



Chirurgia Maxillo-Facciale

Dipartimento di Scienze Odontostomatologiche e Maxillo-Facciali

"La Sapienza" Università di Roma.

U.O.C. di Chirurgia Maxillo-Facciale

Direttore Prof. Piero Cascone

TMD TREATMENT

Prof. Piero Cascone



EACMF 2014

XXIII Congress of the European Association for Cranio-Maxillo-Facial Surgery
Prague, Czech Republic | 23-26 September 2014, Prague Congress Centre



TMD PATIENTS TREATED BETWEEN 1993 AND 2007
DIPARTIMENTO DI SCIENZE ODONTOSTOMATOLOGICHE E MAXILLO-FACCIALI
UNIVERSITA' DI ROMA "LA SAPIENZA"

NON SURGICAL TREATMENT

3927

SURGICAL TREATMENT

672





TEMPORO-MANDIBULAR DISORDER

DEFINITION

GROUP OF MORPHO-STRUCTURAL ANOMALIES, FUNCTIONAL ALTERATION AND DISEASE INVOLVING TMJ, MASTICATORY MUSCLE AND RELATED STRUCTURE.

TMD ARE PART OF THE MUSCOLOSKELETAL PATHOLOGY CLASSIFICATION.

EPIDEMIOLOGY

60-70% OVER ALL HAVE AT LEAST ONE TMD SIGN OR ONE TMD SYMPTOM

25% REFER A SIGN OR SYMPTOM TO THE FAMILY DOCTOR

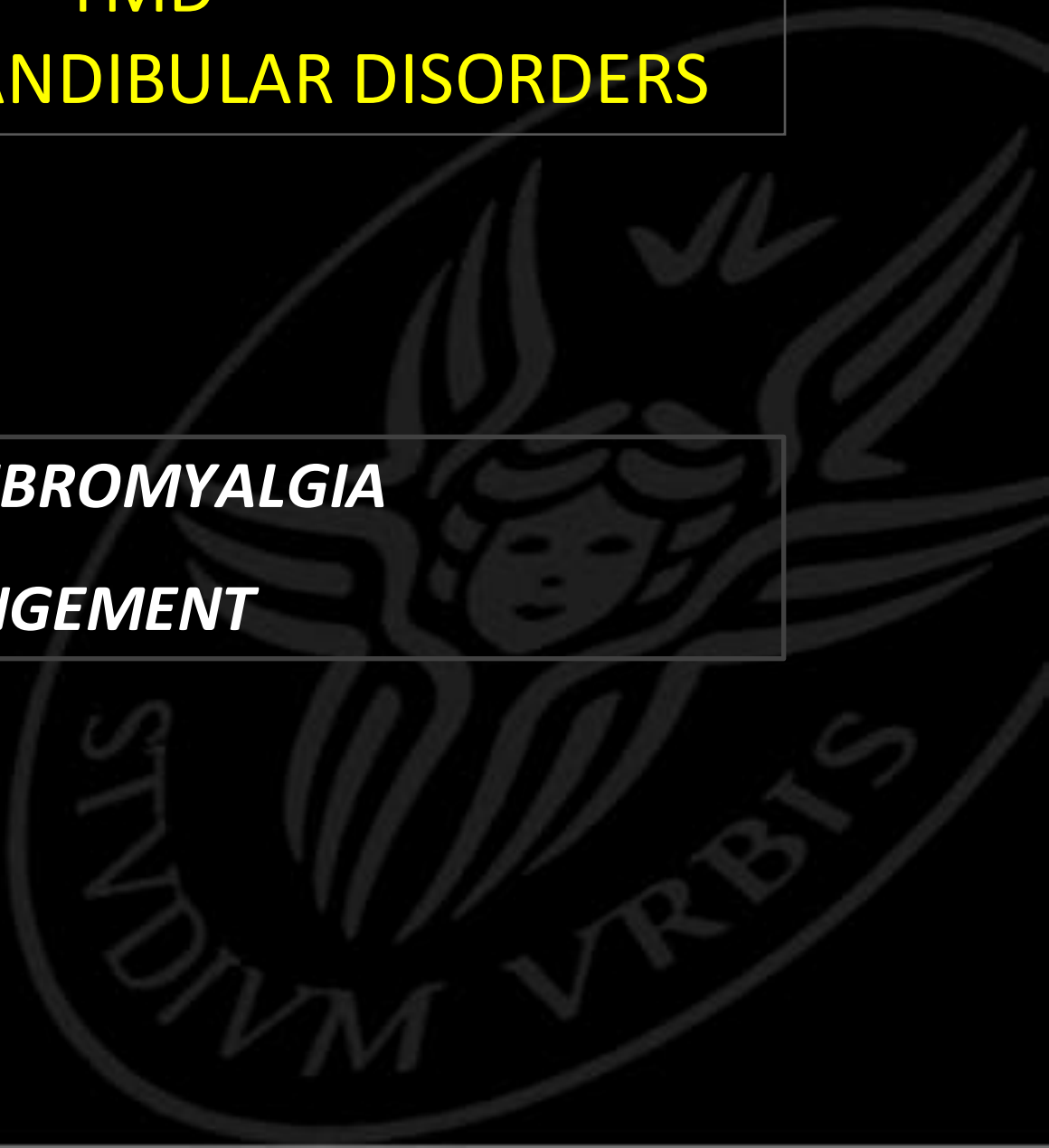
5% NEED TREATMENT

Temporomandibular disorders (TMD) are a significant public health problem affecting approximately 5% to 12% of the population. TMD is the second most common musculoskeletal condition (after chronic low back pain) resulting in pain and disability. Pain related TMD can impact the individual's daily activities, psychosocial functioning, and quality of life.

TMD

TEMPOROMANDIBULAR DISORDERS

MYALGIA AND FIBROMYALGIA
INTERNAL DERANGEMENT



INTERNAL DERANGEMENT

- **SUBLUXATION AND LUXATION**
- **DISC DISPLACEMENT WITH REDUCTION**
- **DISC DISPLACEMENT WITH REDUCTION WITH INTERMITTENT LOCKING**
- **DISC DISPLACEMENT WITHOUT REDUCTION WITH LIMITED OPENING**
- **DISC DISPLACEMENT WITHOUT REDUCTION WITHOUT LIMITED OPENING**
- **DEGENERATIVE JOINT DISEASE**

Eric Schiffman et Al. Diagnostic Criteria for temporomandibular disorder (DC/TMD) for clinical and research applications: Recommendation of the international RDC/TMD consortium network and orofacial pain. Special interest group. Journal of Oral & Facial Pain and Headaches 2014;28:6

SUBLUXATION AND LUXATION

A hypermobility disorder involving the disc-condyle complex and the articular eminence: In the open mouth position, the disc complex is positioned anterior to the articular eminence and is unable to return to a normal closed mouth position without a manipulative maneuver. The duration of dislocation may be momentary or prolonged. When the patient can reduce the dislocation himself/herself, this is referred to as luxation. This disorder is also referred to as “open lock”. The sensitivity and specificity have been established for only subluxation.

DISC DISPLACEMENT WITH REDUCTION

An intracapsular biomechanical disorders involving the condyle-disc complex. In the closed mouth position, the disc is in anterior position relative to the condylar head and the disc reduces upon opening of the mouth. Medial and lateral displacement of the disc may also be present. Clicking, popping or snapping noises may occur with disc reduction. A story of prior locking in the closed position coupled with interference in mastication precludes this diagnosis.

DISC DISPLACEMENT WITH REDUCTION WITH INTERMITTENT LOCKING

An intracapsular biomechanical disorders involving the condyle-disc complex. In the closed mouth position, the disc is in anterior position relative to the condylar head and the disc intermittently reduces with opening the mouth. When the disc does not reduce with opening the mouth, intermittent limited mandibular opening occurs. When limited opening occurs, a maneuver may be needed to unlock the TMJ. Medial and lateral displacement of the disc may also be present. Clicking, popping or snapping noises may occur with disc reduction.

