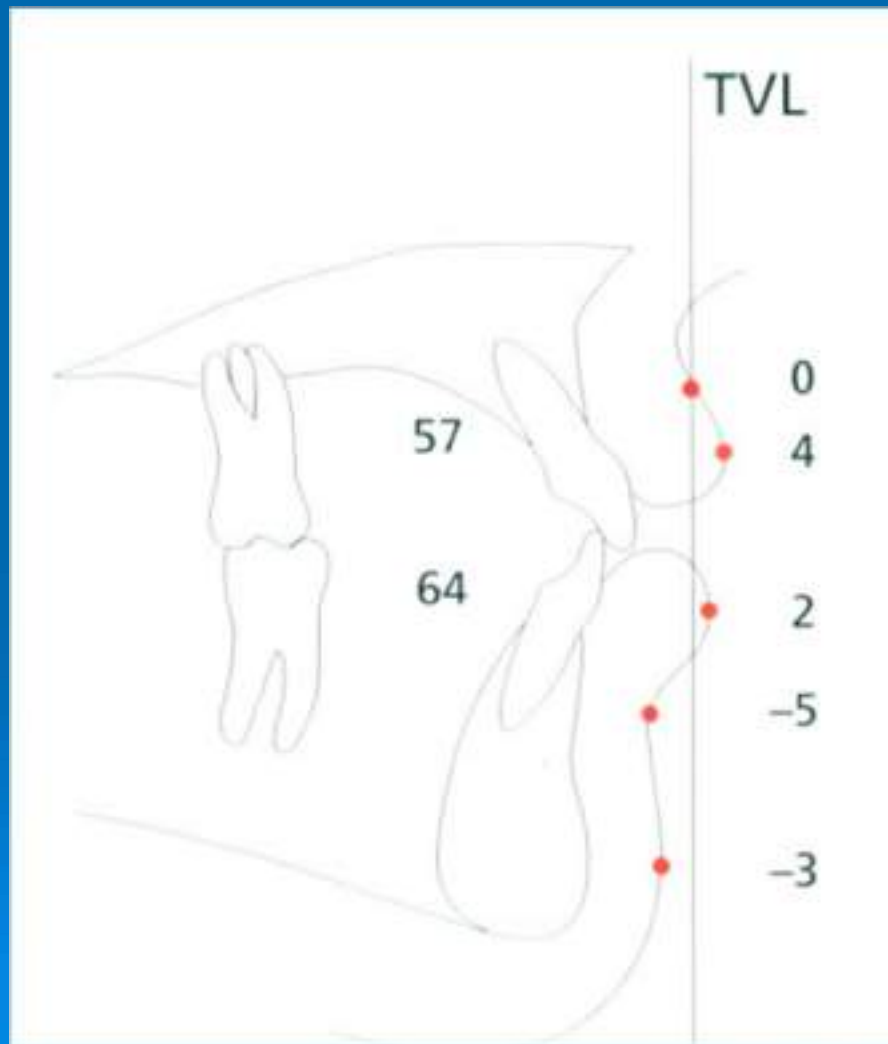


*“We only treat what we are educated to see. The more
we see, the better the treatment we render our
patients”*

Arnett.....

Format for examination of face


- Natural head posture
 - Centric relation (uppermost condyle position)
 - Relaxed lip posture
 - True Vertical Line (TVL)
- 



- It is a Vertical line passing through the Subnasale with natural head posture.
- It may be used to quantify favorable or unfavorable change in the profile after overjet reduction and has a potential role in post treatment analysis and research

Soft tissue Cephalometric Analysis

Composed of five components

1. Dentoskeletal factors
 2. Soft tissue structures
 3. Facial length
 4. Projections to TVL
 5. Harmony values
- 

DENTO – FACIAL DEFORMITIES CASE SELECTION AND PLANNING

MODEL SURGERY OBJECTIVES

- TO KNOW HOW MUCH OF MOVEMENT AND IN WHAT DIRECTION
- TO KNOW THE SIZE AND SHAPE OF THE OSTECTOMIES PARTICULARLY INTER DENTAL

DENTO – FACIAL DEFORMITIES CASE SELECTION AND PLANNING

OBJECTIVES CONTINUED –

- FOR SURGICAL SPLINT CONSTRUCTION
- AS A REFERENCE FOR FUTURE USE



Pre -op



Post -op



Pre -op



Post -op

Midface osteotomies

➤ History

- Langenbeck(1860)
- Cheever(1867)
- Wassmund(1935)
- Gillies and harrison(1950)-le fort III
- Bell
- Obwegeser(1969)

Types of midface osteotomies

Segmental maxillary surgery

- Single tooth osteotomy
- Corticotomy
- Anterior segmental osteotomy
 - Wassmund(1935)
 - Wunderer (1963)
 - Epker and wolford(1980)
- Posterior segmental osteotomy
 - schuhardt(1959)
 - Kufner(1971)
- Horse shoe osteotomy
wolford and epker(1975)

