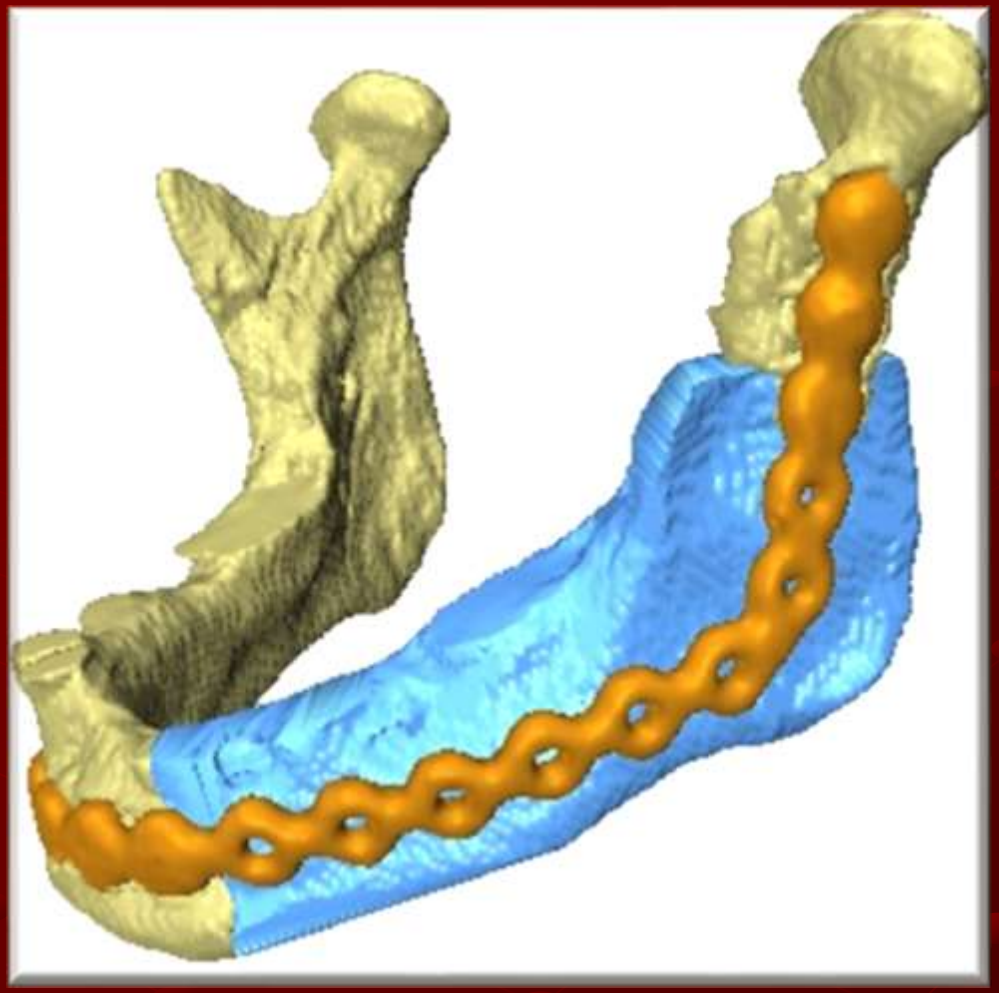


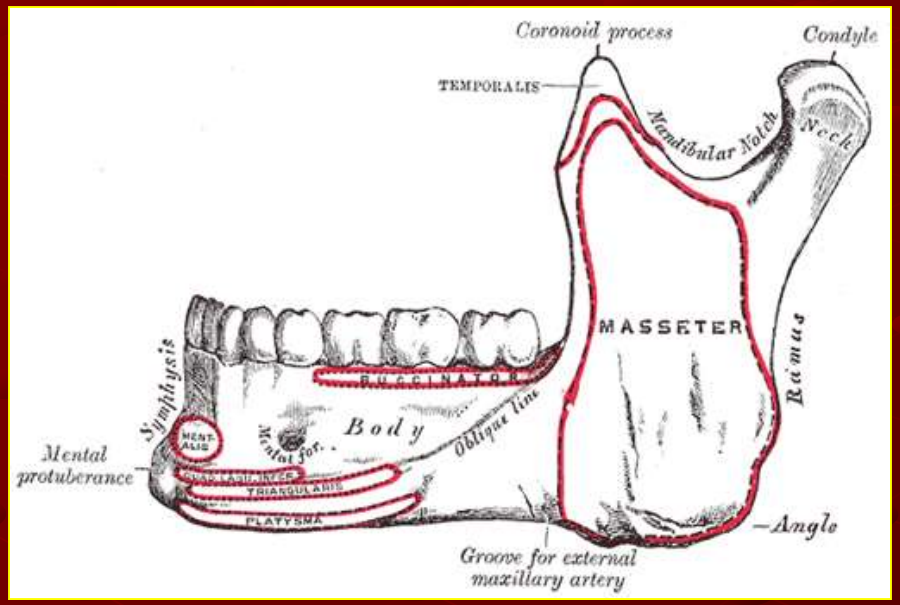
MANDIBULAR FRACTURES

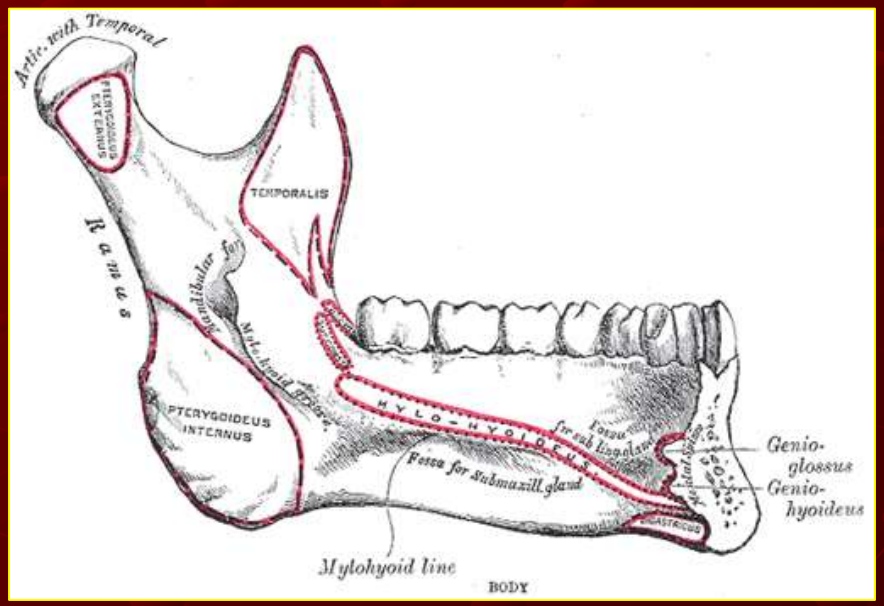
CONTENTS

- ANATOMY OF THE MANDIBLE.
- CHANGES WITH AGE
- BONE HEALING
- BIOMECHANICS
- PHYSIOLOGY
- STRENGTH OF THE MANDIBLE
- WEAK REGIONS OF THE MANDIBLE
- CLASSIFICATIONS
- DIAGNOSIS
- MANAGEMENT-

  OPEN REDUCTIONS, CLOSED REDUCTIONS

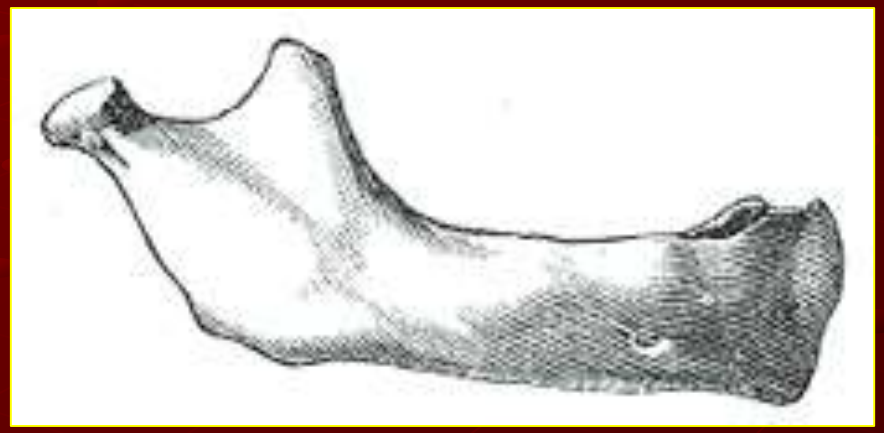
ANATOMY OF THE MANDIBLE





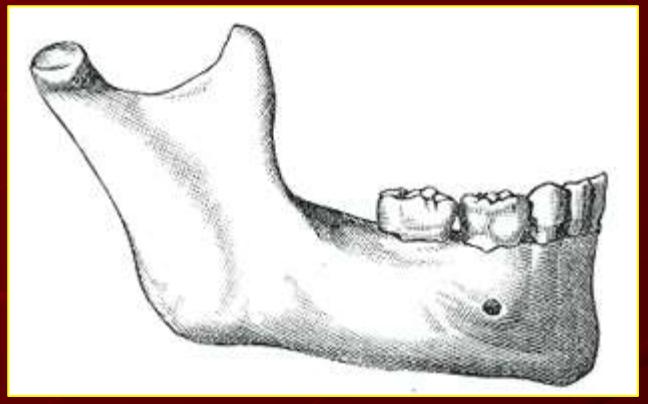
AGE CHANGES WITH MANDIBLE

MANDIBLE AT BIRTH-



- BODY- MERE SHELL
- SOCKETS FOR INCISORS, CANINES AND MOLARS.
- MENTAL FORAMEN- BENEATH THE 1ST MOLAR
- ANGLE- OBTUSE(175)
- CONDYLE- IN LINE WITH THE BODY
- CORONOID- LARGE

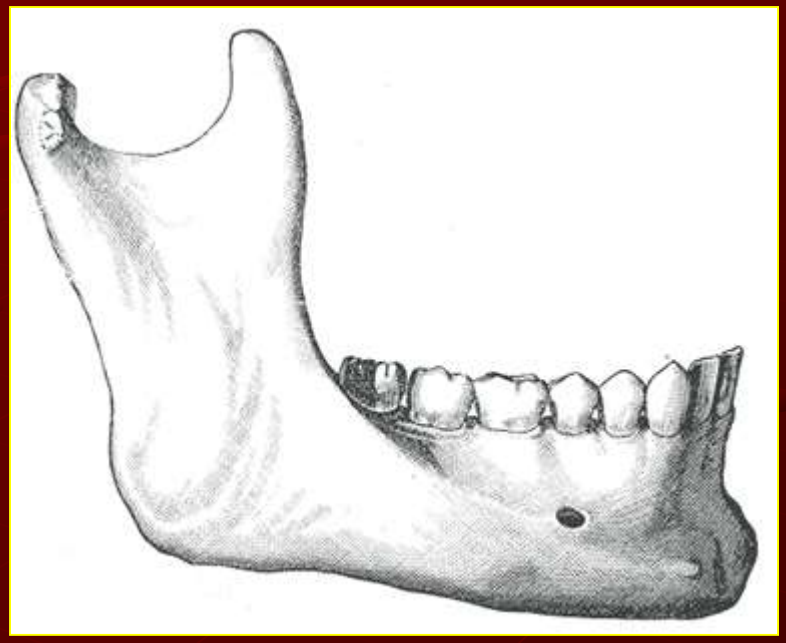
MANDIBLE AFTER BIRTH



- 2 SEGMENTS JOINT- 1 YEAR
- ELONGATION OF THE BODY.
- BEHIND THE MENTAL FORAMEN
- DEPTH OF THE BODY INCREASES
- THICKENING OF THE SUBDENTAL PORTION-TO WITHSTAND THE POWERFUL MASTICATORY FORCES
- MANDIBULAR CANAL– BELOW THE MYLOHYOID LINE
- MENTAL FORAMEN- NEARLY AS SEEN IN ADULTS
- ANGLE- LESS OBTUSE (140)