DISC DISPLACEMENT WITHOUT REDUCTION WITH LIMITED OPENING

An intracapsular biomechanical disorders involving the condyle-disc complex. In the closed mouth position, the disc is in anterior position relative to the condylar head and the disc does not reduce with opening the mouth. Medial and lateral displacement of the disc may also be present. This disorder is associated with persistent limited mandibular opening that does not reduce with the clinician or patient performing a manipulative maneuver. This is also referred to as “closed lock”. This disorder is associated to limited mandibular opening.

DISC DISPLACEMENT WITHOUT REDUCTION WITHOUT LIMITED OPENING

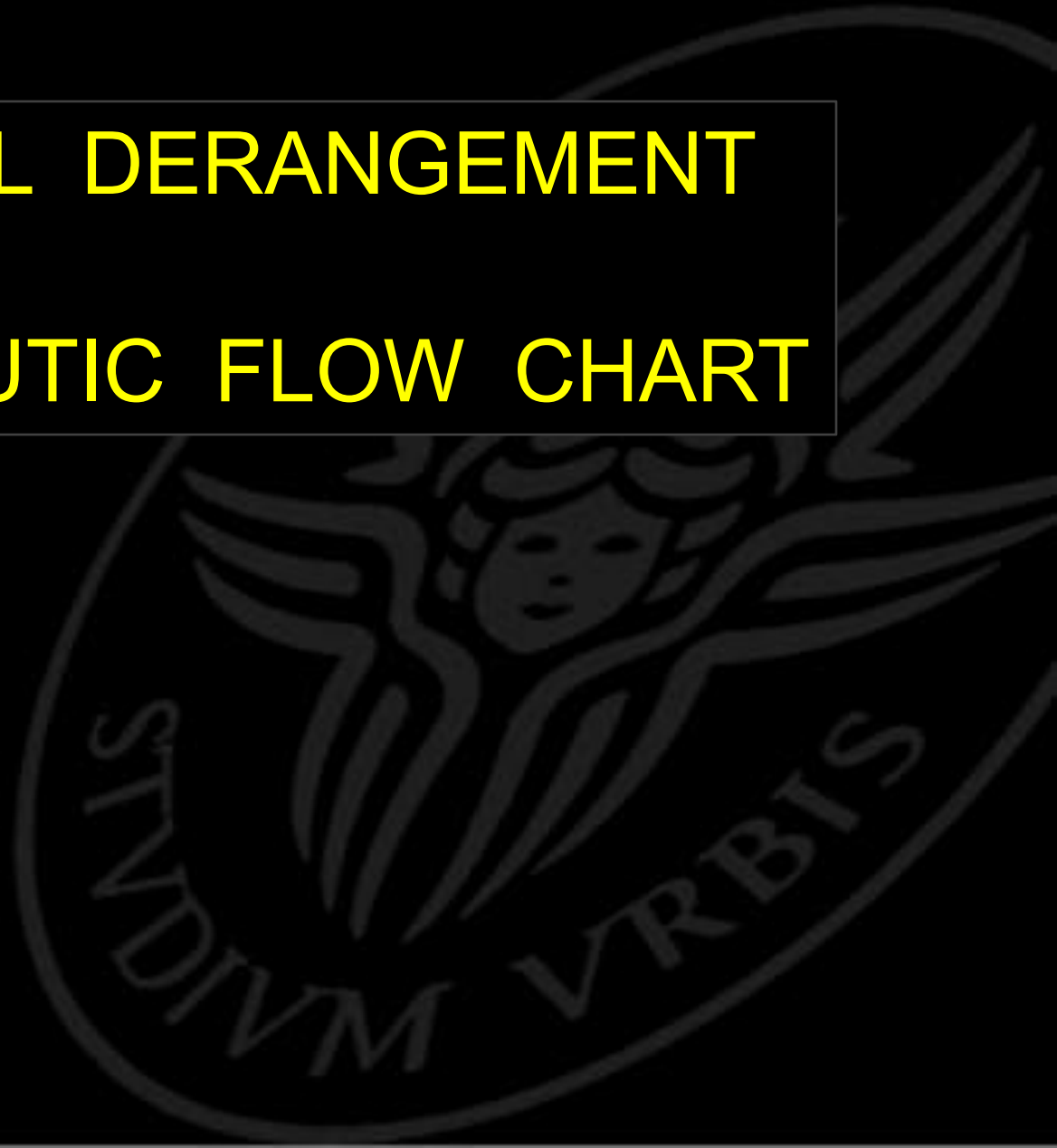
An intracapsular biomechanical disorders involving the condyle-disc complex. In the closed mouth position, the disc is in anterior position relative to the condylar head and the disc does not reduce with opening of the mouth. Medial and lateral displacement of the disc may also be present. This disorder is NOT associated with current limited opening.

DEGENERATIVE JOINT DISEASE

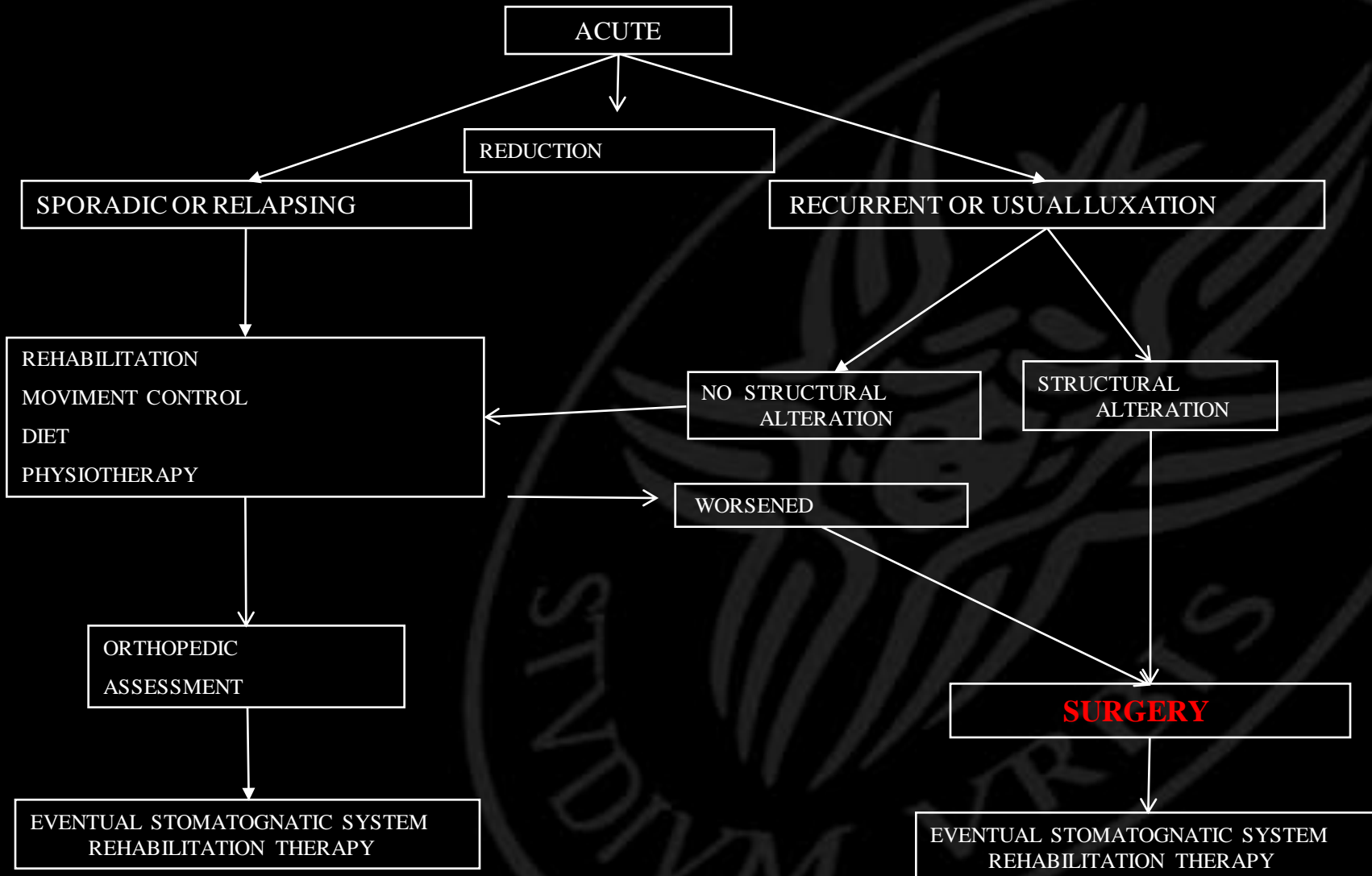
A degenerative disorder involving the joint characterized by deterioration of articular tissue with concomitant osseous changes in the condyle and/or articular eminence.