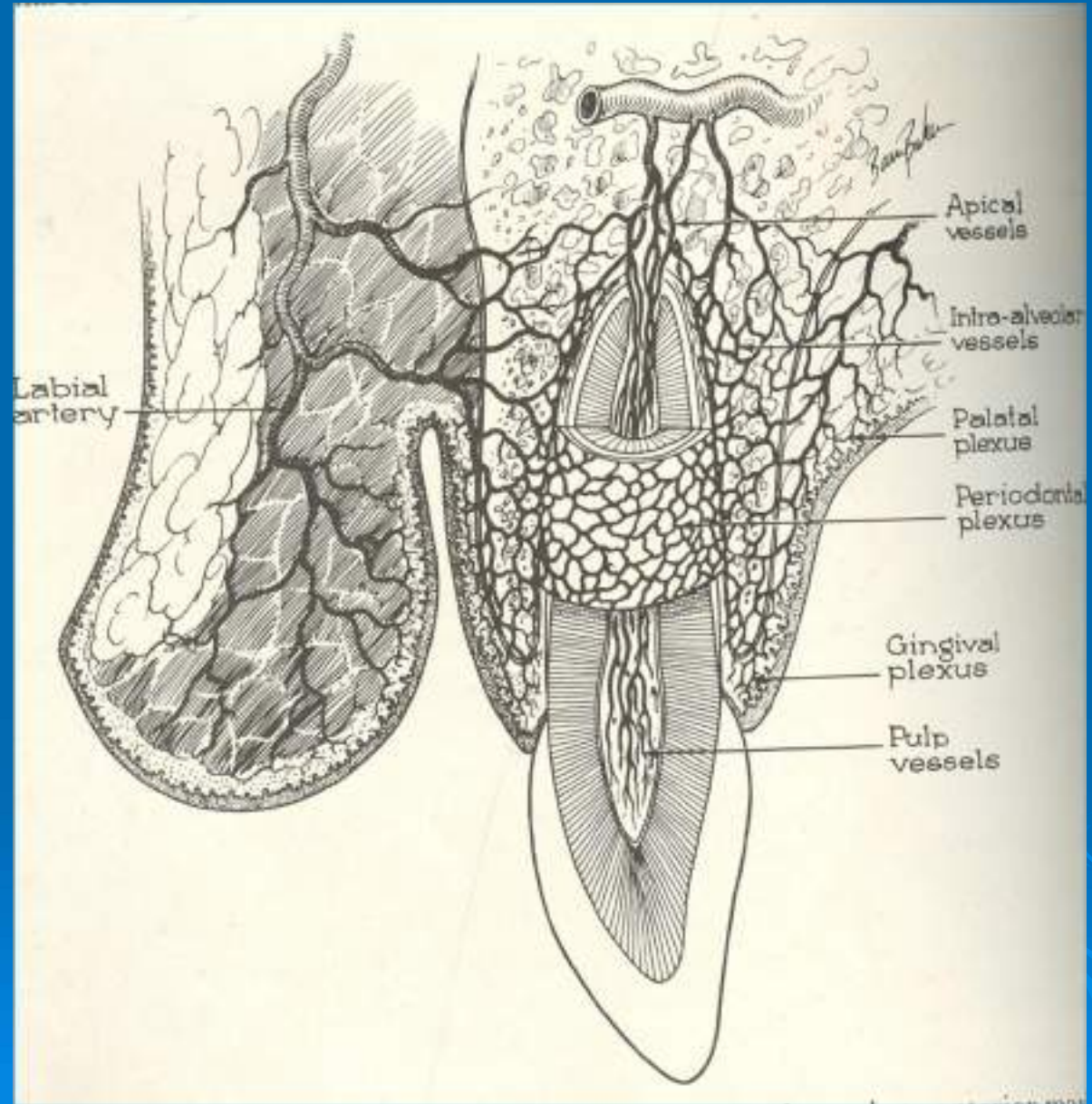
Total maxillary surgery

- Le fort I osteotomy
 - Classical downfracture
 - Surgically assisted maxillary expansion
 - Quadrangular
- Le fort II osteotomy
 - Anterior
 - Pyramidal