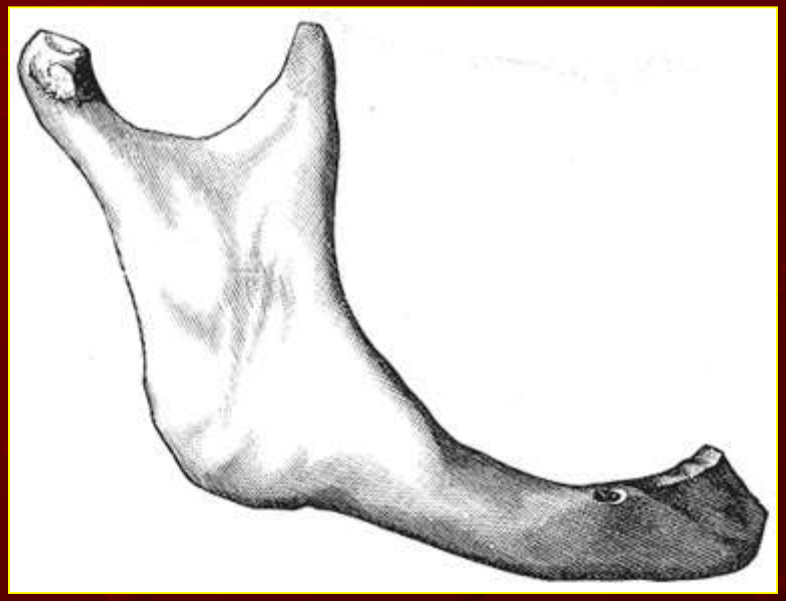
MANDIBLE IN THE ADULT-

- ALVEOLAR AND SUBDENTAL PORTION- EQUAL DEPTH
- MENTAL FORAMEN- MIDWAY BW UPPER & LOWER BORDER
- MANDIBULAR CANAL- PARALLEL WITH MYLOHYOID LINE
- RAMUS ALMOST VERTICAL- 110-120



MANDIBLE IN OLD AGE-

- LOSS OF TEETH
- LOSS OF ALVEOLAR RIDGE
- MANDIBULAR CANAL, MENTAL FORAMEN- CLOSE TO THE ALVEOLAR BORDER
- RAMUS IS OBLIQUE
- ANGLE-OBTUSE (140)
- CONDYLE- BENT BACKWARDS



DEFINITION

A FRACTURE MAY BE DEFINED AS A SUDDEN, VIOLENT DISRUPTION IN CONTINUITY OF BONE AND MAY BE COMPLETE OR INCOMPLETE IN CHARACTER.

-ROW AND WILLIAMS.

BONE HEALING

- PRIMARY BONE HEALING/DIRECT BONE HEALING.
- NO CALLUS AND TISSUE DIFFERENTIATION
- STABILIZED
- PROVIDES THE STRENGTH OF THE CALLUS AREAS-

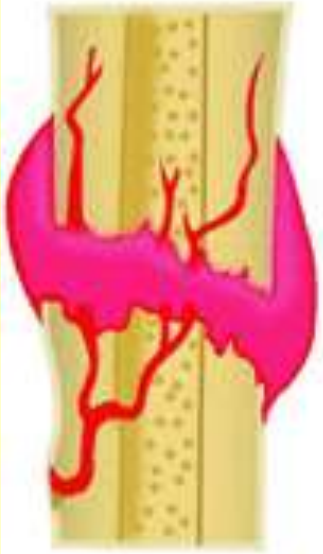
  GAP HEALING-

  CONTACT HEALING-
- SECONDARY BONE HEALING/INDIRECT BONE HEALING

  NOT RIGIDLY FIXED MINIMAL IMMOBILIZATION

Secondary Bone healing

- It take place in fracture without surgical intervention and after semi-rigid fixation.
- It takes place in four stages:
  - Intermediate reaction
  - Procallus formation
  - Osseous callus formation
  - Remodelling

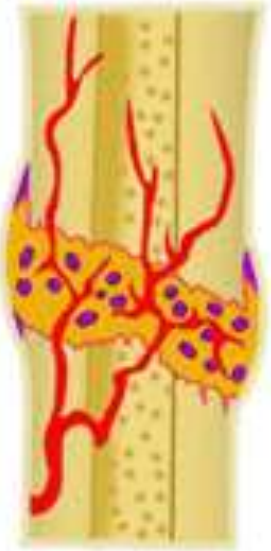


Haematoma

- Activation of coagulation cascade
- Changes of local environment
- Inflammatory cells and molecules released

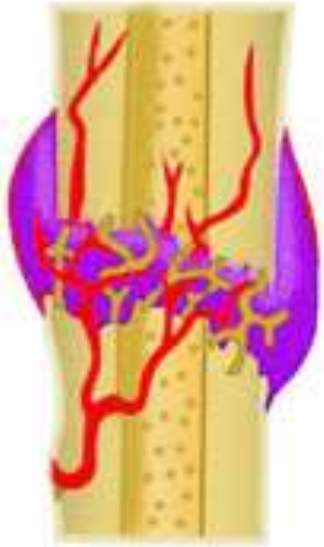
Inflammation

- Recruitment and activation of inflammatory and osteoprogenitor cells
- Clearance of necrotic tissues



Callus formation

- Soft and Hard
- Differentiation of MSCs according to the mechanical environment
- Initial stabilization of fracture, then replaced by calcified tissue



Granulation tissue

- Active proliferation of osteoprogenitor cells
- Angiogenesis
- Extracellular matrix production

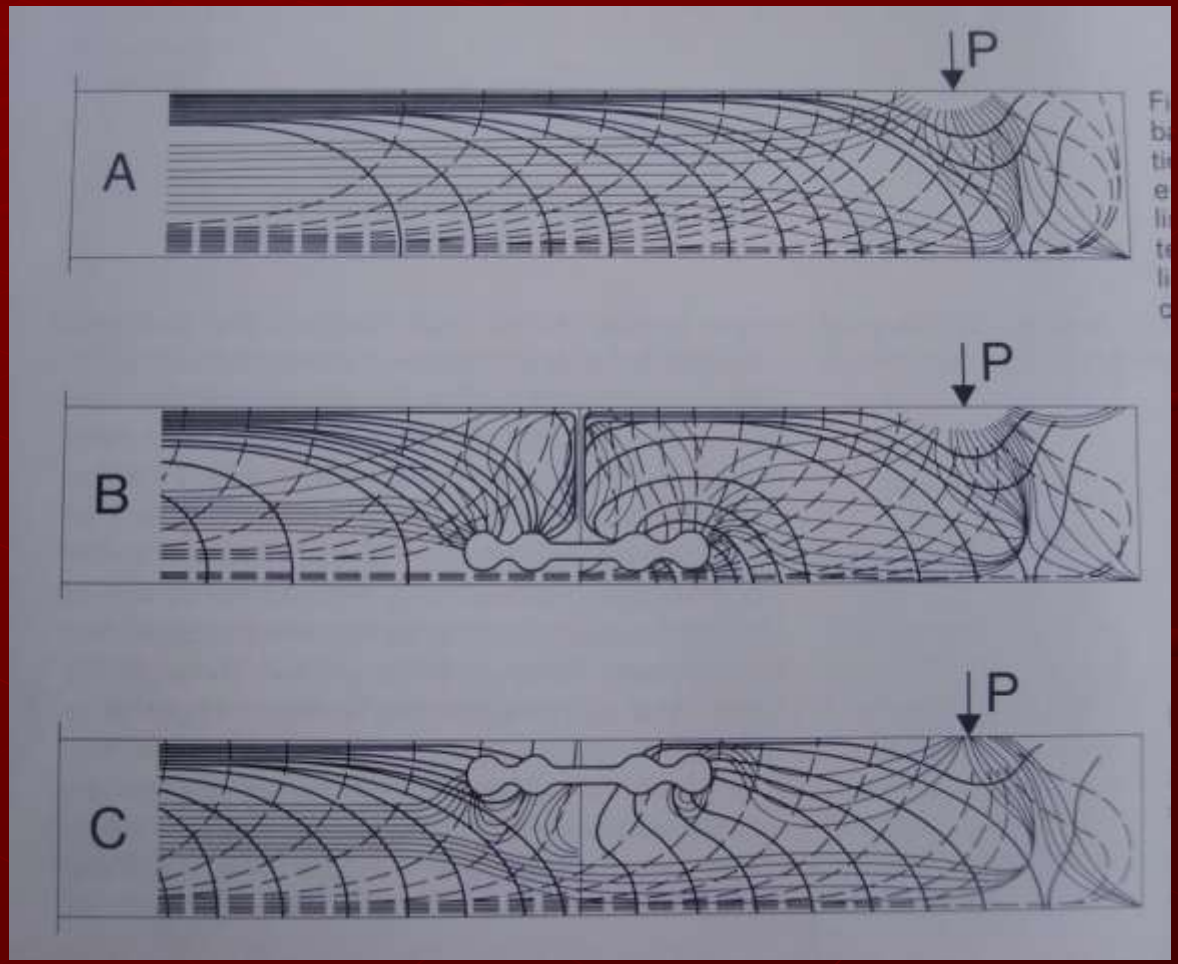
Remodeling

- Long process (years)
- Resorption of remaining cartilage
- Restoration of Haversian system
- No scar formed

Primary Bone Healing

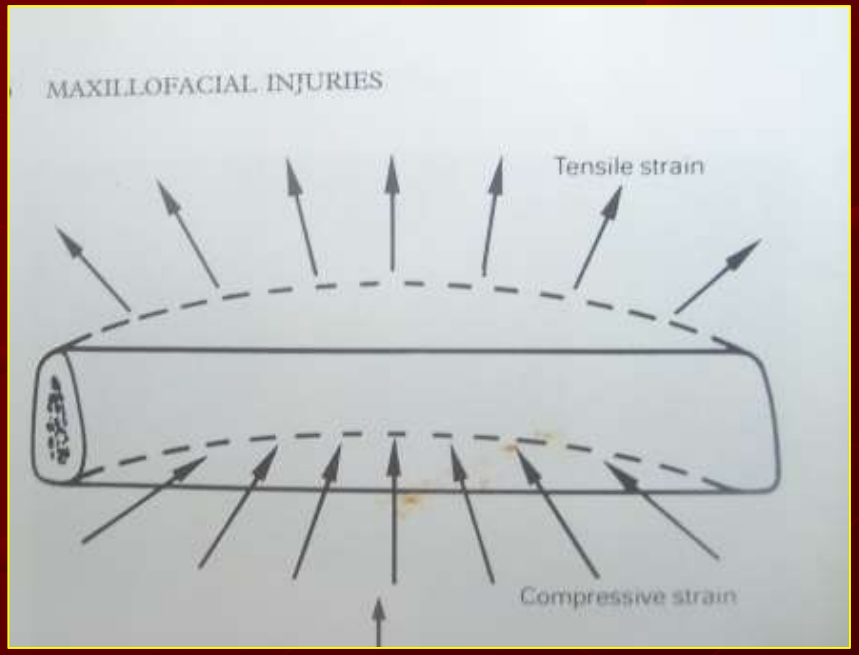
- It take place when in following condition
  - Excellent anatomic reduction
  - Minimal or no mobility
  - Good vascular supply at fracture site
- It occurs in two different ways i.e.:
  - Gap Healing
  - Contact Healing

BIOMECHANICS OF MANDIBLE



PHYSIOLOGY OF MANDIBLE

- MUSCLE OF MASTICATION
- SUPRAHYOID MUSCLES



STRENGTH OF MANDIBLE

MASTICATORY FORCES MEASURED IN DIFFERENT REGIONS-

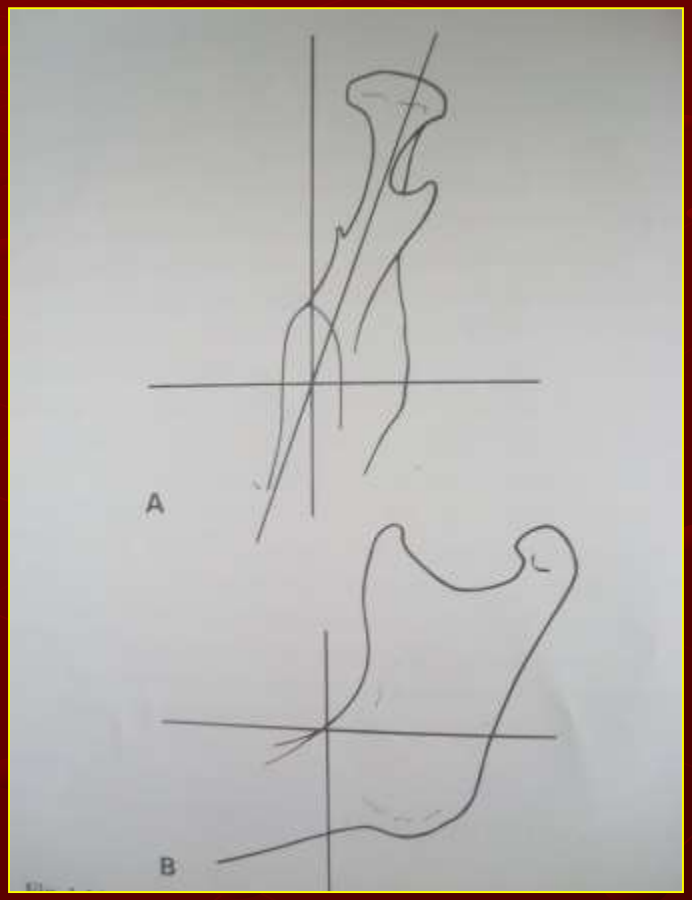
- INCISORS - 29DAN
- CANINE - 30DAN
- PREMOLAR - 48DAN
- MOLAR - 66DAN
- BENDING FORCES - 60DAN
- TORSIONAL FORCES - 100DAN

- STRONGEST BONE.
- FORCE REQUIRED TO FRACTURE IT-

  44.6-74.A4KG/MSQ (115.5- 193.6 DAN)

WEAK REGIONS OF THE MANDIBLE

- JUNCTION BETWEEN ALVEOLAR BONE & BASAL MANDIBULAR BONE.
- SYMPHYSIS REGION - JUNCTION OF TWO INDIVIDUAL BONES
- PARASYMPHYSEAL REGION - LATERAL TO THE MENTAL PROMINENCE, INCISIVE FOSSA AND MENTAL FORAMEN.
- JUNCTION OF THE RAMUS AND THE BODY ARE FRACTURED COMMONLY.