Eric Schiffman et Al. Diagnostic Criteria for temporomandibular disorder (DC/TMD) for clinical and research applications: Recommendation of the international RDC/TMD consortium network and orofacial pain. Special interest group. Journal of Oral & Facial Pain and Headaches 2014:28:6

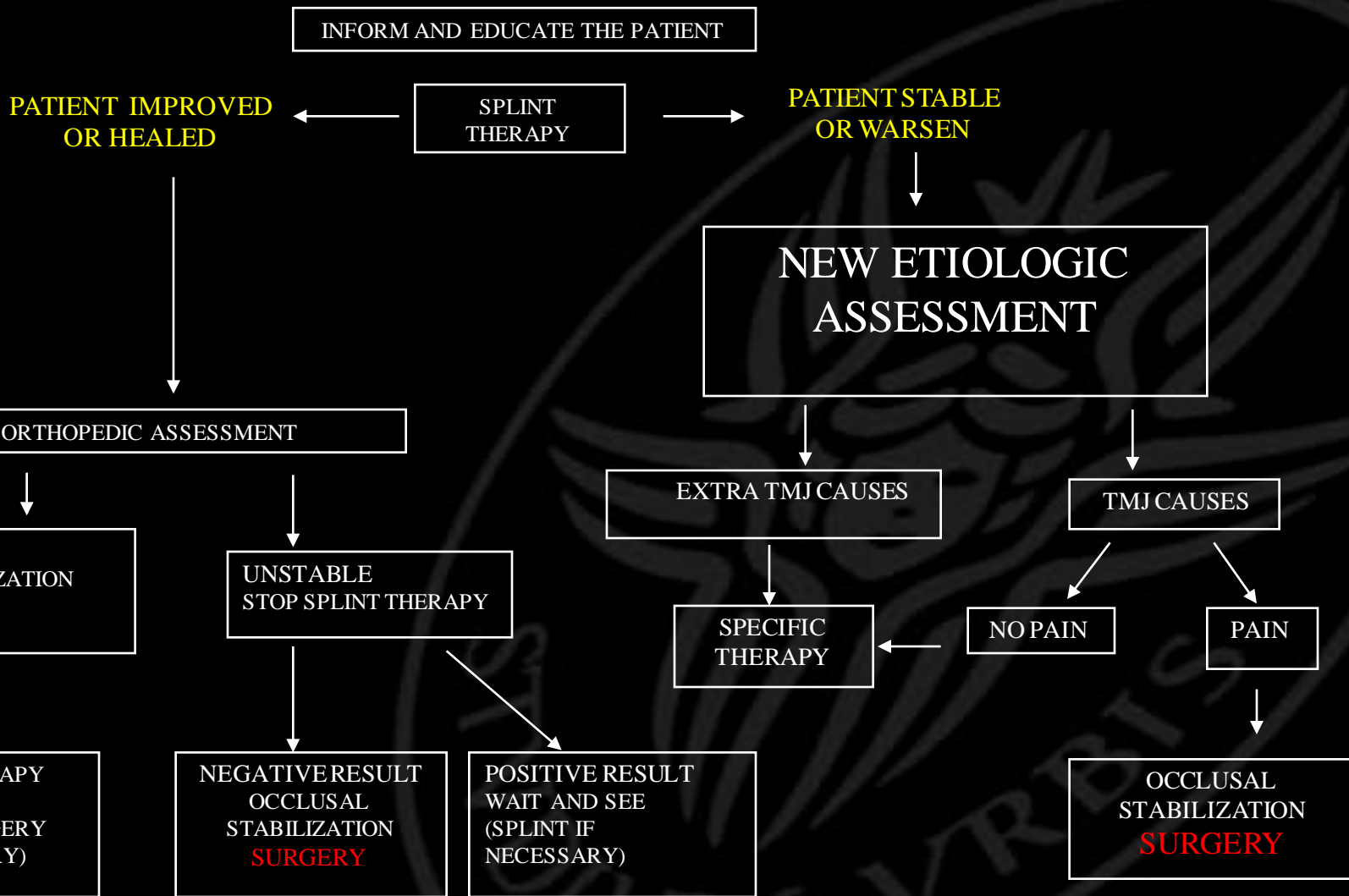
INTERNAL DERANGEMENT THERAPEUTIC FLOW CHART