 - Quadrangular
- Le fort III osteotomy
 - Gillies
 - Tessier
- Other midface osteotomies
 - Zygomatic
 - Malar-maxillary

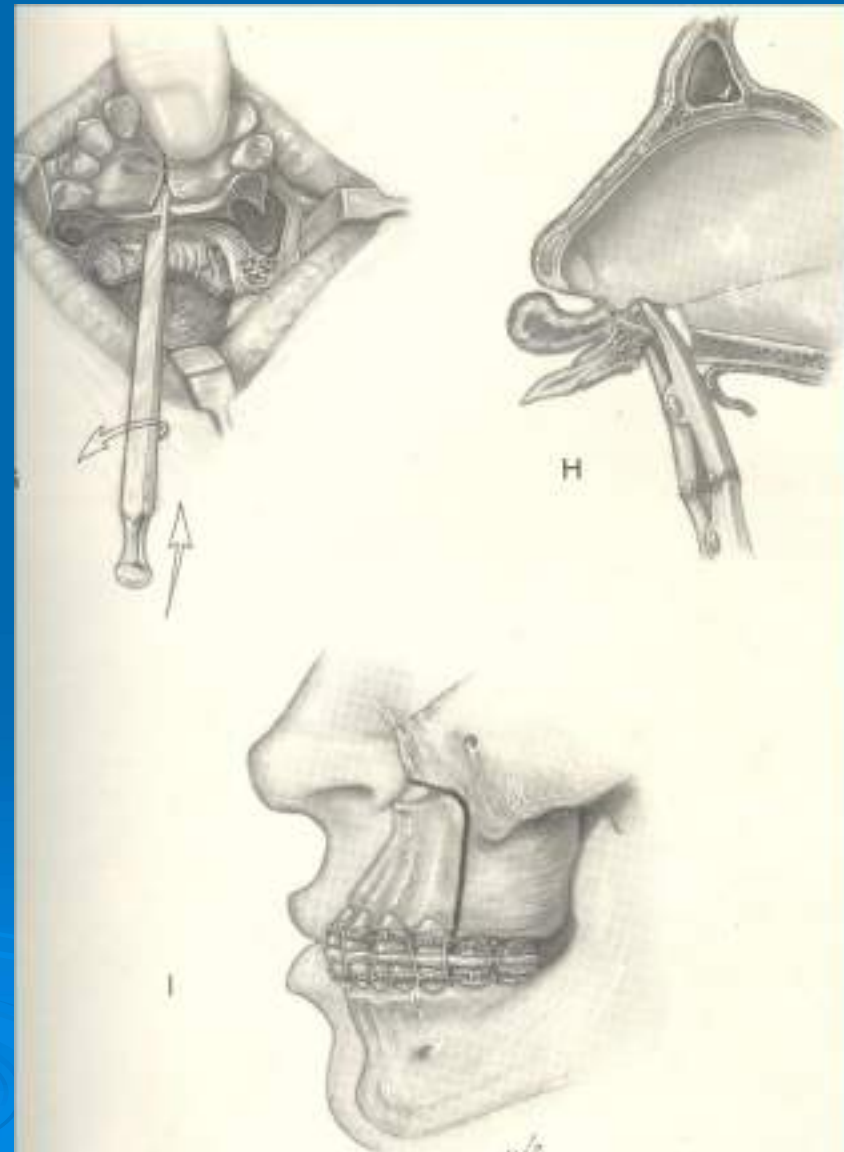
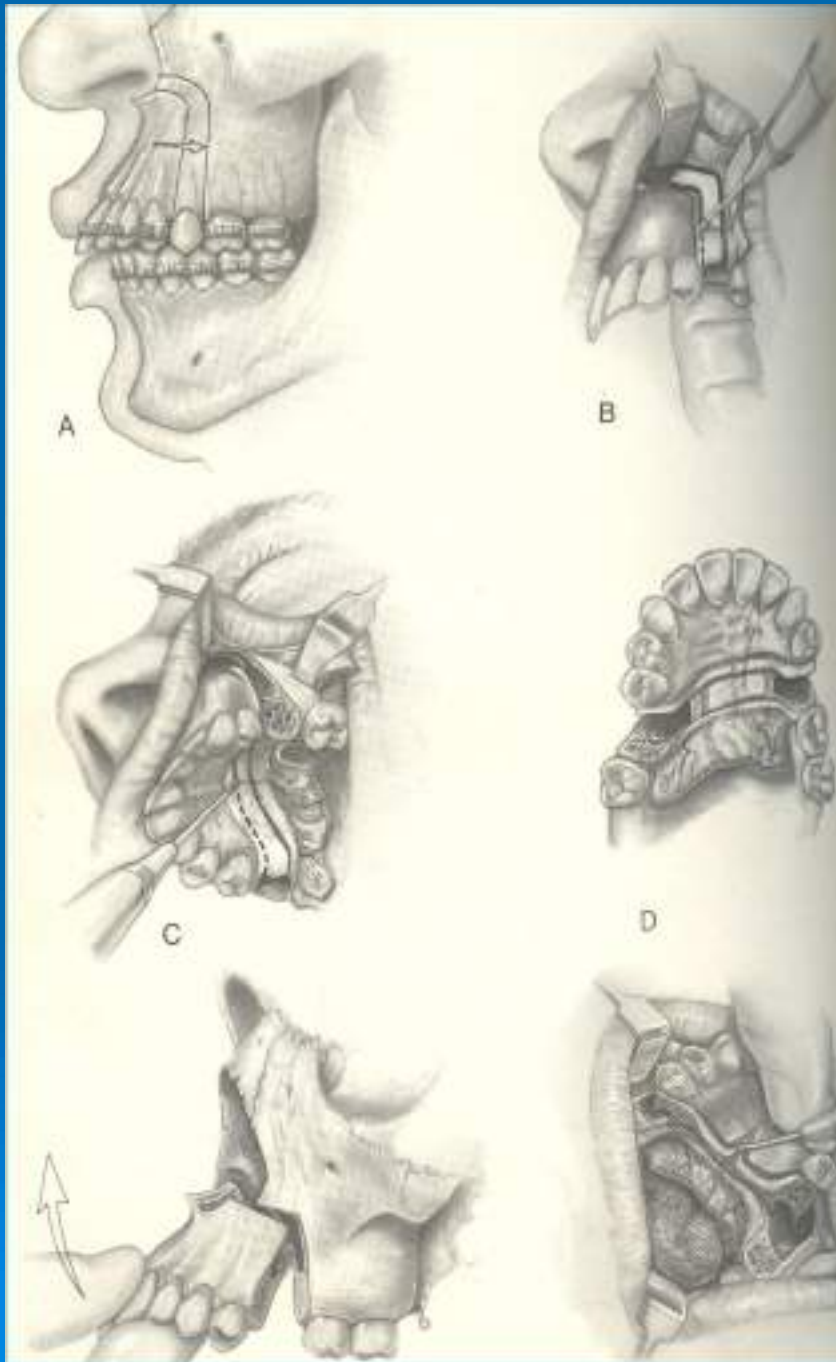
Basic principles