A
B

CLASSIFICATION

KRUGER CLASSIFICATION

- SIMPLE
- COMPOUND
- COMMUNITED

ROWE AND KILLEY

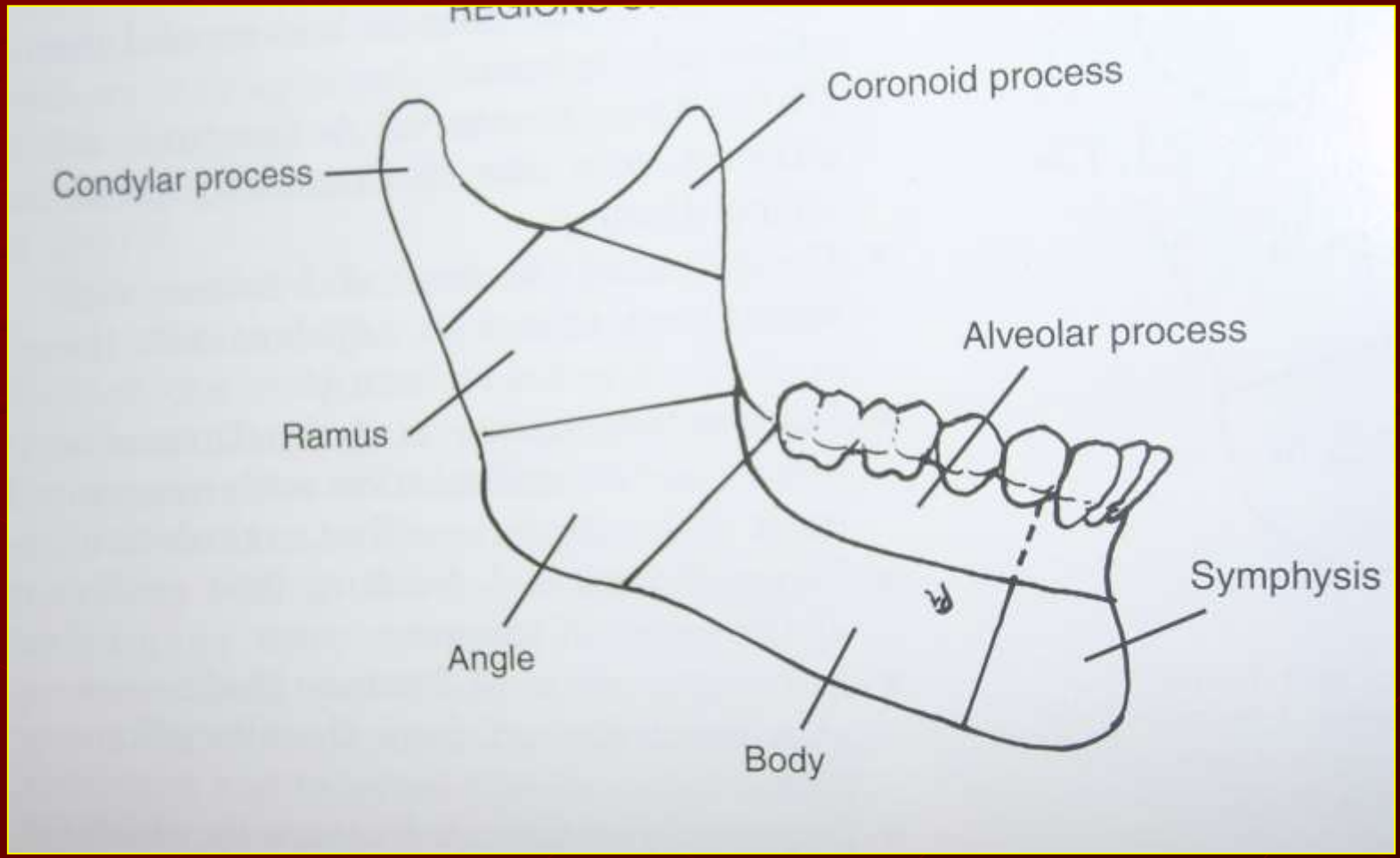
- THOSE NOT INVOLVING BASAL BONE-

  ALVEOLAR FRACTURES.

- THOSE INVOLVING BASAL BONE -

  SINGLE UNILATERAL, DOUBLE UNILATERAL, BILATERAL AND MULTIPLE.

DINGMAN AND NATVIG-1964



BASED ON PRESENCE OR ABSENCE OF SERVICEABLE TEETH IN RELATION TO FRACTURE LINE.

KAZANGIAN AND CONVERSE(1974)

- CLASS I - TEETH PRESENT ON BOTH SIDES OF # LINE
- CLASS II – TEETH PRESENT ONLY ON 1 SIDE OF # LINE
- CLASS III - PATIENT IS EDENTULOUS.

HELPS IN DETERMINING THE TREATMENT

- CLASS I –TEETH USED FOR IMF
- CLASS II- SEEN IN CONDYLE, RAMUS, ANGLE OR PARTIALLY EDENTULOUS BODY. REQUIRES ORIF.
- CLASSIII- REQUIRES PROSTHETIC TECHNIQUES OR OPEN REDUCTIONS METHODS OR BOTH, FOR STABILIZATION.

KRUGER AND SCHILLI-FOUR CATEGORIES

- RELATION TO EXTERNAL ENVIRONMENT-

  SIMPLE/CLOSED

  COMPOUND/OPEN

- TYPES OF FRACTURE

  INCOMPLETE

  COMPLETE

  GREENSTICK

  COMMUNITED

- DENTITION OF JAW,

  WITH REFERENCE TO USE OF SPLINTS

  SUFFICIENTLY DENTULOUS

  EDENTULOUS

  PRIMARY AND MIXED DENTITION

- LOCALIZATION

SYMPHYSIS

CANINE REGION

BODY REGION: BETN CANINE & ANGLE

ANGLE REGION

RAMUS REGION

CORONOID REGION

CONDYLE REGION

AO CLASSIFICATION (RELEVANT TO INTERNAL FIXATION)

- F: NUMBER OF FRACTURE OR FRAGMENTS.
- L: LOCATION (SITE) OF THE FRACTURE.
- O: STATUS OF OCCLUSION.
- S: SOFT TISSUE INVOLVEMENT.
- A: ASSOCIATED FRACTURES OF FACIAL SKELETON

THESE CRITERIA CAN BE OBJECTIFIED CLINICALLY AND RADIOGRAPHICALLY:

F: NUMBER OF FRACTURE.

F0: INCOMPLETE FRACTURE.

F1: SINGLE FRACTURE.

F2: MULTIPLE FRACTURE.

F3: COMMINUTED FRACTURE.

F4: FRACTURE WITH A BONE DEFECT

- CATEGORIES OF LOCALIZATION (SITE) L1-L8

L1: PRECANINE.

L2: CANINE.

L3: POSTCANINE.

L4: ANGLE

L5: SUPRA-ANGULAR

L6: CONDYLE

L7: CORONOID.

L8: ALVEOLAR PROCESS

CATEGORY OF OCCLUSION – O0-O2

O0: NO MALOCCLUSION.

O1: MALOCCLUSION.

O2: NON EXISTENT OCCLUSION – EDENTULOUS Mn

CATEGORIES OF SOFT TISSUE INVOLVEMENT – S0-S4

S0: CLOSED.

S1: OPEN INTRAORALLY.

S2: OPEN EXTRAORALLY.

S3: OPEN INTRA AND EXTRAORALLY.

S4: SOFT TISSUE DEFECT.

- CATEGORIES OF ASSOCIATED FRACTURES A0-A6

A1: FRACTURED TOOTH &/ OR LOSS OF TOOTH.

A2: NASAL BONE.

A3: ZYGOMA.

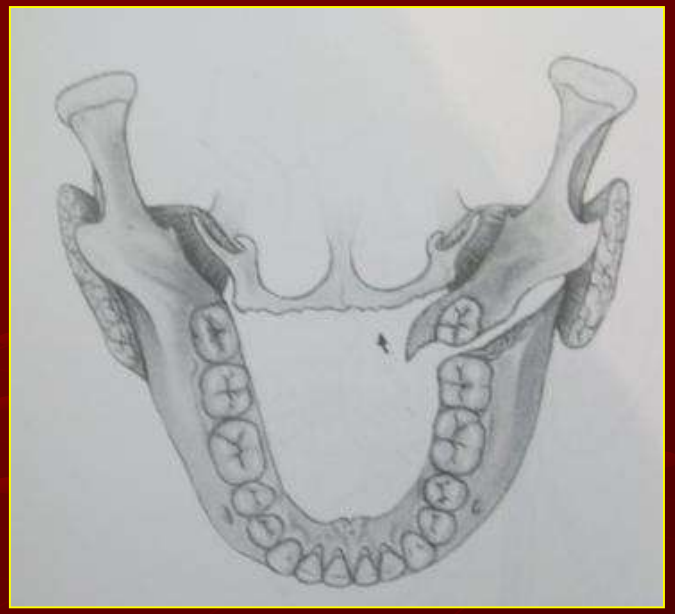
A4: LEFORT I

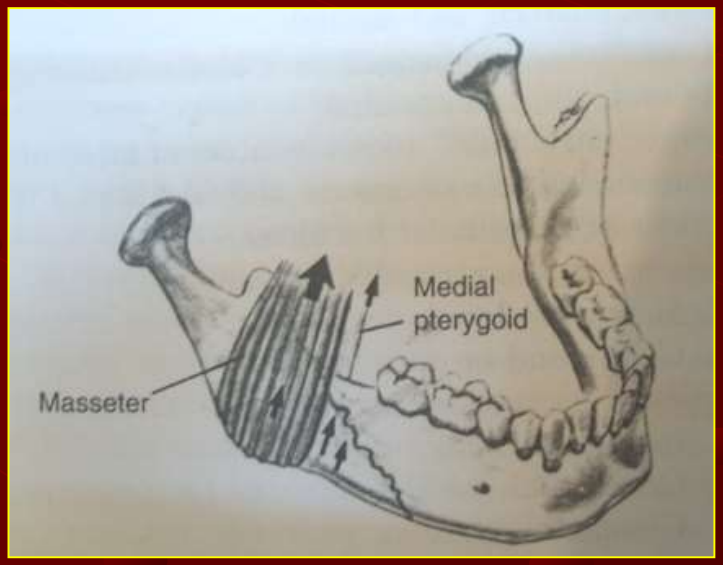
A5: LEFORT II

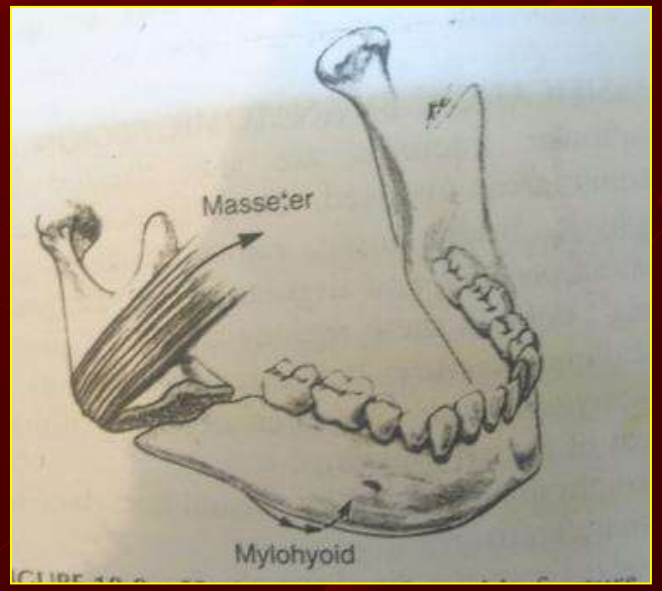
A6: LEFORT III

ACCORDING TO DIRECTION OF # FAVOURABILITY FOR TREATMENT

- HORIZONTALLY FAVOURABLE FRACTURE.
- HORIZONTALLY UNFAVOURABLE FRACTURE.
- VERTICALLY FAVOURABLE FRACTURE.
- VERTICALLY UNFAVOURABLE FRACTURE.