MANDIBULAR LUXATION



CLICK



CLOSED LOCK

INFORM AND EDUCATE THE PATIENT

UNLOCKING THERAPY: SPLINT THERAPY, MANIPULATION, ARTHROCENTESIS, ARTHROSCOPY, SUPPORT THERAPY

IMPROVED
OR
HEALED

STABLE
WORSEN

KEEP ON
CLICK
THERAPY

SEVERE DISORDER
LIMITATION
PAIN

MILD DISORDER
MILD LIMITATION
NO PAIN

OCCLUSAL
STABILIZATION

NOT STABLE
OCCLUSION

STABLE
OCCLUSION

SURGERY

OCCLUSAL
STABILIZATION

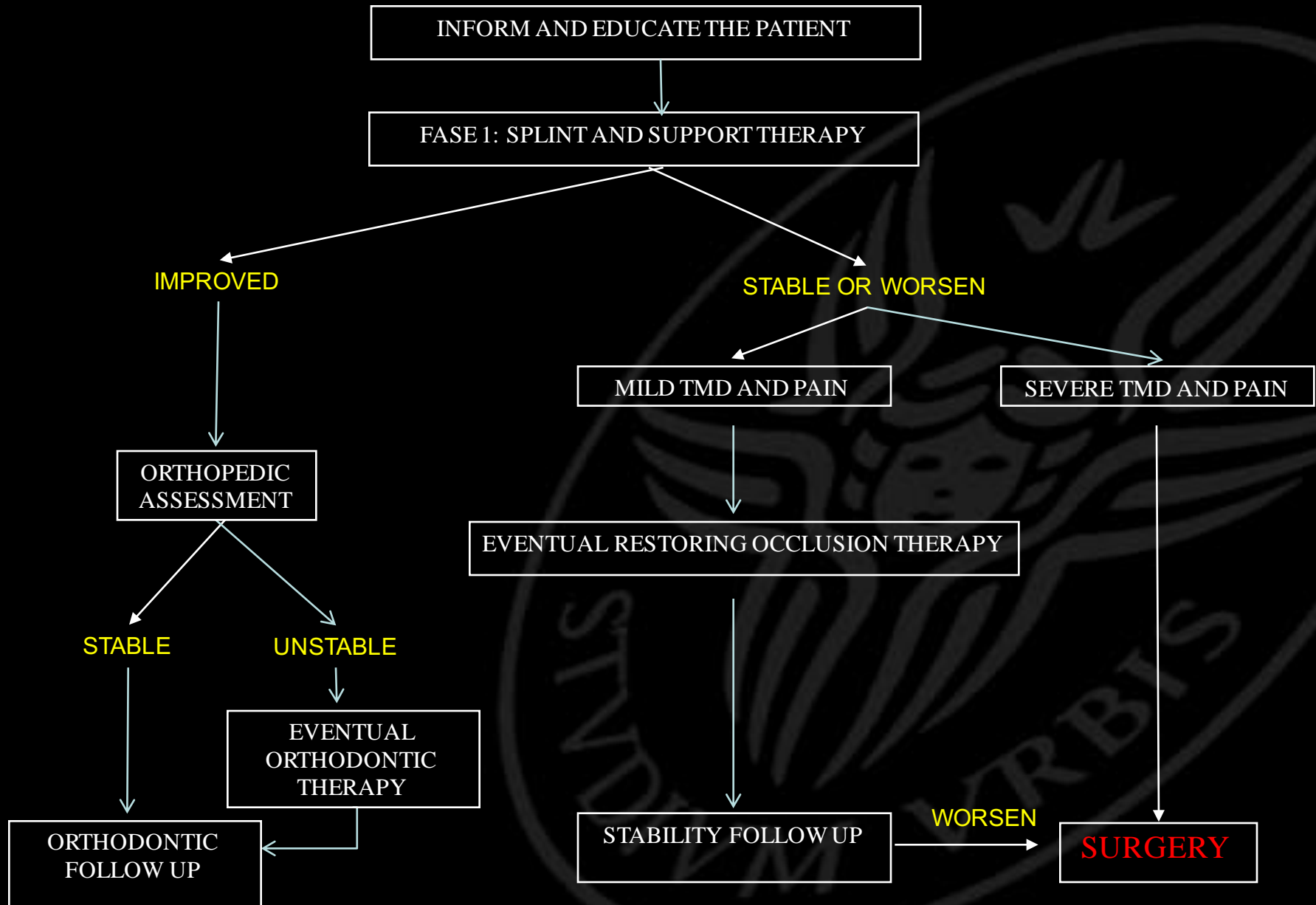
WAIT AND SEE

IMPROVED

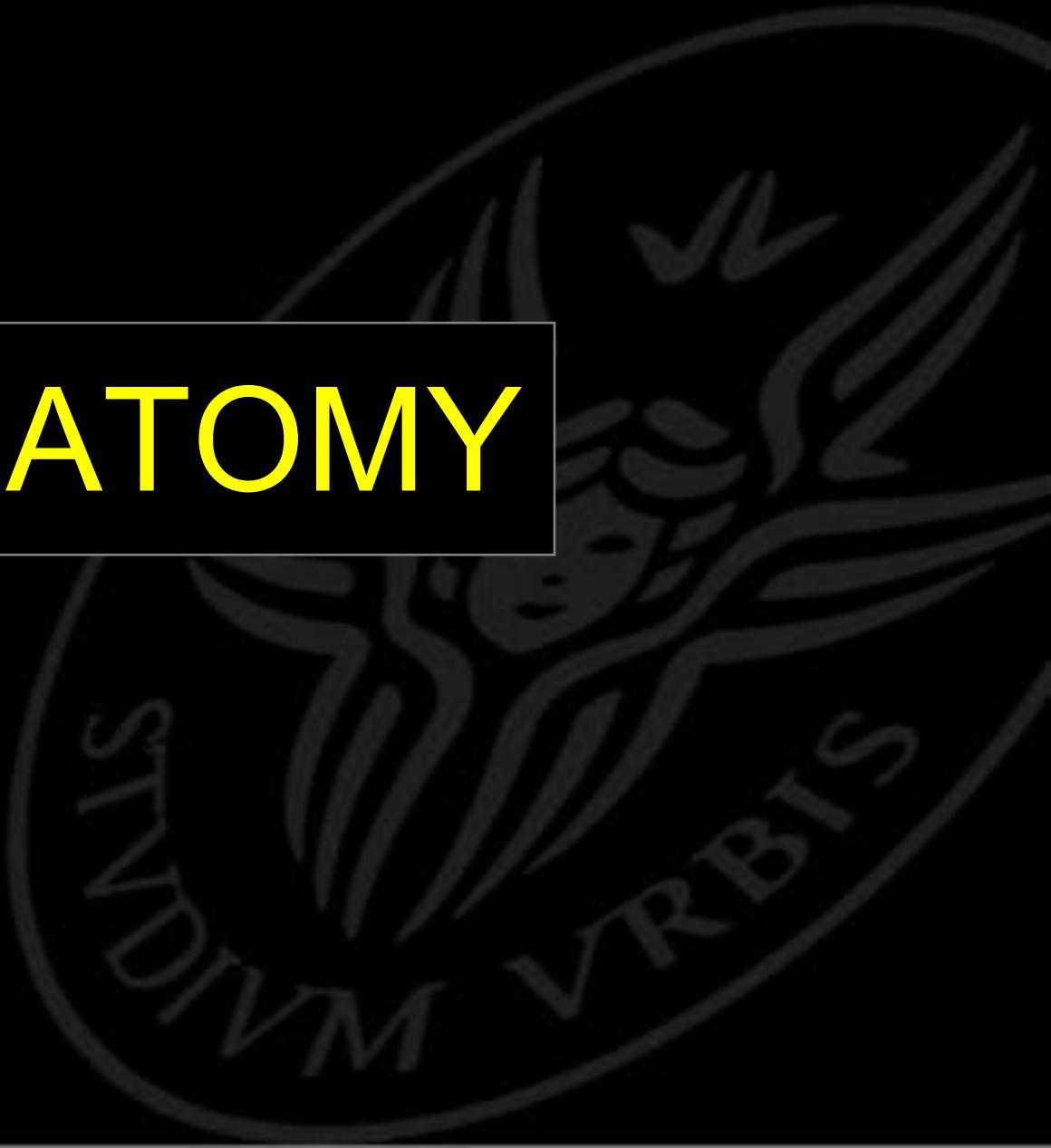
WORSEN

SURGERY

TEMPORO-MANDIBULAR OSTEOARTHRITIS



ANATOMY



STOMATOGNATHIC SYSTEM

TMJ

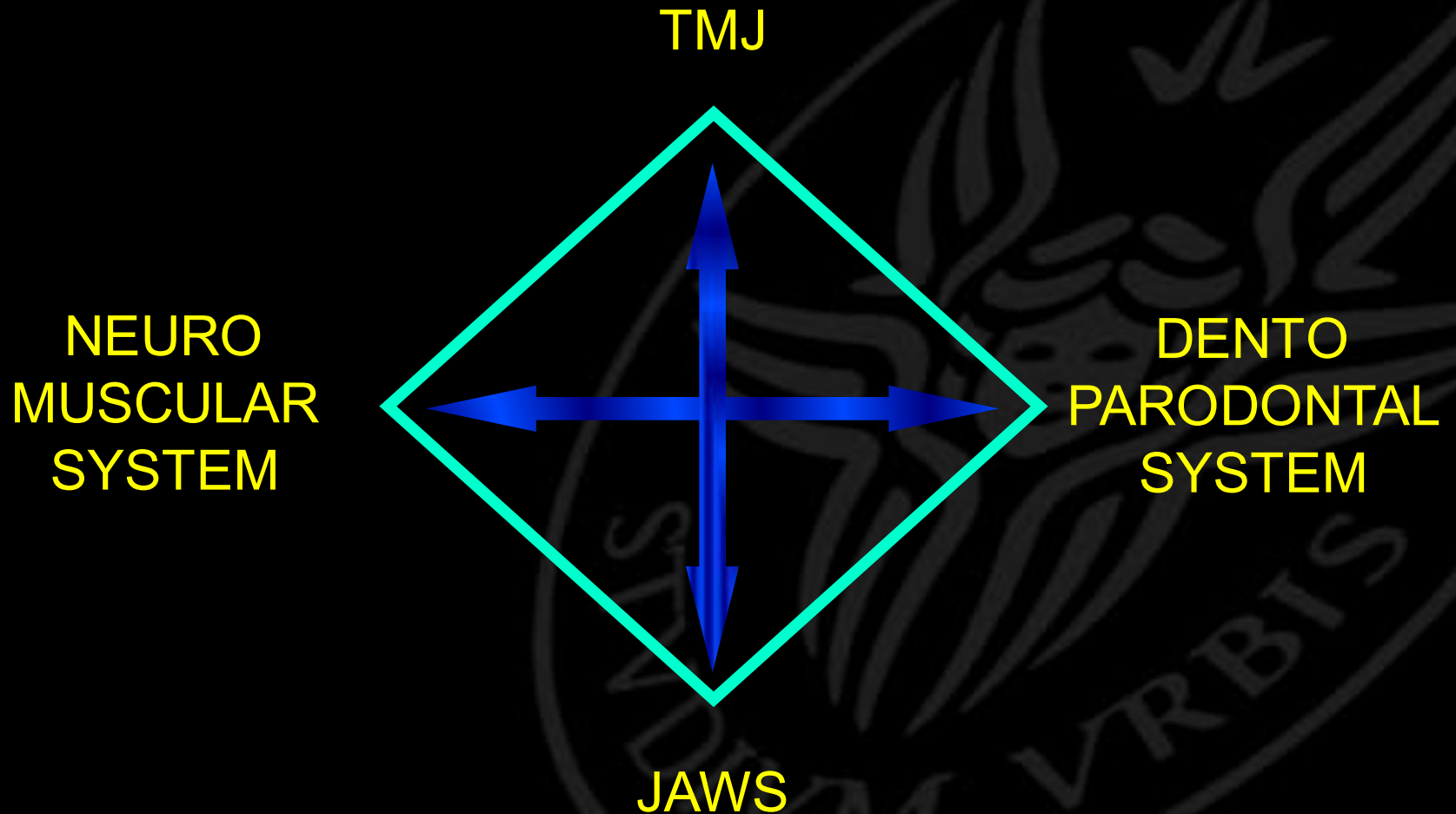


DENTO
PARODONTAL
SYSTEM

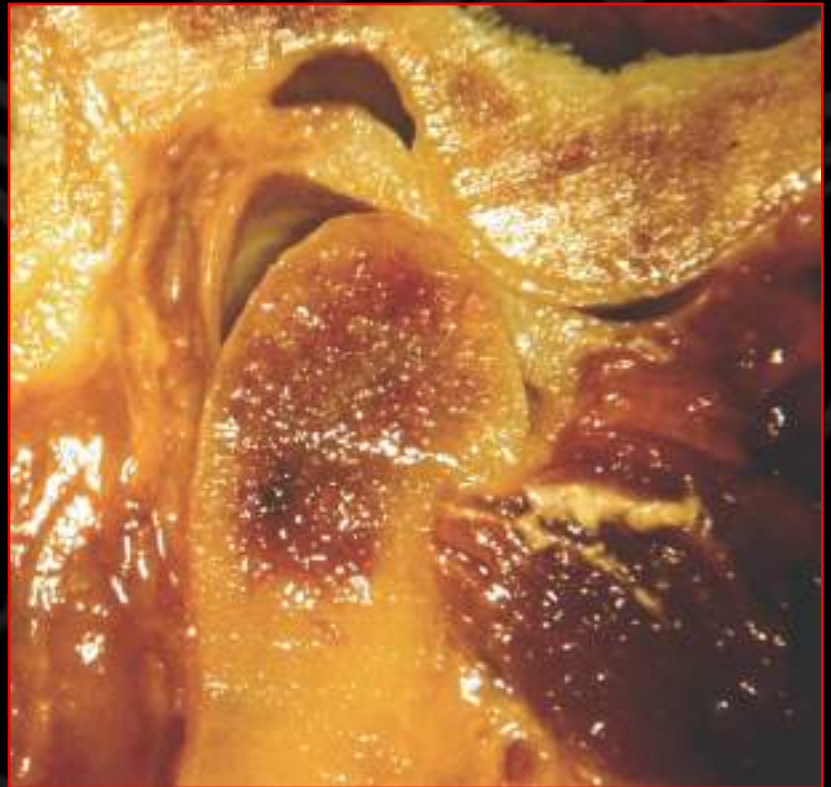


NEURO
MUSCULAR
SYSTEM

STOMATOGNATHIC SYSTEM