- maximum labiobuccal and palatal mucoperiosteal attachment is maintained
- Design for largest possible dento-osseous segment to preserve sufficient soft tissue pedicle
- Design to prevent injury to apices of teeth and consequent complications
- Incisions designed to protect the vascular pedicles and supply

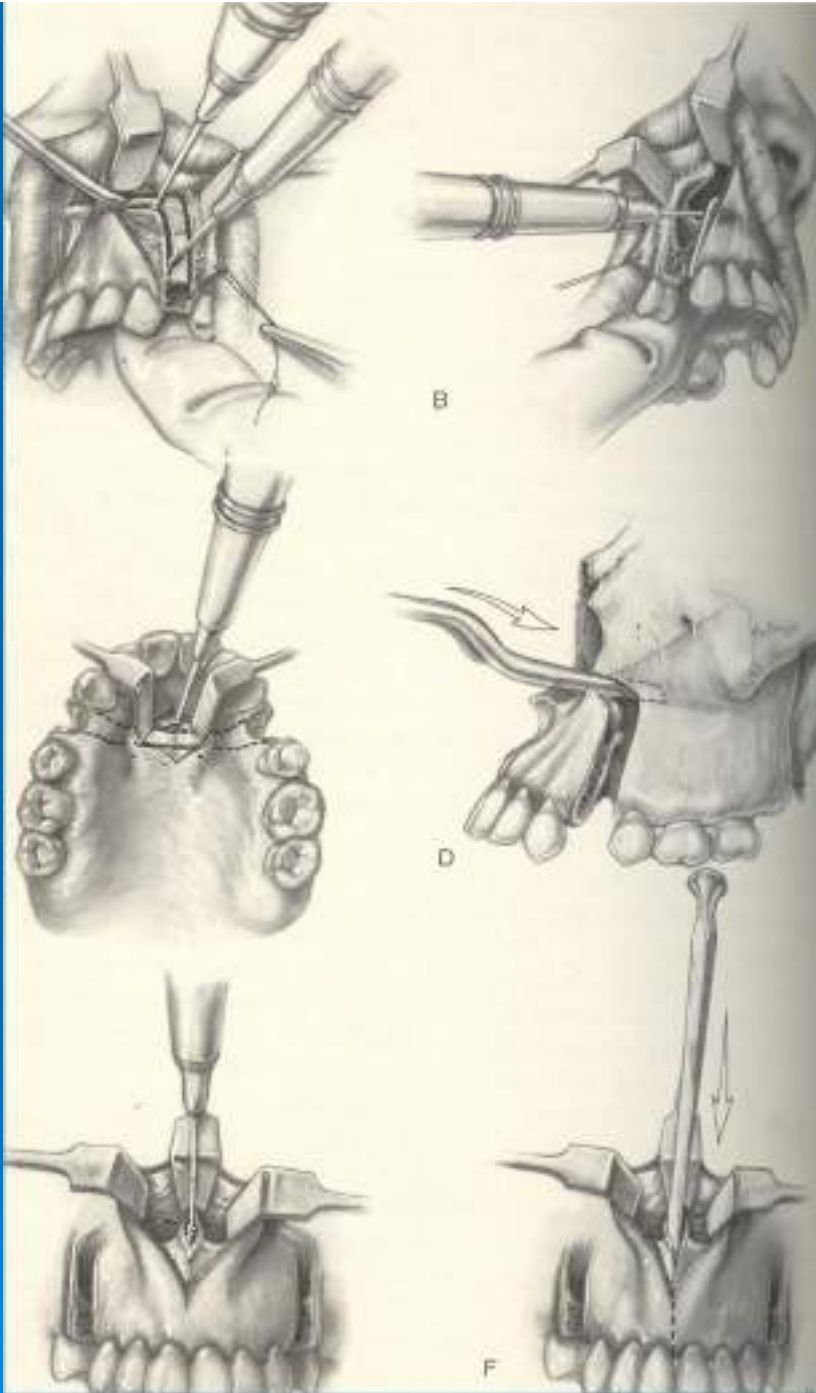
Vascular supply



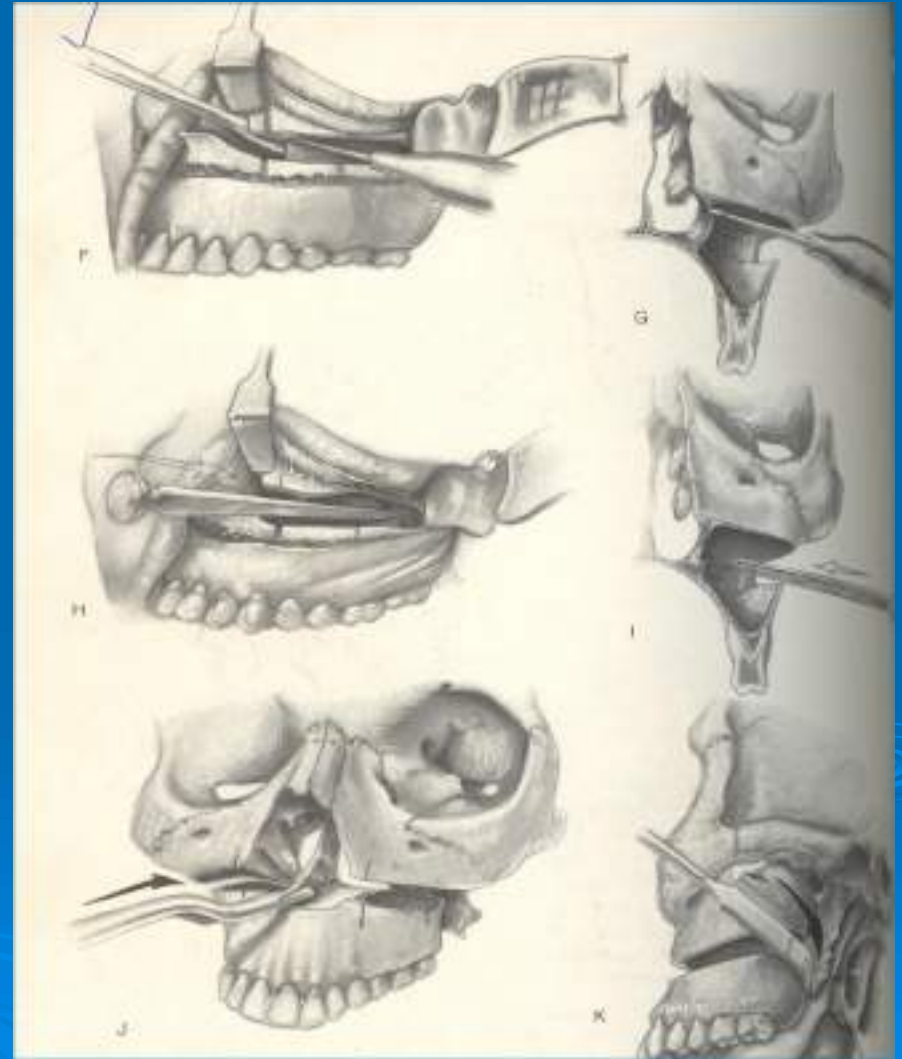
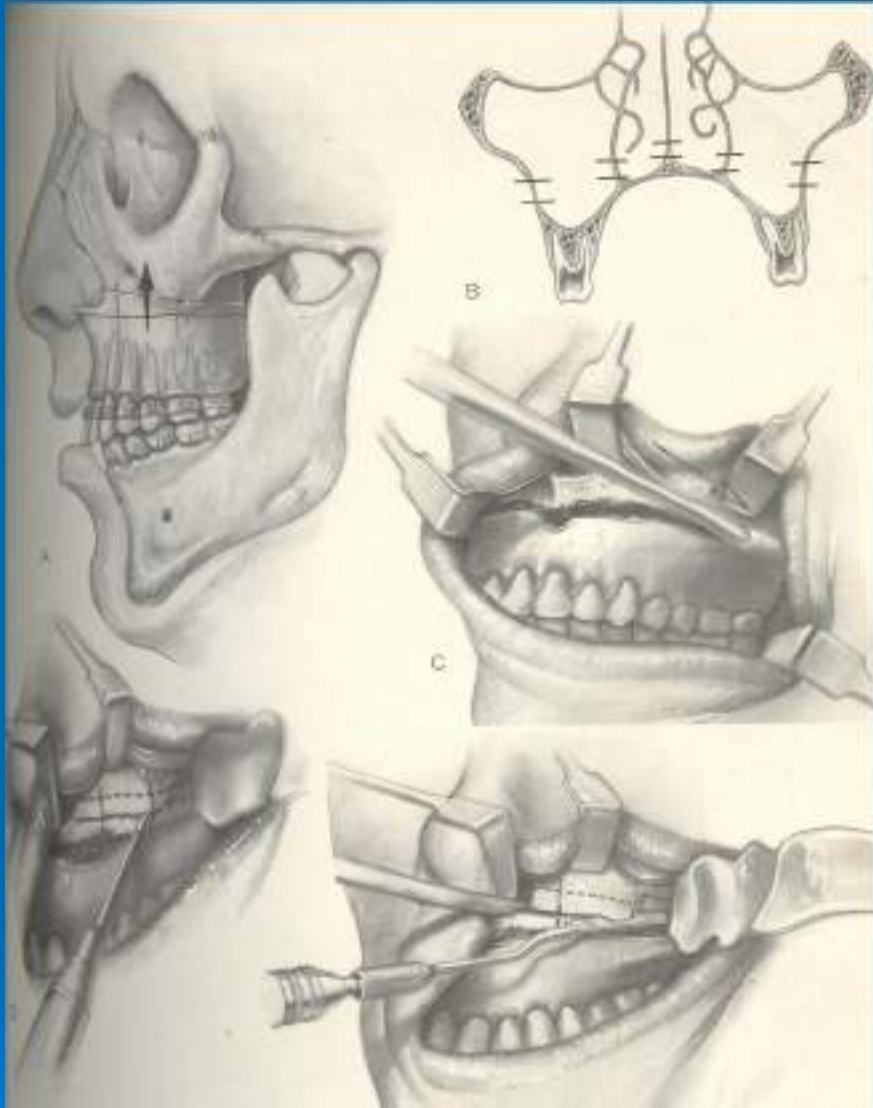
Wunderer's anterior segmental