Medial
pterygoid
Masseter


Masseter
Mylohyoid

DIAGNOSIS OF MANDIBULAR FRACTURES

HISTORY

MECHANISM OF INJURY-MOTOR VEHICLE ACCIDENTS

ASSAULTS

DIRECTION OF THE BLOW

PREVIOUS FACIAL TRAUMA -

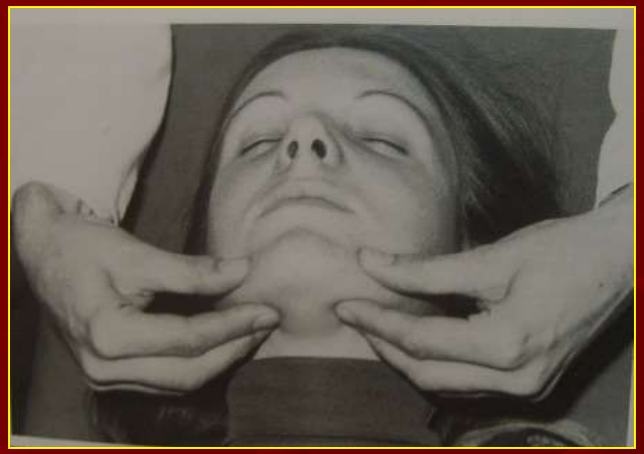
H/O TMJ DISORDERS

PRE-INJURY OCCLUSION

- MEDICAL HISTORY
- SYSTEMIC DISEASES-DIABETES, OSTEOPOROSIS, IMMUNO-SUPPRESION.
- SEIZURES, PSYCHIATRIC CONDITIONS
- SPECIAL NUTRITIONAL REQUIREMENTS

PHYSICAL EXAMINATION

TENDERNESS TO PALPATION



- MALOCCLUSION- SUBJECTIVE, OBJECTIVE
- LOSS OF NORMAL FORM-

  STEP DEFORMITY

  FLATTENED APPEARANCE - BODY, ANGLE OR RAMUS.
- DEFICIENT MANDIBULAR ANGLE - UNFAVOURABLE ANGLE # WHERE PROXIMAL FRAGMENT ROTATES SUPERIORLY.
- RETRUDED CHIN – BILATERAL PARASYMPHYSEAL #
- ELONGATED FACIAL APPEARANCE – BILATERAL SUBCONDYLAR, ANGLE OR BODY #, WHICH ALLOWS THE ANTERIOR MANDIBLE TO BE DISPLACED DOWNWARDS.

- LOSS OF NORMAL FUNCTION-MUSCLE SPASM IMPINGEMENT OF THE CORONOID ON ZYGOMA.
- EDEMA-
- ABRASIONS, LACERATIONS, ECCHYMOSIS
- ALTERED SENSATION
- CREPITUS

RADIOLOGIC EXAMINATION

- PANOROMIC RADIOGRAPH-MOST INFORMATIVE.

  ENTIRE MANDIBLE VISUALIZED.

- LATERAL OBLIQUE VIEW-RAMUS, ANGLE & POSTERIOR BODY .

- CALDWELL POSTEROANTERIOR- MEDIAL OR LATERAL DISPLACEMENT OF RAMUS, ANGLE, BODY & SYMPHYSIS.

MANDIBULAR OCCLUSAL- DISCREPANCIES IN THE MEDIAL AND LATERAL POSTION OF THE BODY

REVERSE TOWNS PROJECTION-MEDIAL DISPLACEMENT OF THE CONDYLE

TRANSCRANIAL VIEW-CONDYLAR FRACTURES,ANTERIOR DISPLACEMENT OF THE FRAGMENT

CT SCAN-IDEAL FOR CONDYLE FRACTURES.

MANAGEMENT OF MANDIBULAR FRACTURES

3 GOALS OF FRACTURE TREATMENT ARE-

- ANATOMIC REDUCTION
- FRACTURE FRAGMENT COMPRESSION
- ~~RIGID IMMOBILIZATION~~

GENERAL PRINCIPLES

- PATIENTS GENERAL PHYSICAL STATUS
- DIAGNOSIS AND TREATMENT OF MANDIBLE # SHOULD BE DONE METHODICALLY .
- DENTAL INJURIES SHOULD BE EVALUATED AND TREATED CONCOMITANTLY WITH THE TREATMENT OF MANDIBULAR FRACTURES.

- RE ESTABLISHMENT OF THE OCCLUSION IS THE PRIMARY GOAL IN TREATING MANDIBULAR #S.
- IN CASE OF MULTIPLE FACIAL #S, THE CONCEPT- INSIDE OUT AND FROM BOTTOM TO TOP, HAS TO BE FOLLOWED.
- INTER-MAXILLARY FIXATION TIME SHOULD VARY ACCORDING TO TYPE, LOCATION, NUMBER AND SEVERITY OF THE FRACTURE.

- PROPHYLACTIC ANTIBIOTIC COVERAGE SHOULD BE FOLLOWED IN ALL COMPOUND FRACTURES.
- NUTRITIONAL STATUS OF THE PATIENT HAS TO BE MONITORED.
- MOST MANDIBULAR #S CAN BE TREATED WITH CLOSED REDUCTION.

CHAMPY'S IDEAL OSTEOSYNTHESIS LINES

- IN EVERY Mn #, FORCES OF MASTICATION PRODUCE TENSIONAL FORCES ON UPPER BORDER & FORCES OF COMPRESSION ON LOWER BORDER.
- CHAMPY PUT FORWARD THE LINES WHERE PLATES & SCREWS HAVE TO BE PLACED .
- THESE ARE KNOWN AS "IDEAL OSTEOSYNTHESIS LINES"
- IT CORRESPONDS TO COURSE OF A LINE OF TENSION AT BASE OF THE ALVEOLAR PROCESS.
- ONLY IN SYMPHYSIS REGION, 2 PLATES ARE PLACED TO NEUTRALIZE TORSIONAL FORCES

CLASSIFICATION OF TREATMENT OPTIONS

CLOSED REDUCTION & INDIRECT SKELETAL FIXATION-

1.DIRECT INTERDENTAL WIRING

2.INDIRECT INTERDENTAL WIRING

3.CONTINUOS OR MULTIPLE LOOP WIRING

4.ARCH BARS

5.CAP SPLITS

6.GUNNING TYPE OF SPLINTS

OPEN REDUCTION AND DIRECT SKELETAL FIXATION-

1.TRANSOSSEOUS WIRING

2.PLATING

3.INTERMEDULLARY PINNING

4.TITANIUM MESH

5.CIRCUMFERENTIAL STRAPS

6.BONE CLAMPS

7.BONE STAPLES

8.BONE SCREWS

INDICATIONS FOR CLOSED REDUCTION.

1. NON DISPLACED FAVOURABLE #S.
2. GROSSLY COMMUNITED #S.
3. #S EXPOSED BY SIGNIFICANT LOSS OF OVERLYING SOFT TISSUE.
4. EDENTULOUS MANDIBULAR #S.
5. MANDIBULAR #S IN CHILDREN WITH DEVELOPING DENTITION.
6. CORONOID #S
7. CONDYLAR #S.

INDICATIONS FOR OPEN REDUCTION

1. DISPLACED UNFAVOURABLE #S THROUGH THE ANGLE.
2. DISPLACED UNFAVOURABLE #S THROUGH BODY OR PARASYMPHYSIS - OPEN INFERIORLY IN CLOSED REDUCTION
3. MULTIPLE #S OF THE FACIAL SKELETON.
4. MIDFACIAL #S WITH B/L SUBCONDYLAR #S.
5. EDENTULOUS MAXILLAE WITH OPPOSING MANDIBULAR #S
6. DELAYED TREATMENT & INTERPOSITION OF SOFT TISSUE.
7. MALUNION
8. SPECIAL SYSTEMIC CONDITIONS CONTRAINDICATING IMF.

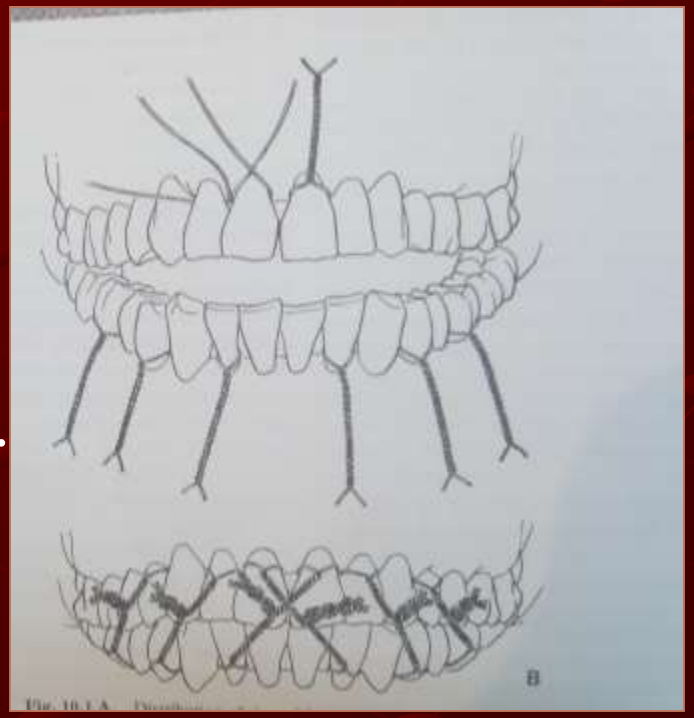
CLOSED REDUCTION

DIRECT INTER-DENTAL WIRING-GILMER

SIMPLE AND RAPID

MAY LOOSEN.

SINGLE WIRE CANNOT BE REPLACED.