TMJ ANATOMY



TMJ BASIC COMPONENTS

MANDIBLE

TEMPORAL BONE

CAPSULE

DISC

RETRODISCAL TISSUE

SYNOVIA

LIGAMENTS

MUSCLES

VESSELS

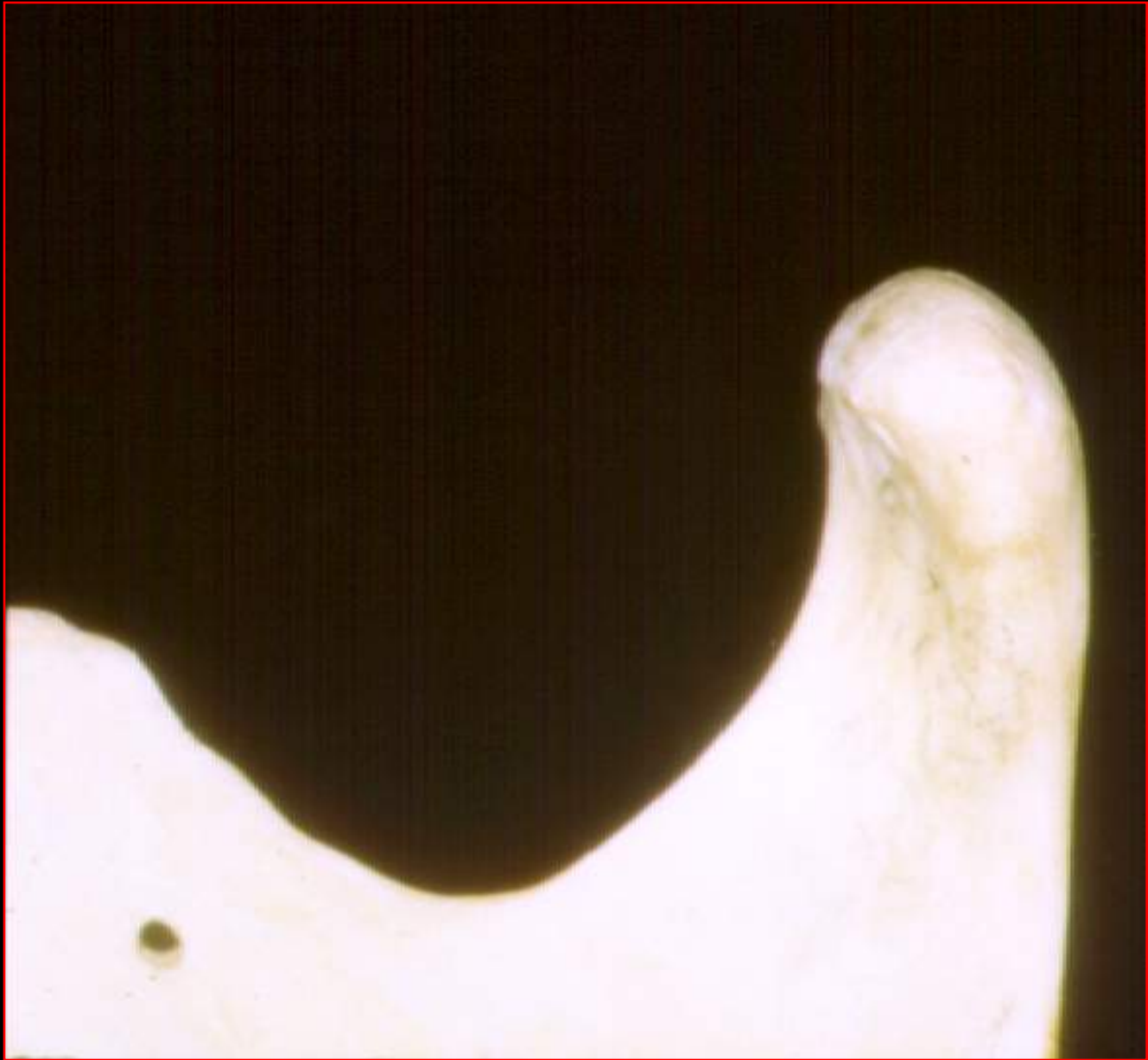
NERVES

CONDYLE











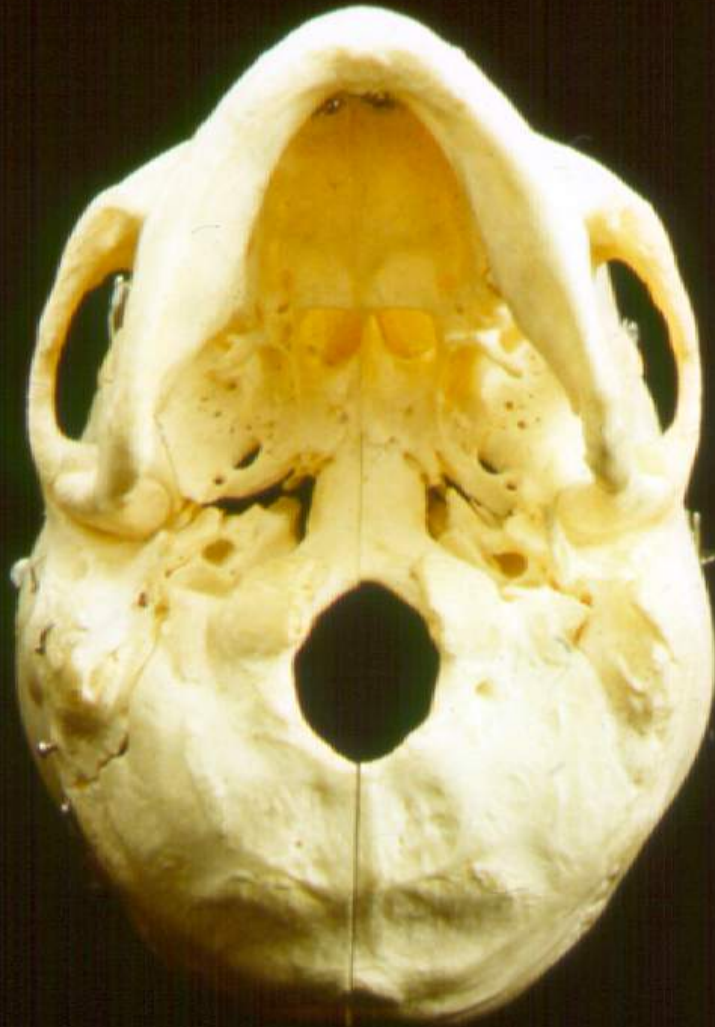
TEMPORAL BONE



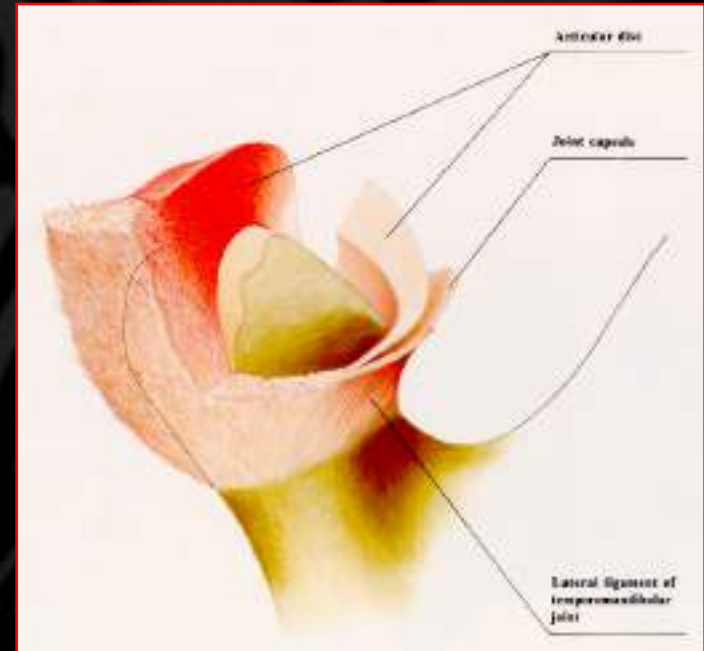


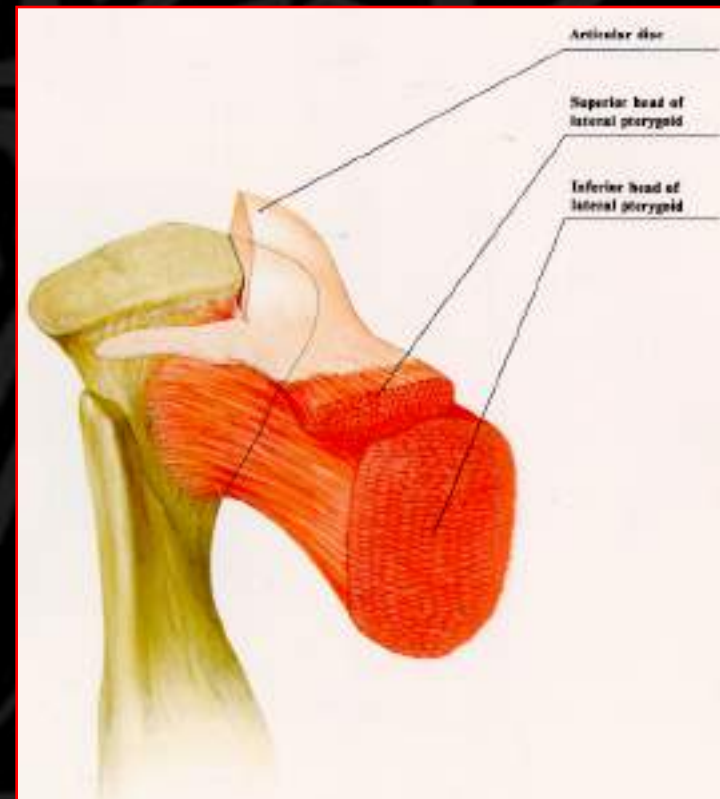
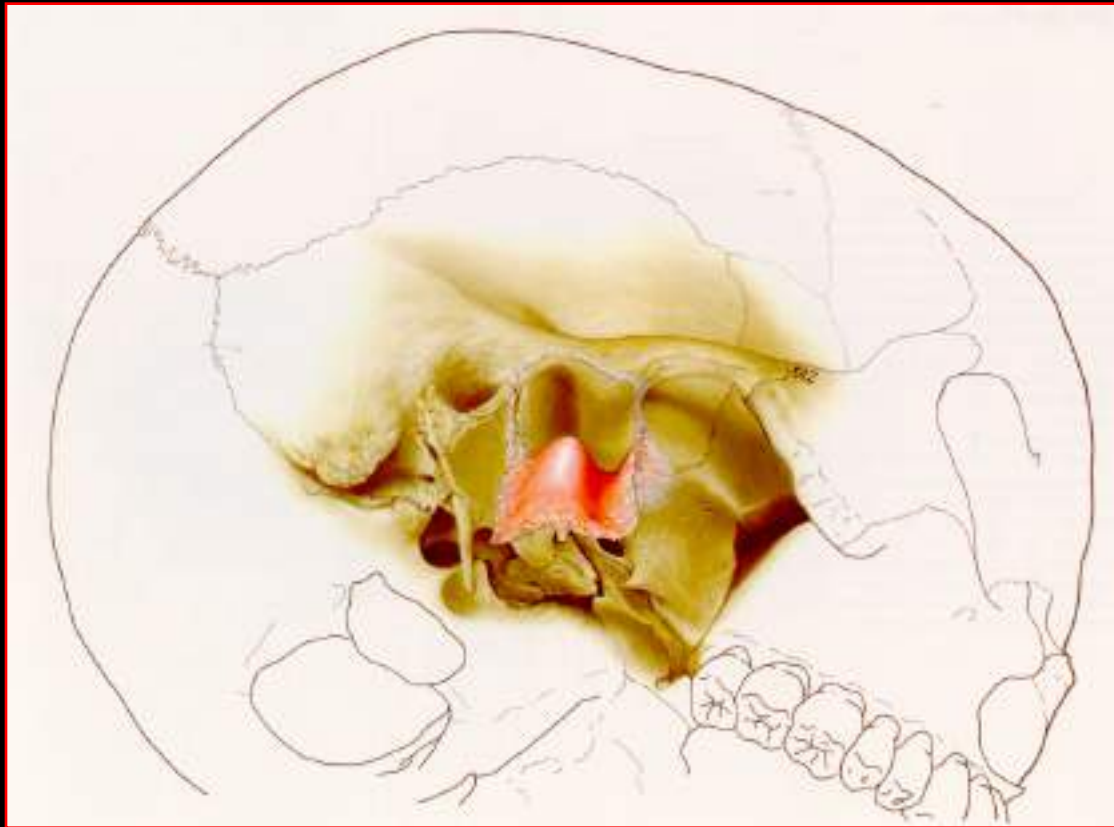