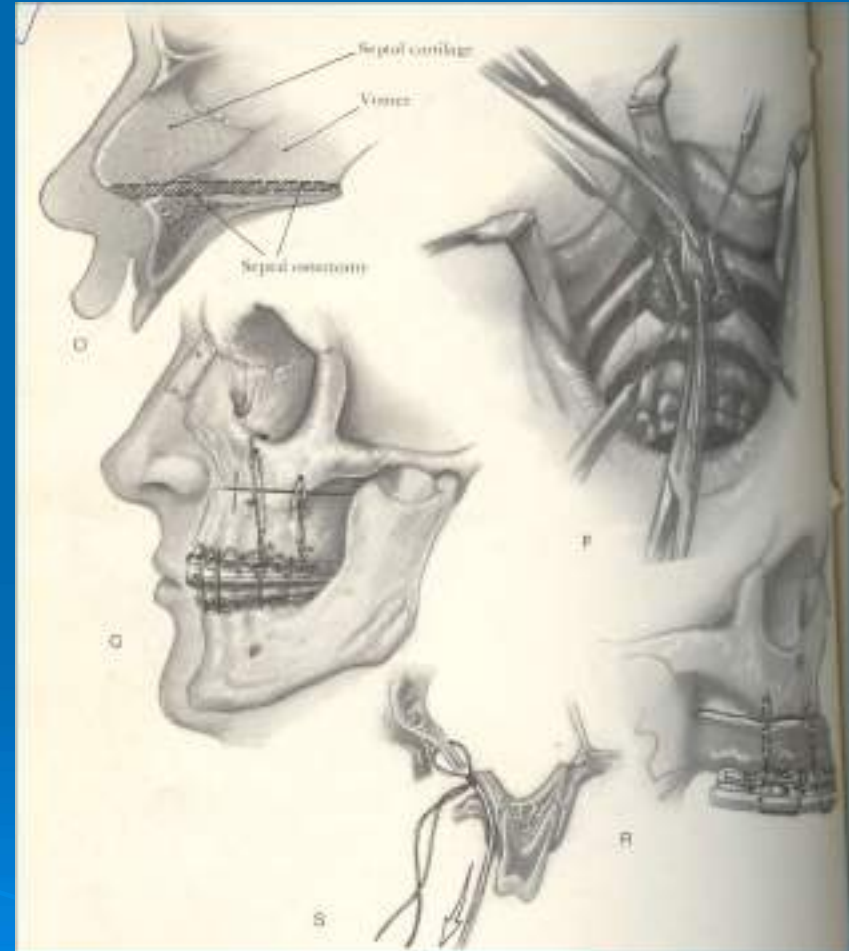
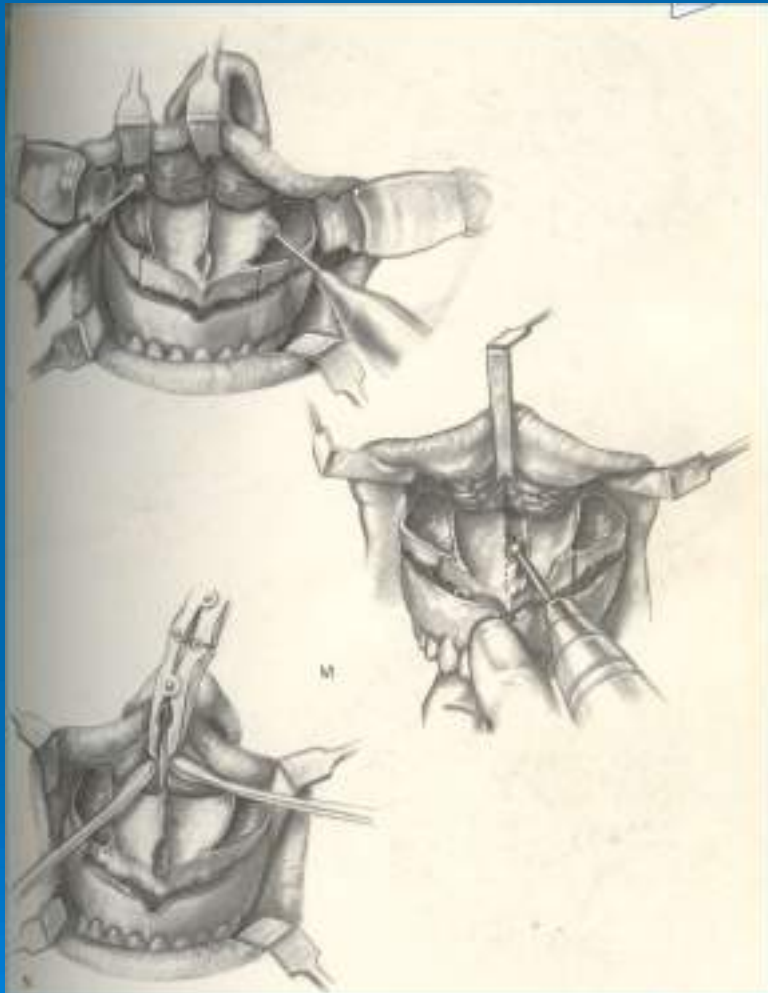


Wassmund's anterior segmental

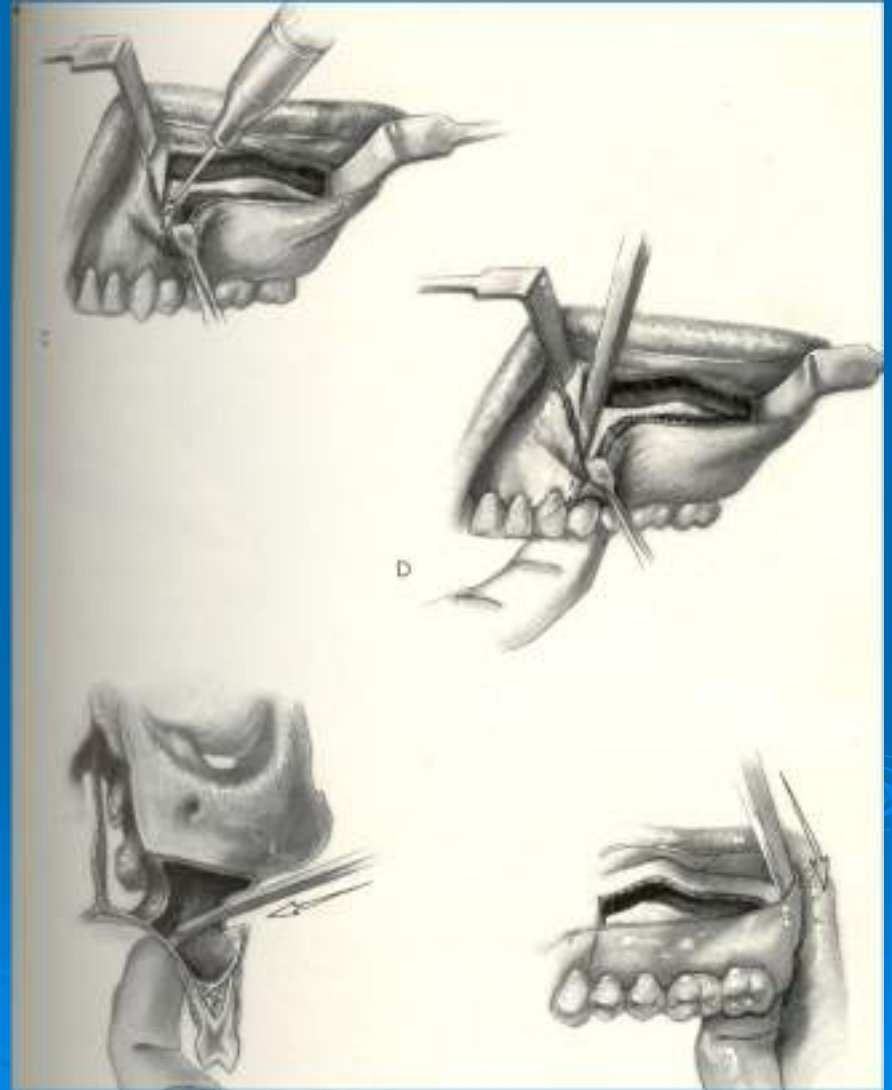
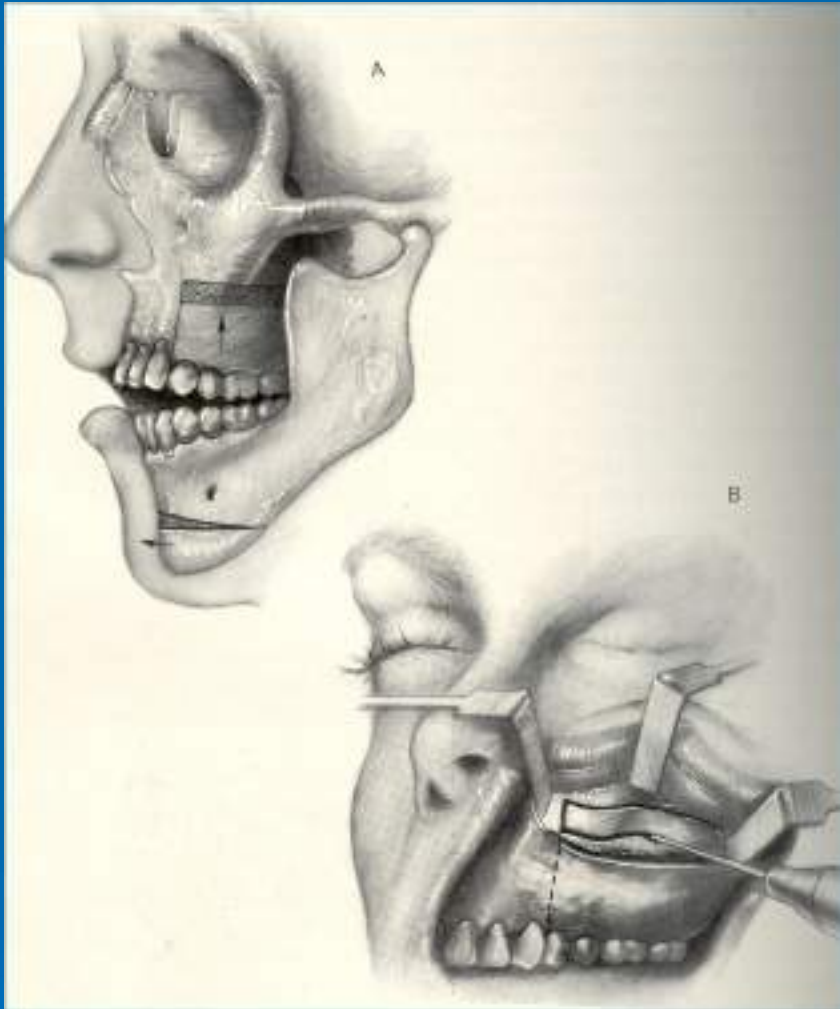