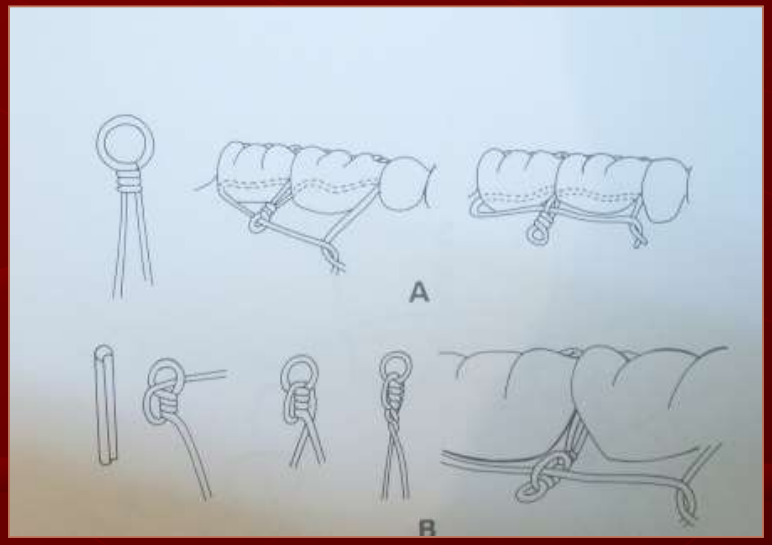


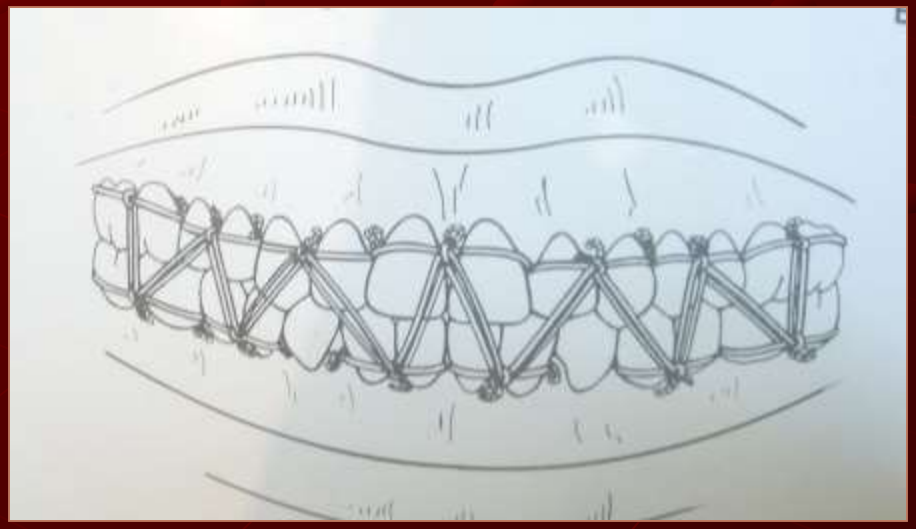
INDIRECT INTERDENTAL WIRING-

EYELET WIRING/IVY LOOP METHOD.

QUICK AND EASY METHOD.

FOR SHORT PERIOD-1-2 EYELETS IN EACH QUADRANT





CONTINUOUS OR MULTIPLE LOOP WIRING - STOUT

THIS TECHNIQUE PERMITS BLOCKS OF TEETH IN EITHER JAW TO BE WIRED

SUCH THAT ELASTIC TRACTION CAN BE USED TO REDUCE THE FRACTURE.

ARCH BARS-

INDICATIONS-

- INSUFFICIENT NUMBER OF SUITABLE SHAPED TEETH ARE PRESENT.
- SIMPLE DENTOALVEOLAR FRACTURES OR WHEN MULTIPLE TOOTH BEARING FRAGMENTS REQUIRE REDUCTION.
- COMMERCIALLY PRODUCED OR CUSTOM MADE.
- ACRYLATED ARCH BAR, DIRECTLY BONDED.

CAP SPLINTS-

- SILVER CAP SPLINTS USED.
- TIME CONSUMING
- TO PROVIDE PROLONGED FIXATION OF THE MANDIBULAR TEETH IN PATIENT WITH FRACTURES OF THE TOOTH BEARING SEGMENT AND B/ DISPLACED #S OF THE CONDYLAR NECK

CLOSED REDUCTION

ADVANTAGES

- INEXPENSIVE
- ONLY STAINLESS STEEL WIRES & BARS NEEDED
- EASY AVAILIBILITY AND CONVENIENT
- SHORT & STABLE PROCEDURE
- NO SURGICAL DAMAGE
- NO FOREIGN MATERIAL LEFT IN THE BODY

DISADVANTAGES

- CANNOT OBTAIN ABSOLUTE STABILITY
- NON COMPLIANCE FROM THE PATIENT
- COMPROMISED NUTRITION
- MUSCULAR ATROPHY AND STIFFNESS
- DECREASE RANGE OF MANDIBULAR MOVEMENTS
- POSSIBLE TMJ SEQUELAE

SURGICAL APPROACHES

SUBMANDIBULAR APPROACH

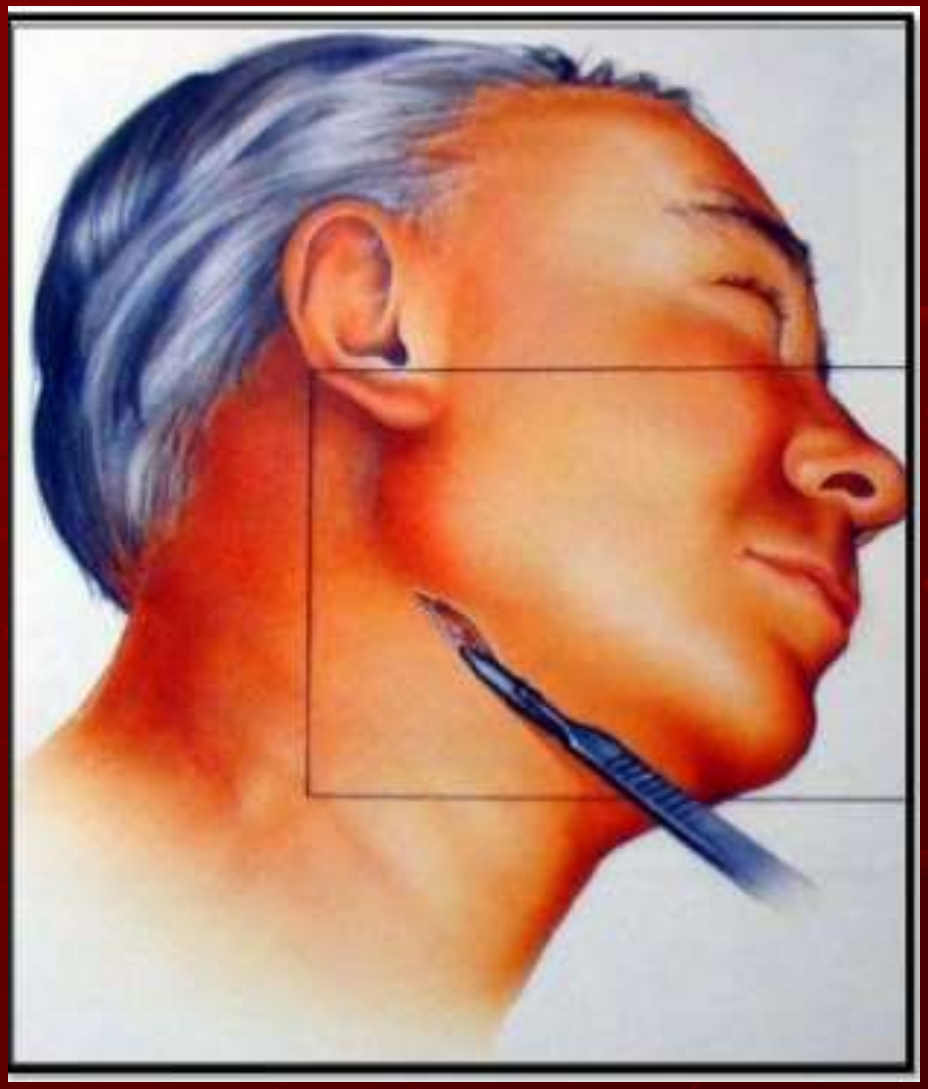
RETROMANDIBULAR APPROACH

PREAURICULAR APPROACH

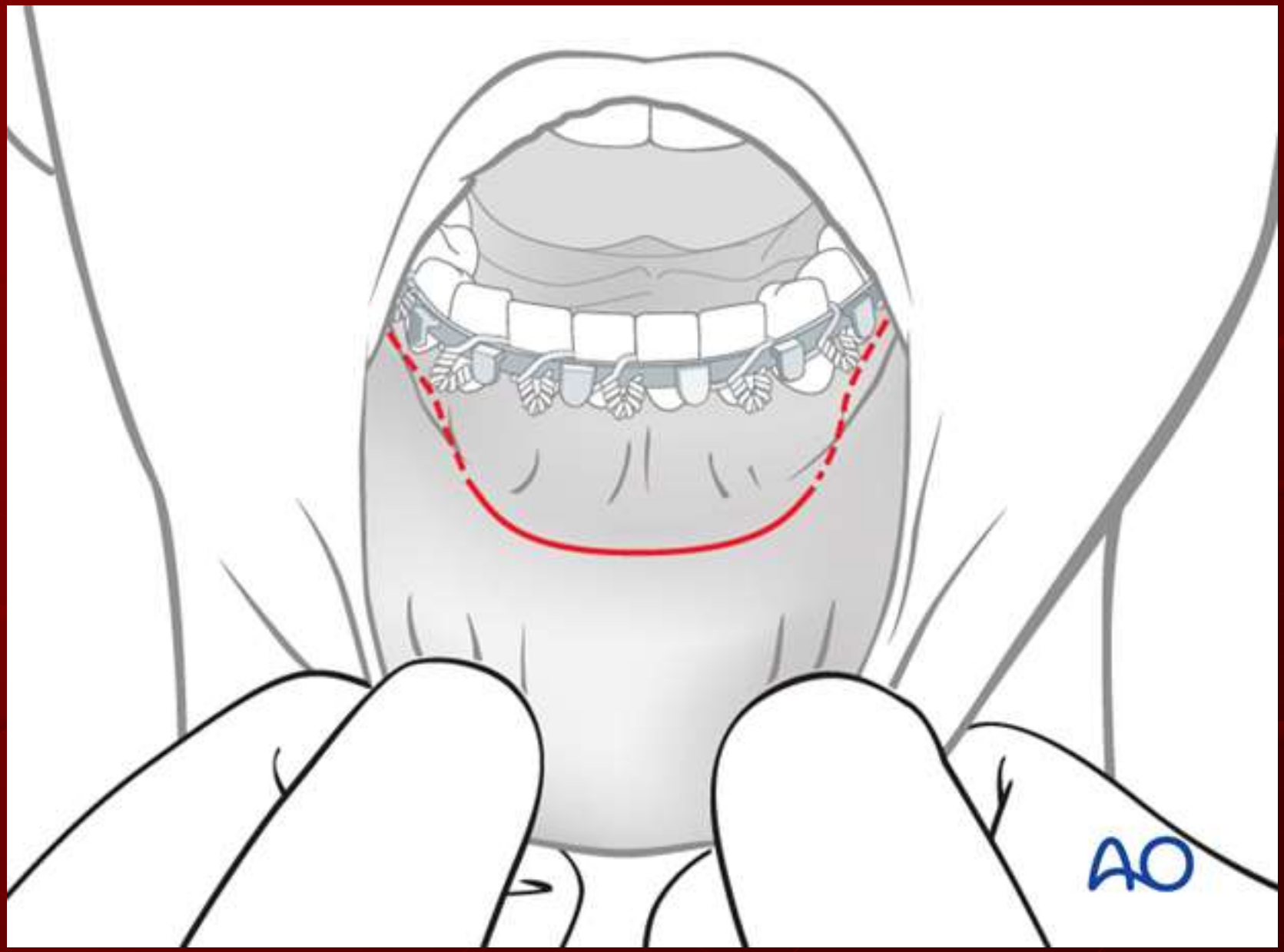
ENDAURAL APPROACH

INTRA-ORAL APPROACH

EXTENDING THE LACERATIONS



Vertical incision just posterior to the mandible through skin and subcutaneous tissue to the depth of the platysma muscle.


AO

TRANSOSSEOUS WIRING/WIRE OSTEOSYNTHESIS

INDICATIONS-

OF RAMUS

REPLACEMENT OF ALL SMALL FRAGMENTS IN

GROSSLY COMMUNITED #S

FOR FUNCTIONAL STABILIZATION OF

FRAGMENTS IN PLATE & SCREW OSTEOSYNTHESIS

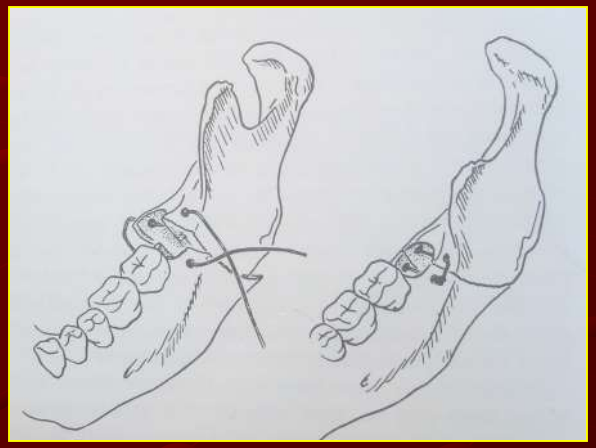
EDENTULOUS MANDIBLE

SIMPLER

MAINTAIN FRAGMENTS & PREVENT DISPLACEMENT.