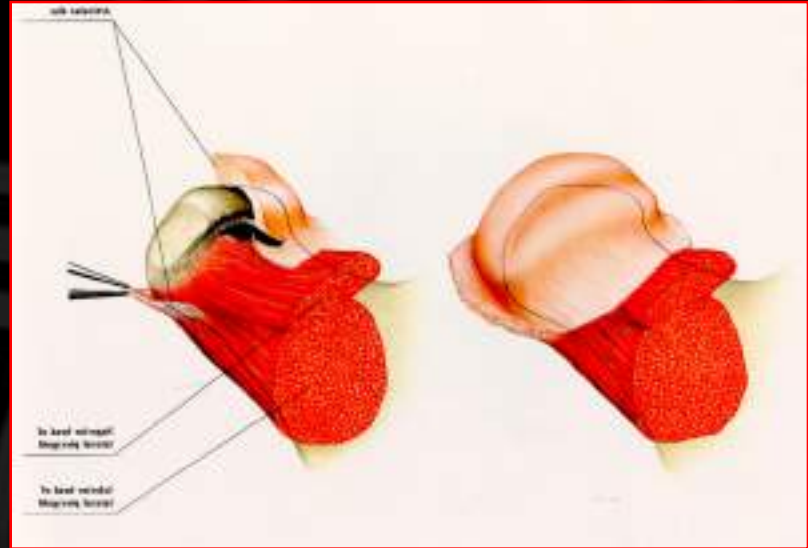


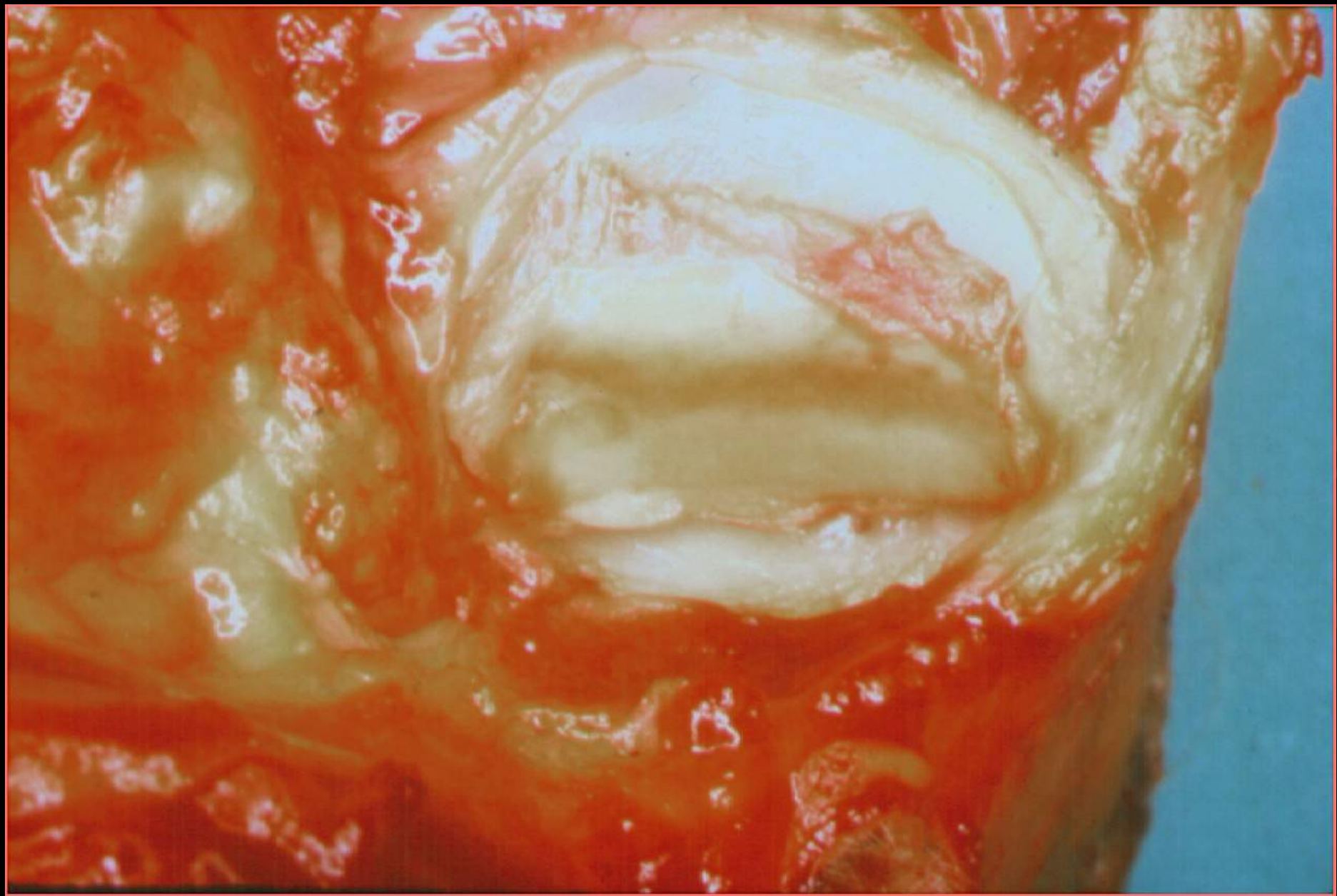


CAPSULE
RETRODISCAL TISSUE
DISC
SYNOVIA
LIGAMENTS