Le fort I OSTEOTOMY

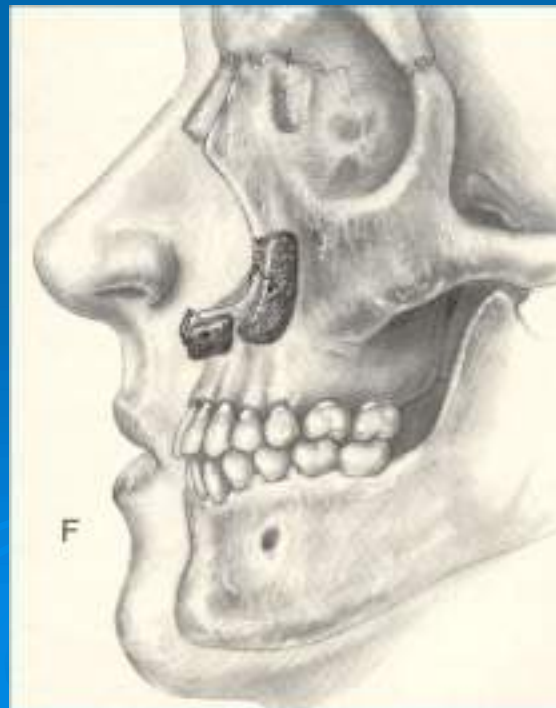


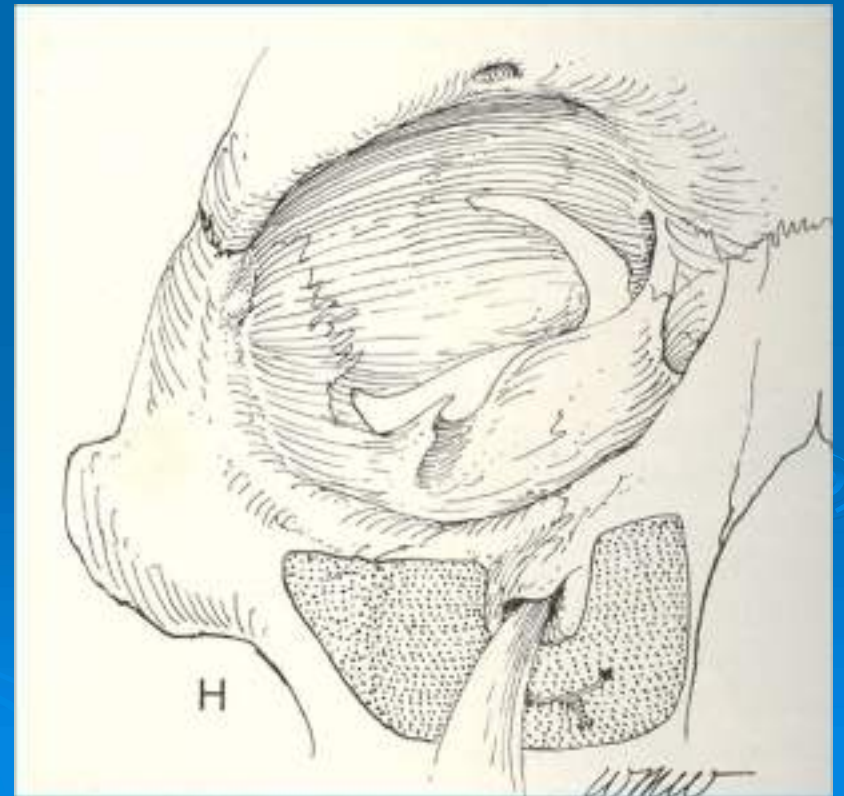
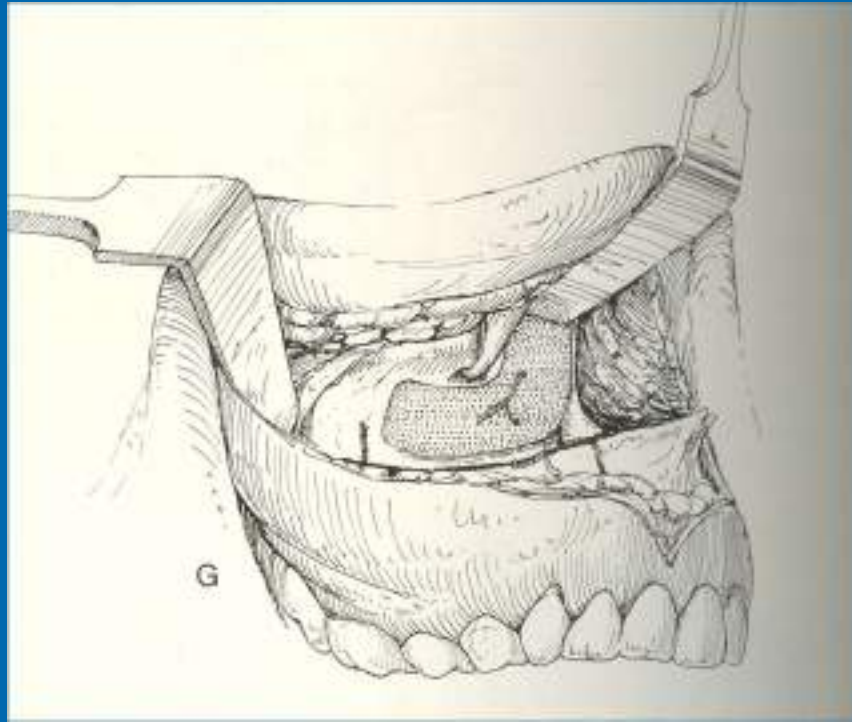