LACK RIGIDITY, DIRECTIONAL CONTROL &

SURFACE TO BONE CONTACT.



OPEN REDUCTION AND INTERNAL FIXATION

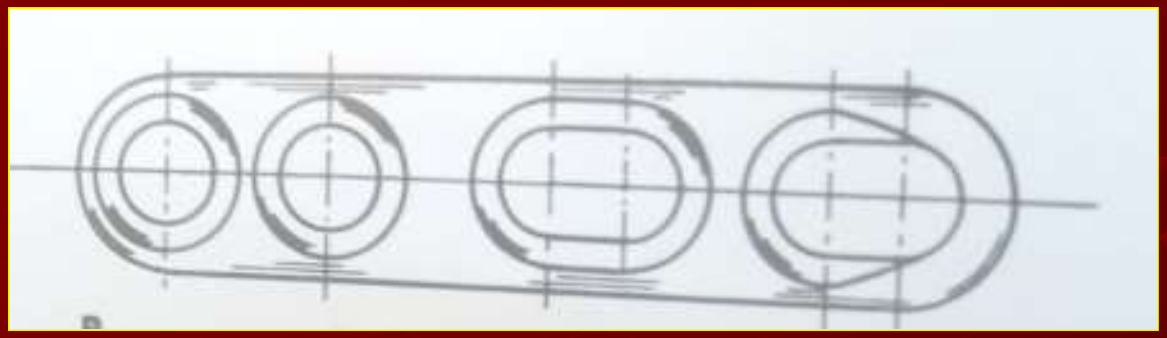
- VARIOUS PLATES AND SCREWS-
- LAG SCREWS
- COMPRESSION PLATES
- MINIPLATES

- LAG SCREWS-
- 1970 BY BRONS AND BOERING USED FOR OBLIQUE FRACTURES

COMPRESSION OSTEOSYNTHESIS

- ABSOLUTE STABILITY IN WHICH NO MOVEMENTS OCCUR AT AREA OF INTERFRAGMENTARY CONTACT OR BETWEEN BONE AND THE DEVICE.

- MAXIMUM FORCE GENERATED- 300 KP/CMSQ



SELF COMPRESSION PLATES

RETENTION PART

COMPRESSION PART-

OBLONG SLIDING HOLE

COMPRESSION HOLE

DYNAMIC COMPRESSION PLATES

LUHR IN 1972

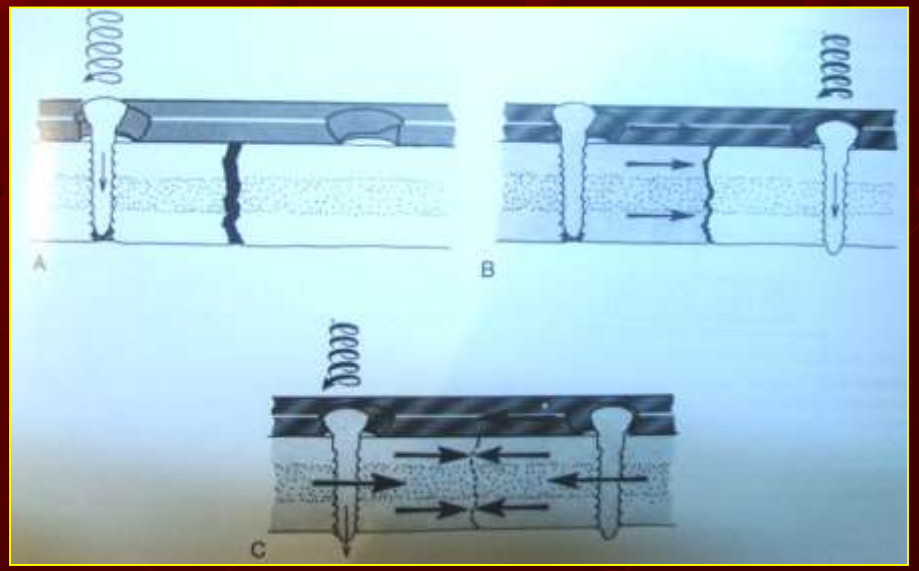
SPEISSEL

PLATE THICKNESS- 2.0MM,2.7MM AND 3.0MM

MOSTLY ON THE CONVEX SURFACE

BICORTICAL SCREWS

PEAR SHAPED HOLES



ECCENTRIC DYNAMIC COMPRESSION PLATES

- MODIFICATION OF THE DCP

  (SCHILLI AND SHOEMAKER)

- THE LATERAL 2 HOLES ARE DIRECTED OBLIQUELY SUPERIORLY

- DECREASE IN SPLAYING OF THE UPPER BORDER

MINIPLATES

- SEMIRIGID FIXATION
- MALLEABLE PLATES AT THE LINE OF OSTEOSYNTHESIS
- LINE OF OSTEOSYNTHESIS-

OPEN REDUCTION

ADVANTAGES

- EARLY MOBILIZATION
- NORMAL HYGIENE AFTER FEW DAYS
- NO COMPROMISED NUTRITION
- GOOD STABILITY
- EXACT RE APPROXIMATION OF THE SEGMENTS
- DECREASED PATIENT DISCOMFORT
- LOW INFECTION RATES

DISADVANTAGES

- NEED FOR AN OPEN PROCEDURE
- EXPENSIVE HARDWARE
- NEED FOR SECOND OPERATION TO REMOVE THE PLATE
- SCARRING
- NO BRIDGING OF SMALL FRAGMENTS

COMPLICATIONS OF MANDIBULAR FRACTURES

- INFECTION/OSTEOMYELITIS
- DELAYED HEALING AND NON HEALING
- FACIAL WIDENING
- NERVE DISORDERS

COMPUTER SIMULATION & RAPID PROTOTYPING FOR RECONSTRUCTION OF MANDIBLE

COMPUTER GRAPHICS MERGED WITH 3-D REPRESENTATIONS OF ANATOMIC REGIONS GENERATED FROM IMAGING MODALITIES (MAINLY COMPUTED TOMOGRAPHY [CT] & MRI, HAVE THEIR BACKGROUND IN WELL-KNOWN & WELL-ESTABLISHED CONVENTIONAL IMAGE-GUIDED SURGERY, WHICH WE CAN DESCRIBE AS THE “FIRST GENERATION OF NAVIGATION.

CONDYLAR FRACTURES

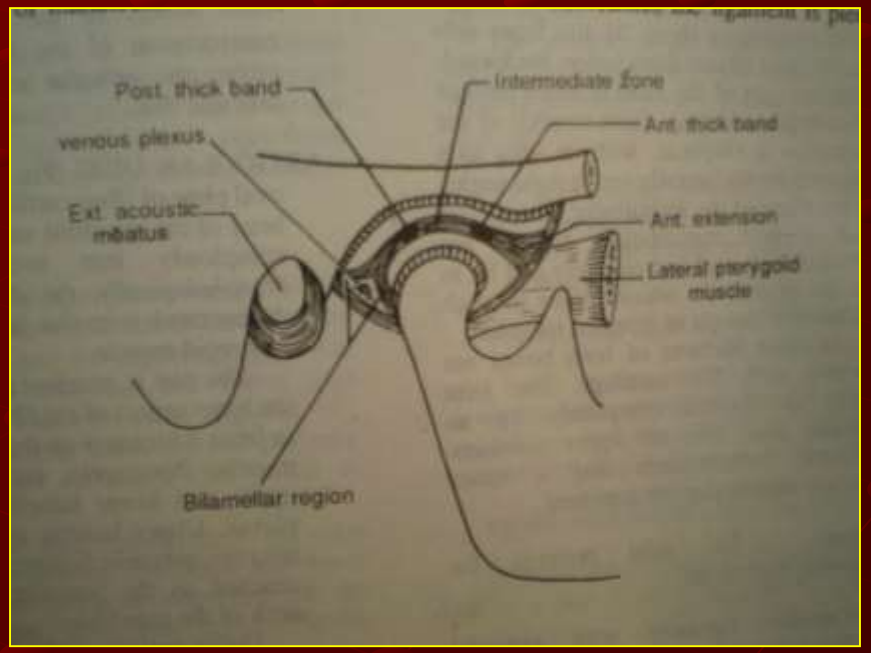
ANATOMY

- BONES FORMING TMJ
- ABOVE: ARTICULAR TUBERCLE AND ANTERIOR ARTICULAR PART OF THE MANDIBULAR FOSSA OF TEMPORAL BONE.
- BELOW: HEAD OR CONDYLE OF THE MANDIBLE

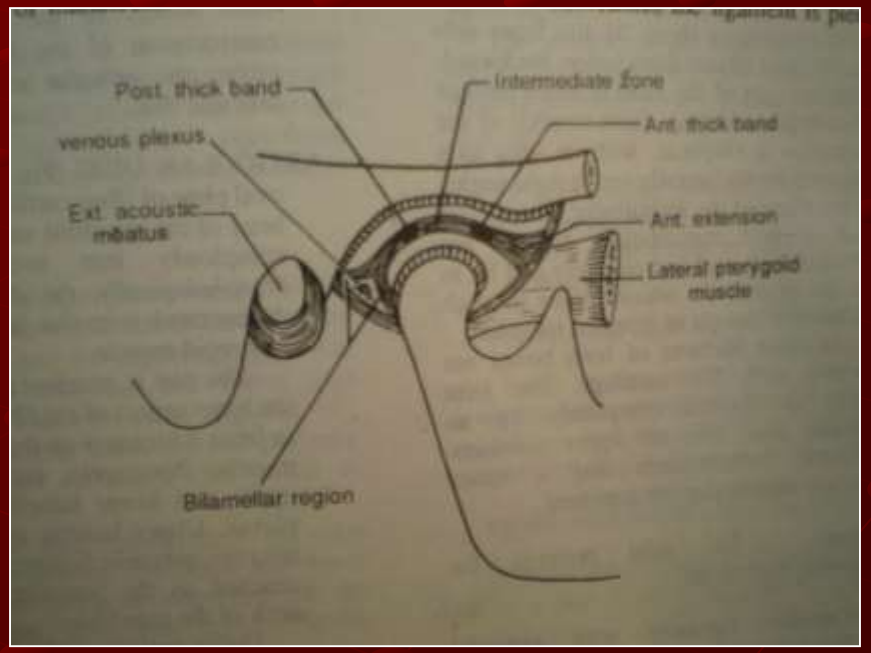
  -20 MM SIDE TO SIDE

  -10 MM BEFORE BACKWARD

  -ELLIPTICAL, LONG AXIS MEDIOLATERALLY



- ARTICULAR SURFACES OF THE BOTH BONES ARE COVERED WITH FIBROCARTILAGE.
- JOINT CAVITY IS DIVIDED COMPLETELY BY AN ARTICULAR DISC INTO AN UPPER MENISCOTEMPORAL AND LOWER MENISCO MANDIBULAR COMPARTMENT.



LIGAMENTS

- ARTICULAR DISC
- CAPSULAR LIGAMENT
- LATERAL OR TEMPOROMANDIBULAR LIGAMENT
- ACCESSARY LIGAMENTS-SPHENOMANDIBULAR AND STYLOMANDIBULAR LIGAMENT.

RELATIONS

- ANTERIORLY:

-LATERAL PTERYGOID

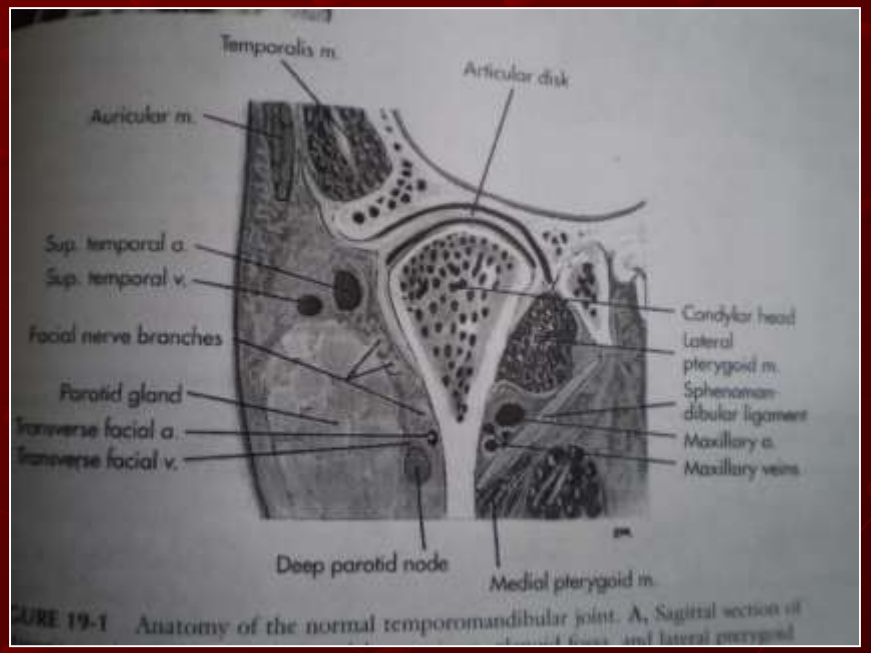
-TEMPORALIS AND MASSETRIC VESSELS AND NERVE

POSTERIORLY:

-PAROTID GLAND

-SUPERFICIAL TEMPORAL VESSELS

-AURICULOTEMPORAL NERVE AND EXTERNAL ACOUSTIC MEATUS



URE 19-1 Anatomy of the normal temporomandibular joint. A, Sagittal section of

- LATERALLY:

  -PAROTIDOMASSETRIC FASCIA

  -SUPERFACIAL INVESTING FASCIA(TEMPORAL AND ZYGOMATIC BR OF FACIAL NERVE)

MEDIALLY:

  -LATERAL PTERIGOID

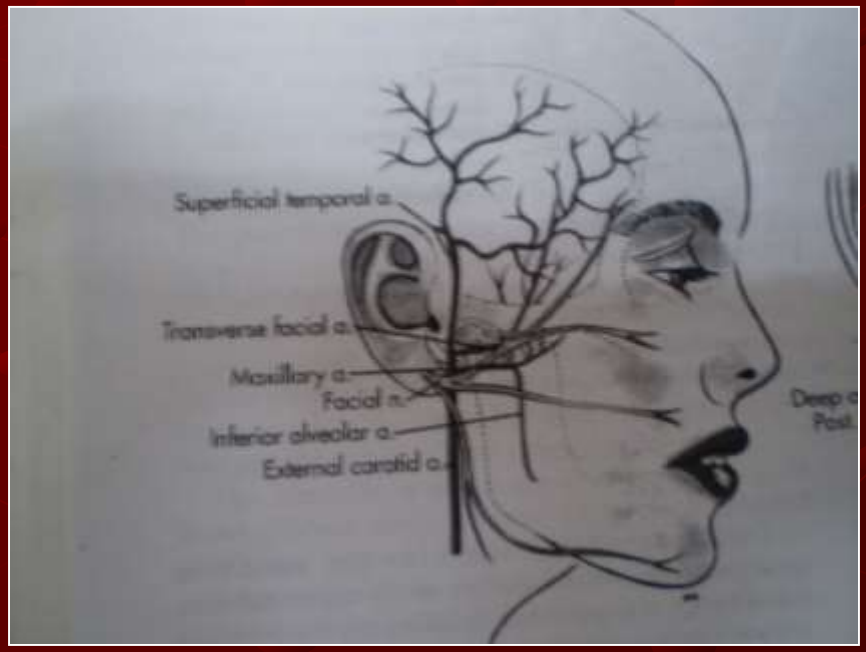
  -ROOTS OF AURICULO TEMPORAL NERVE ENCLOSING MIDDLE MENINGEAL ARTERY

- SPINE OF SHENOID AND SPHENOMANDIBULAR LIGAMENT AND MAXILLARY ARTERY AND VEIN.

-CHORDA TYMPANI NERVE

ARTERIAL SUPPLY

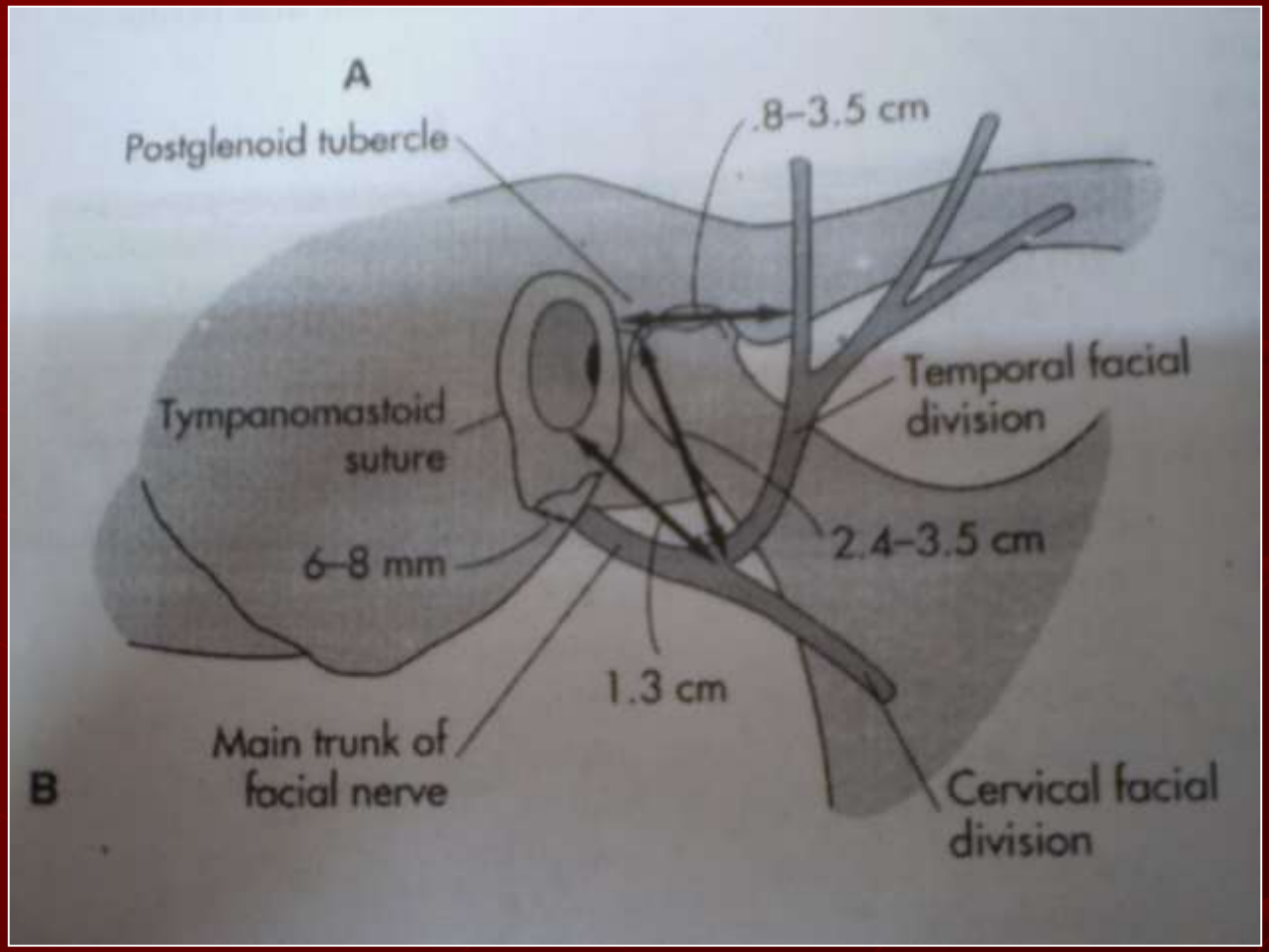
- SUPERFICIAL TEMPORAL AND MAXILLARY ARTERIES.



NERVE SUPPLY

- AURICULO-TEMPORAL NERVE
- MASSETRIC NERVE

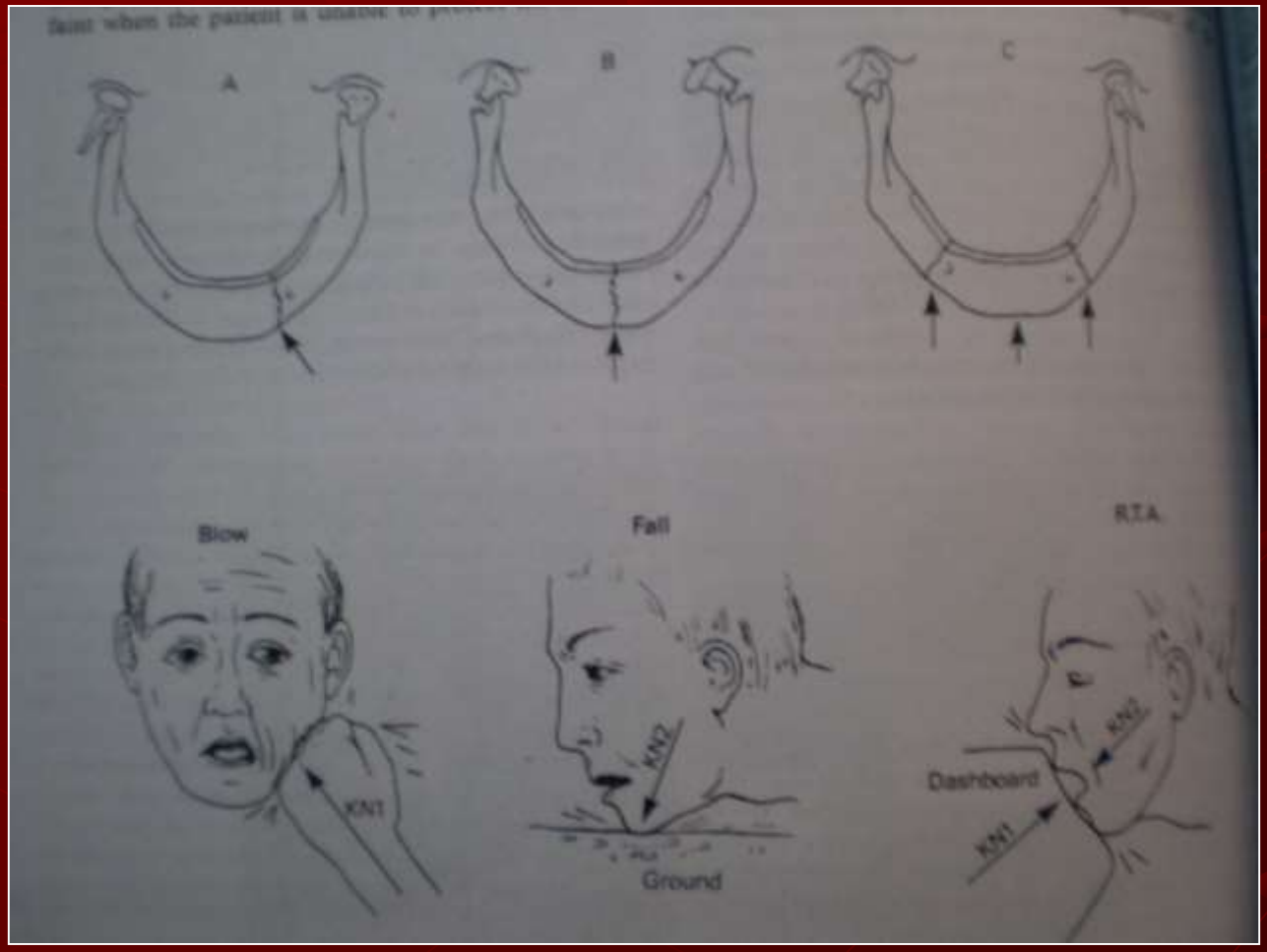
FACIAL NERVE



GENERAL NATURE OF INJURY

- CONTUSION
- DISLOCATION
- FRACTURE

MECHANISM OF INJURY



CLASSIFICATION

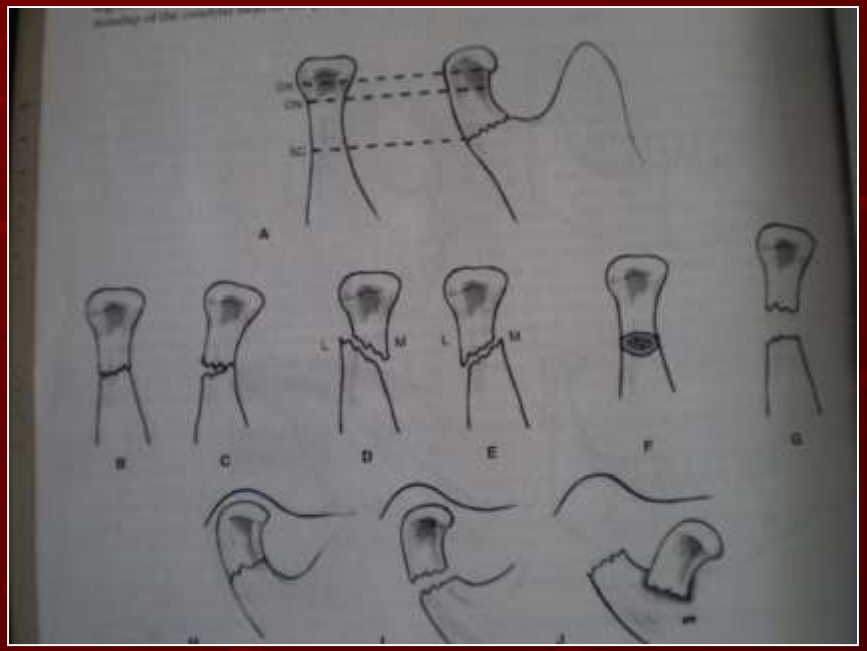
- LINDHAL SYSTEM(1977)