POSTERIOR SEGMENTAL

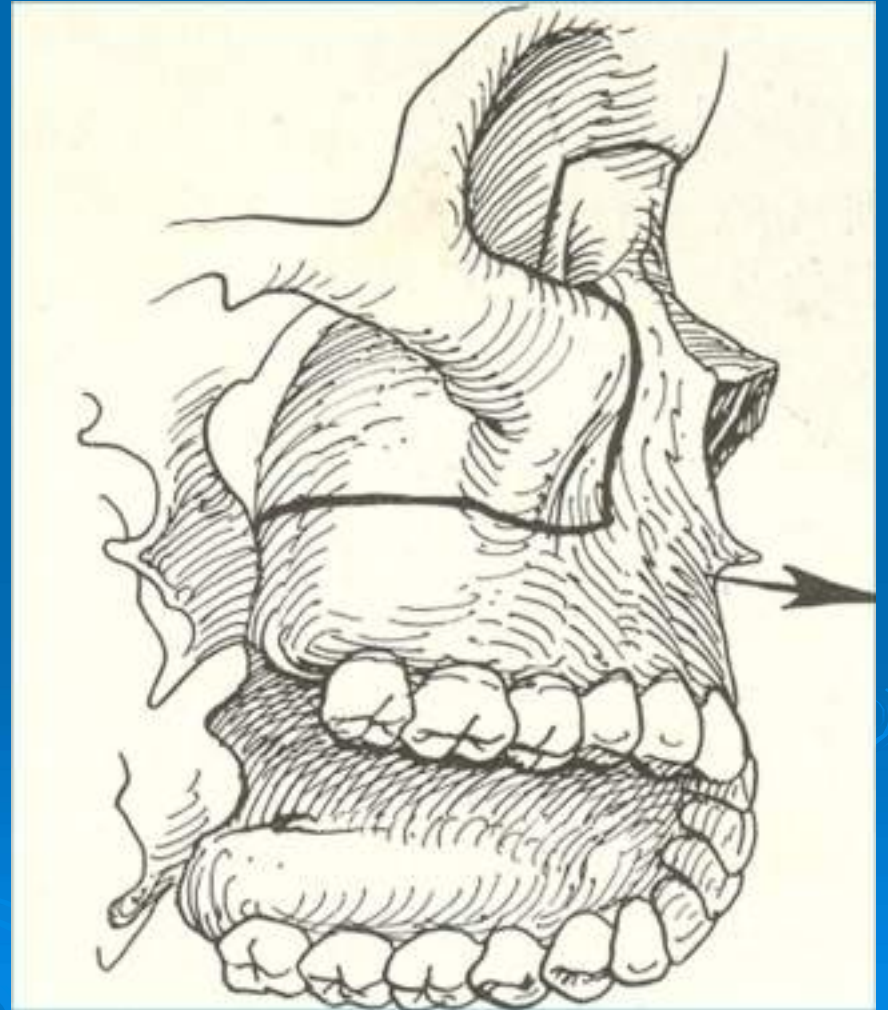
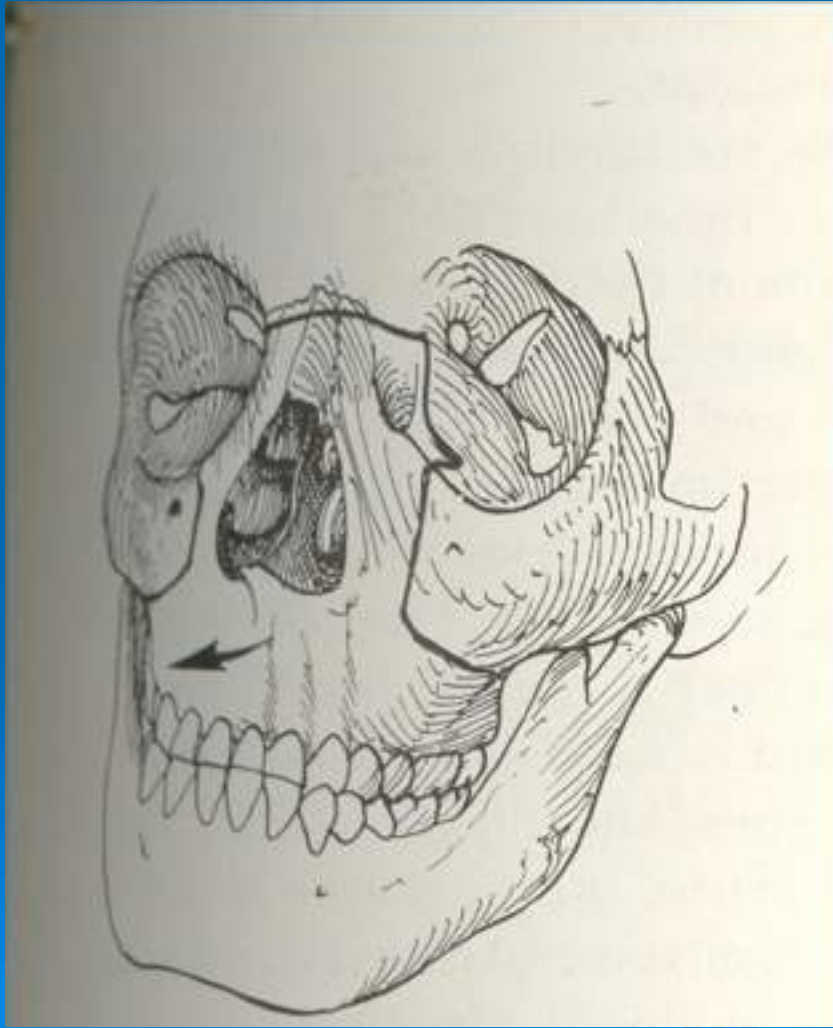