1. LEVEL OF FRACTURE

-CONDYLAR HEAD

-CONDYLAR NECK

-SUBCONDYLAR



2.RELATIONSHIP OF THE CONDYLAR SEGMENT TO THE MAND.FRAGMENT

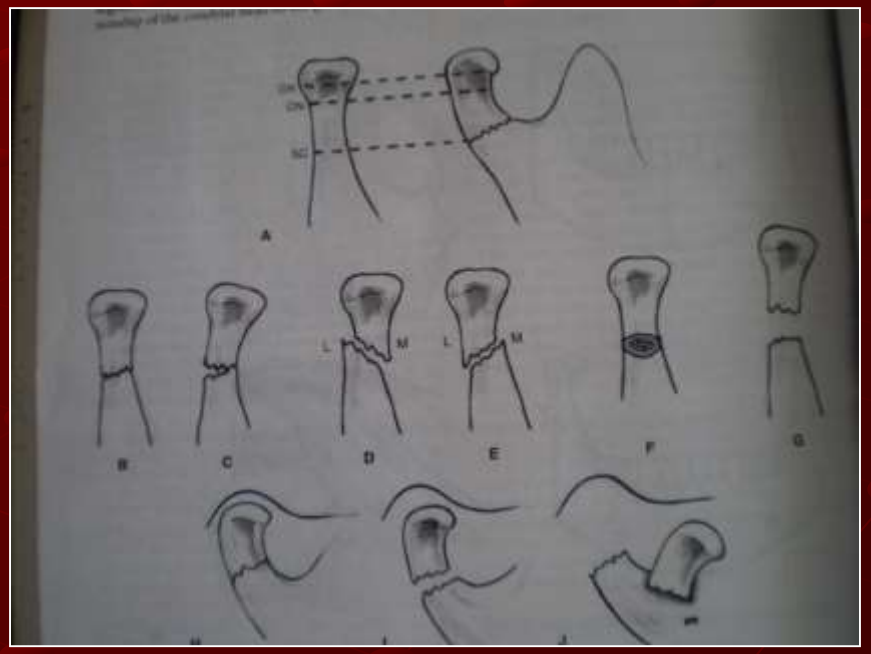
-NONDISPLACED

-DEVIATED

-DISPLACEMENT WITH MEDIAL AND LATERAL OVERLAP.

-DISPLACEMENT WITH ANTERIOR OR POSTERIOR OVERLAP.

- NO CONTACT B/W THE # SEGMENTS

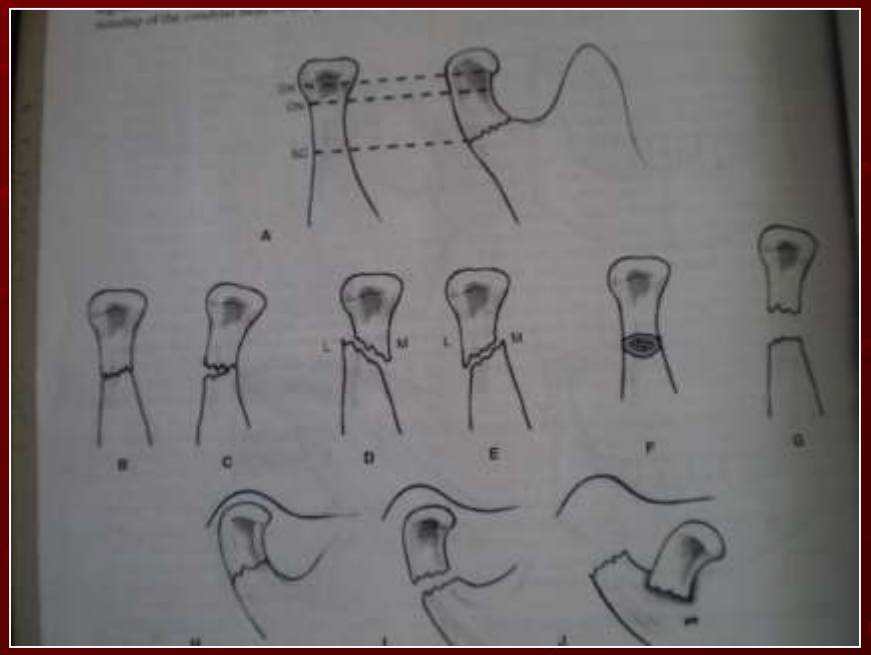


- 3.RELATIIONSHIP B/W CONDYLAR HEAD AND GLENOID FOSSA

-NONDISPLACED

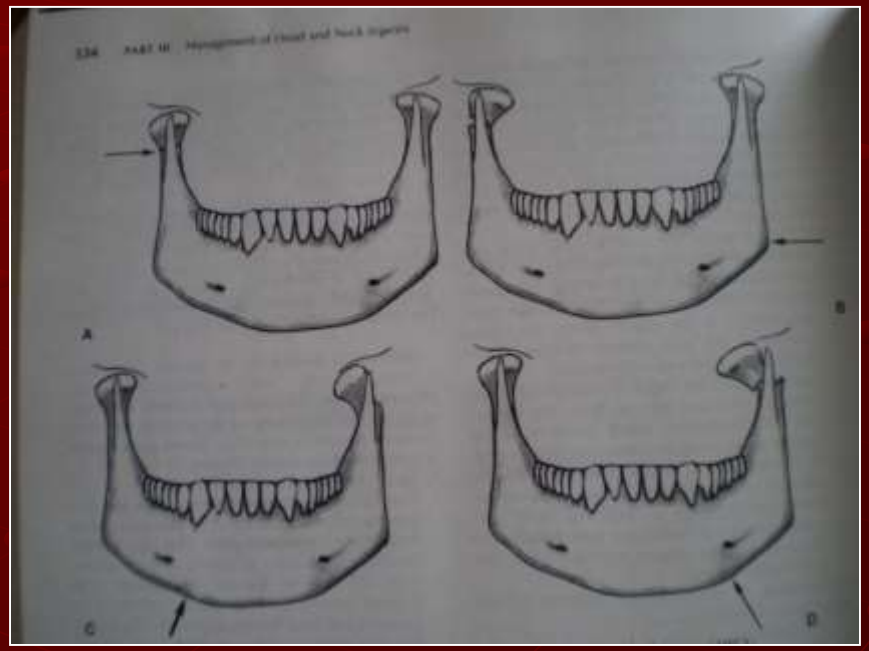
-DISPLACEMENT

-DISLOCATION



MAC LENNAN SYSTEM(1952)

- TYPE 1-NONDISPLACED
- TYPE 2-FRACTURE DEVIATION
- TYPE 3-FRACTURE DISPLACEMENT
- TYPE 4-FRACTURE DISLOCATION



IMAGING TECHNIQUES

CONVENTIONAL RADIOGRAPHY

-ORTHOPANTOMOGRAM

-LATERAL OBLIQUE OF MANDIBLE

-REVERSE TOWN'S VIEW & PA VIEW

-TRANSCRANIAL VIEWS OF CRANIAL SKELETON

CT SCAN

MRI

ARTHOGRAPHY

SIGNS AND SYMPTOMS

- EVIDENCE OF TRAUMA
- BLEEDING FROM EAC.
- FACIAL ASYMMETRY.
- PALPABLE SWELLING
- PAIN AND TENDERNESS TO PALPATION
- CREPITATION
- MALOCCLUSION

- DEVIATION OF THE MANDIBULAR MIDLINE.
- MUSCLE SPASM
- DENTOALVEOLAR INJURIES.

MANAGEMENT

- CONSERVATIVE
- FUNCTIONAL
- SURGICAL

CONSERVATIVE AND FUNCTIONAL

- CHALMER ET AL

-ASYMPTOMATIC LIMITATION OF LATERAL EXCURSION TO ONE SIDE.

-DEVIATION TO THE AFFECTED SIDE ON OPENING.

-INTERARCH MALRELATIONSHIP.

SPECIFIC TREATMENT

- YOUNG PATIENTS WITH A MAXIMUM REMODELLING POTENTIAL.
- ADULT DENTATE FRACTURE WITH UNILATERAL FRACTURE
- ADULT DENTATE PATIENTS WITH BILATERAL FRACTURES
- EDENTULUS PATIENTS
- COMPOUND FRACTURES

SURGICAL MANAGEMENT

- ABSOLUTE INDICATIONS

-FRACTURE DISLOCATION OF CONDYLE INTO THE MIDDLE CRANIAL FOSSA

-IMPOSSIBILITY OF OBTAINING ADEQUATE OCCLUSION BY CLOSED REDUCTION DUE TO LOCKING BY THE CONDYLAR FRAGMENT

-LATERAL FRACTURE DISLOCATION OF THE CONDYLE

-INVASION BY A FOREIGN BODY

- RELATIVE INDICATIONS

-BILATERAL CODYLAR FRACTURE IN AN EDENTULOUS PATIENT(UNAVAILABILITY OF SPLINT)

-UNILATERAL OR BICONDYLAR FRACTURES WHERE SPLINT IS NOT RECOMMENDED FOR MEDICAL REASONS

-BILATERAL CONDYLAR FRACTURES WITH COMMINUTED MID FACE FRACTURES

- BILATERAL CONDYLAR FRACTURES WITH ASSOCIATED GNATHOLOGIC PROBLEMS

SURGICAL APPROACHES

- PRE AURICULAR INCISION
- SUBMANDIBULAR INCISION
- RETROMANDIBULAR INCISION
- INTRAORAL INCISION

METHODS OF IMMOBILISATION OF THE CONDYLE

- TRANSOSSEOUS WIRING
- BONE PINS
- GLENOID FOSSA – CONDYLE SUTURE
- KIRSCHNER WIRE
- INTRAMEDULLARY SCREWS
- BONE PLATING

TREATMENT OF EDENTULOUS MANDIBLE

1. DENTURES WIRED USING CIRCUM-MANDIBULAR OR CIRCUMZYGOMATIC WIRES
2. IMF SCREWS THRU' PRE-EXISTING DENTURES
3. ACRYLIC BASEPLATES USED AS DENTURES
4. ARCH BAR PROCESSED INTO DENTURES
5. HOLES MADE INTO FLANGES OF DENTURE

INDICATION FOR GUNNING SPLINTS

UNILATERAL OR BILATERAL # OF EDENTULOUS MANDIBLE

CONTRAINDICATIONS

1. UNFAVOURABLE # OUTSIDE DENTURE BEARING AREA
2. SEVERE POSTERIOR DISPLACEMENT OF PARASYMPHYSEAL AREA
3. PROJECTILE INJURIES INVOLVING HARD & SOFT TISSUE LOSS

INDICATION FOR BIPHASIC PIN

1. EDENTULOUS #
2. WHERE IMF MIGHT BE DIFFICULT OR INADVISABLE
3. AVULSIVE INJURIES
4. BONE GRAFT REQUIREMENTS
5. GREATLY COMMINUTED #
6. USED WITH HEAD FRAME IN SEVERE MIDFACE TRAUMA WHERE VERTICAL STABILISATION IS NOT POSSIBLE
7. WHERE EARLY MOBILISATION OF TMJ IS NECESSARY

CONTRA-INDICATION

1. IRRADIATED TISSUE
2. GROSSLY CONTAMINATED TISSUE
3. CASES OF OSTEOPOROSIS
4. OSTEOSCLEROSIS
5. EXTREME ATROPHIC MANDIBLE