On lay grafting

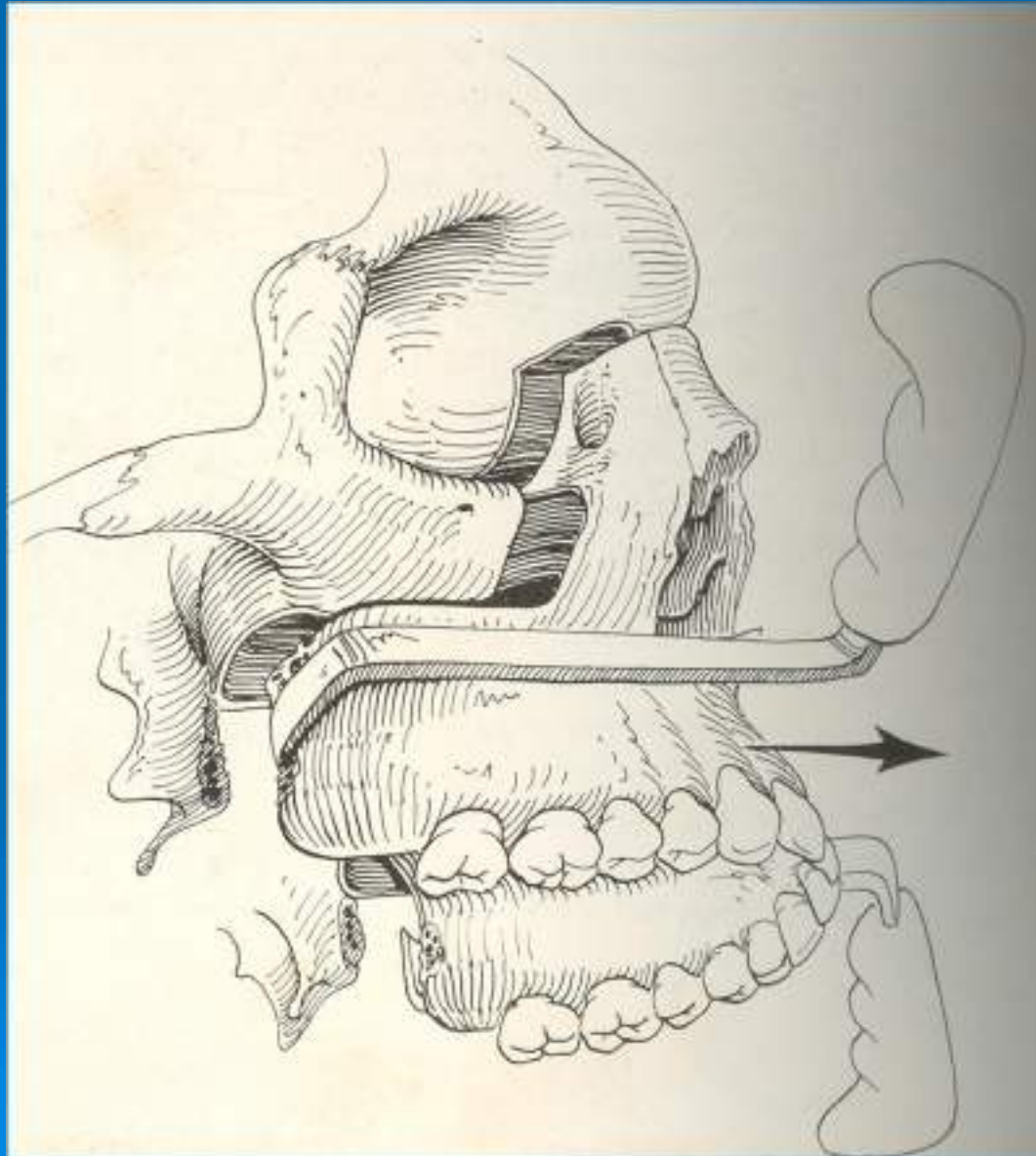




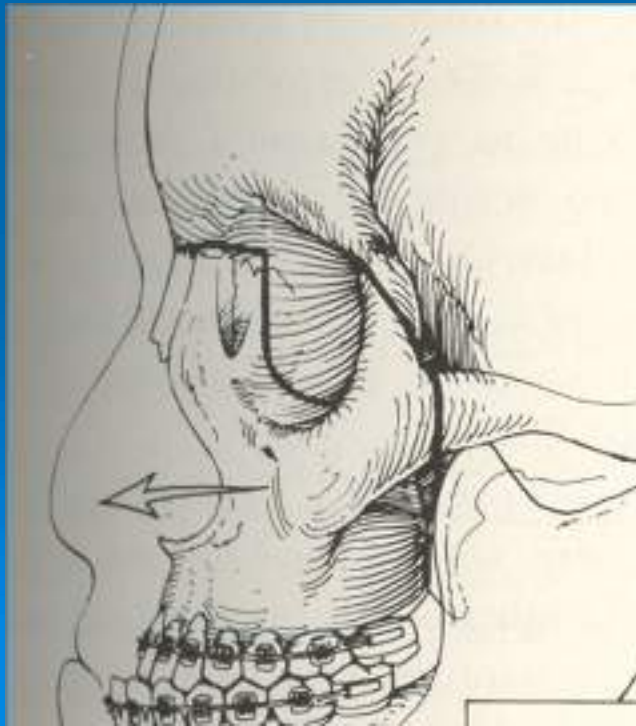
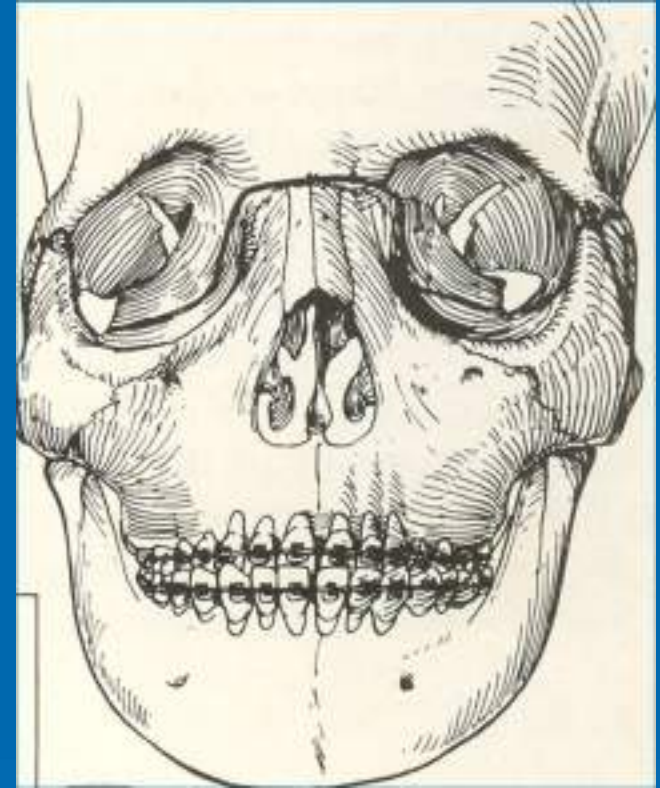
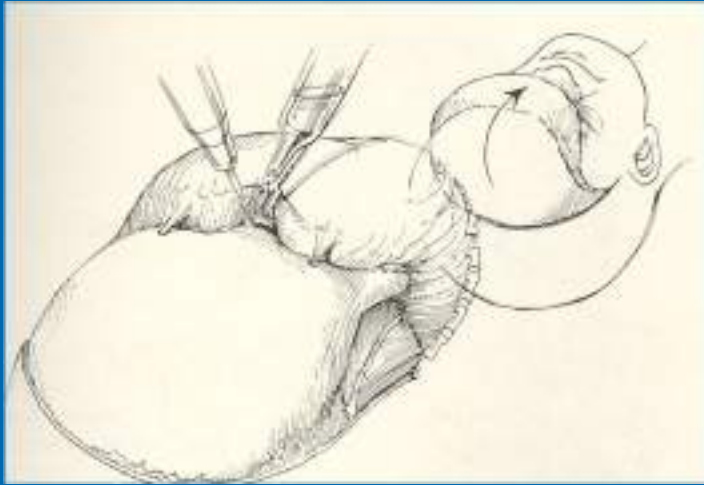
LE FORT II OSTEOTOMY



Mobilization from pterygoid plates



Le fort III OSTEOTOMY



MOBILIZATION



INTERPOSITIONAL GRAFTING