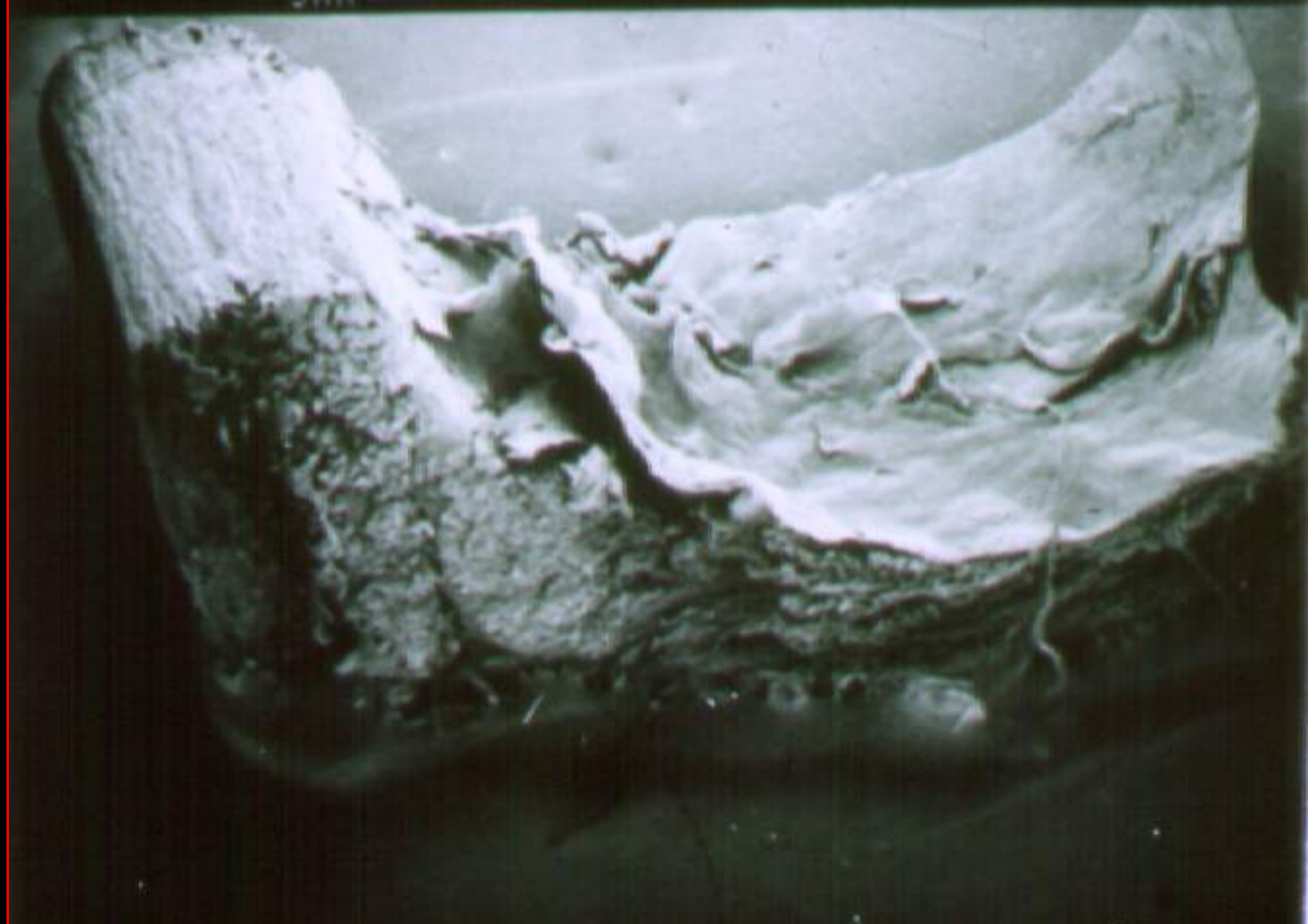




10.0X
5MM

10KV WD 29MM

S 00000 P 00001



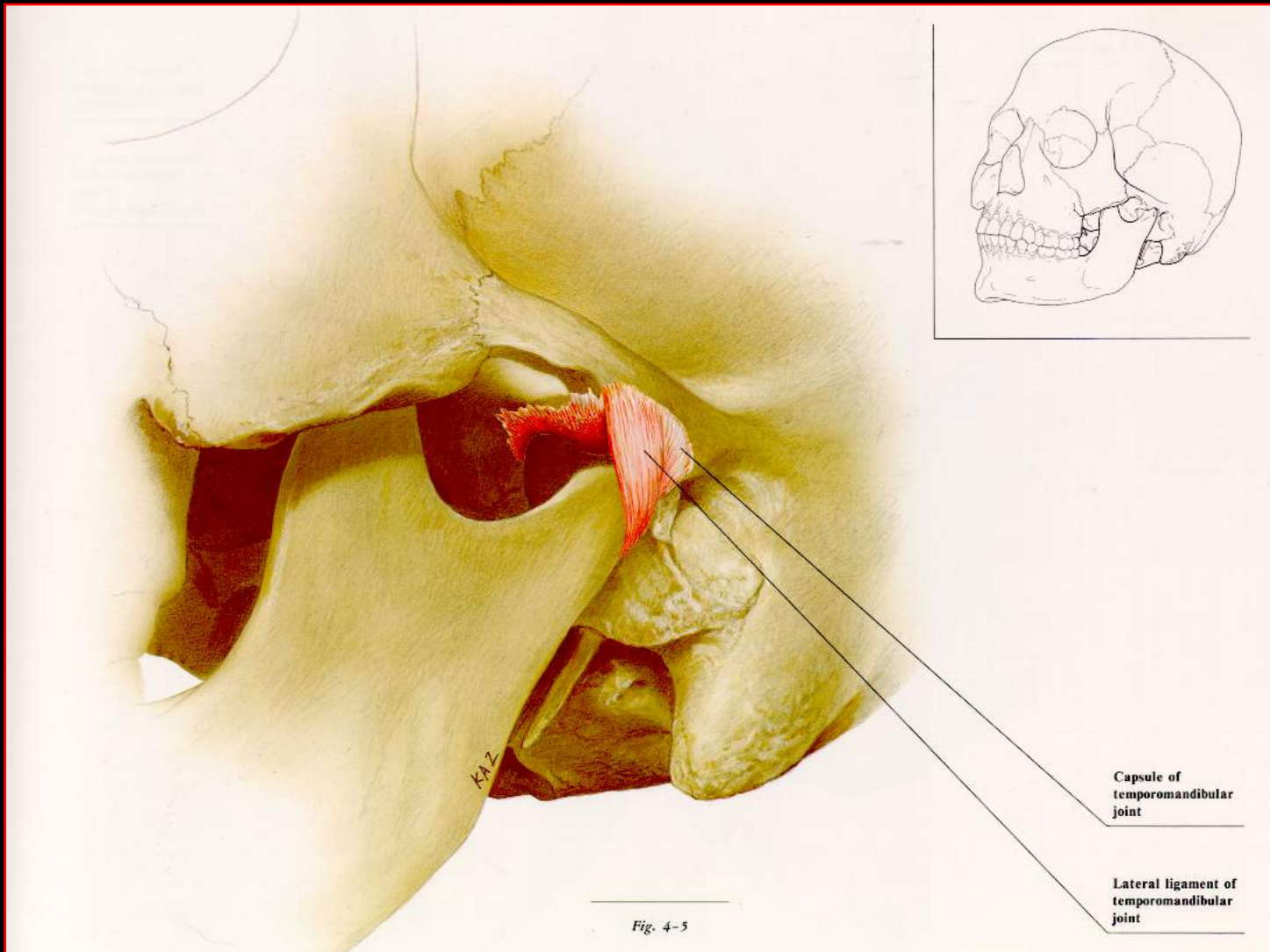
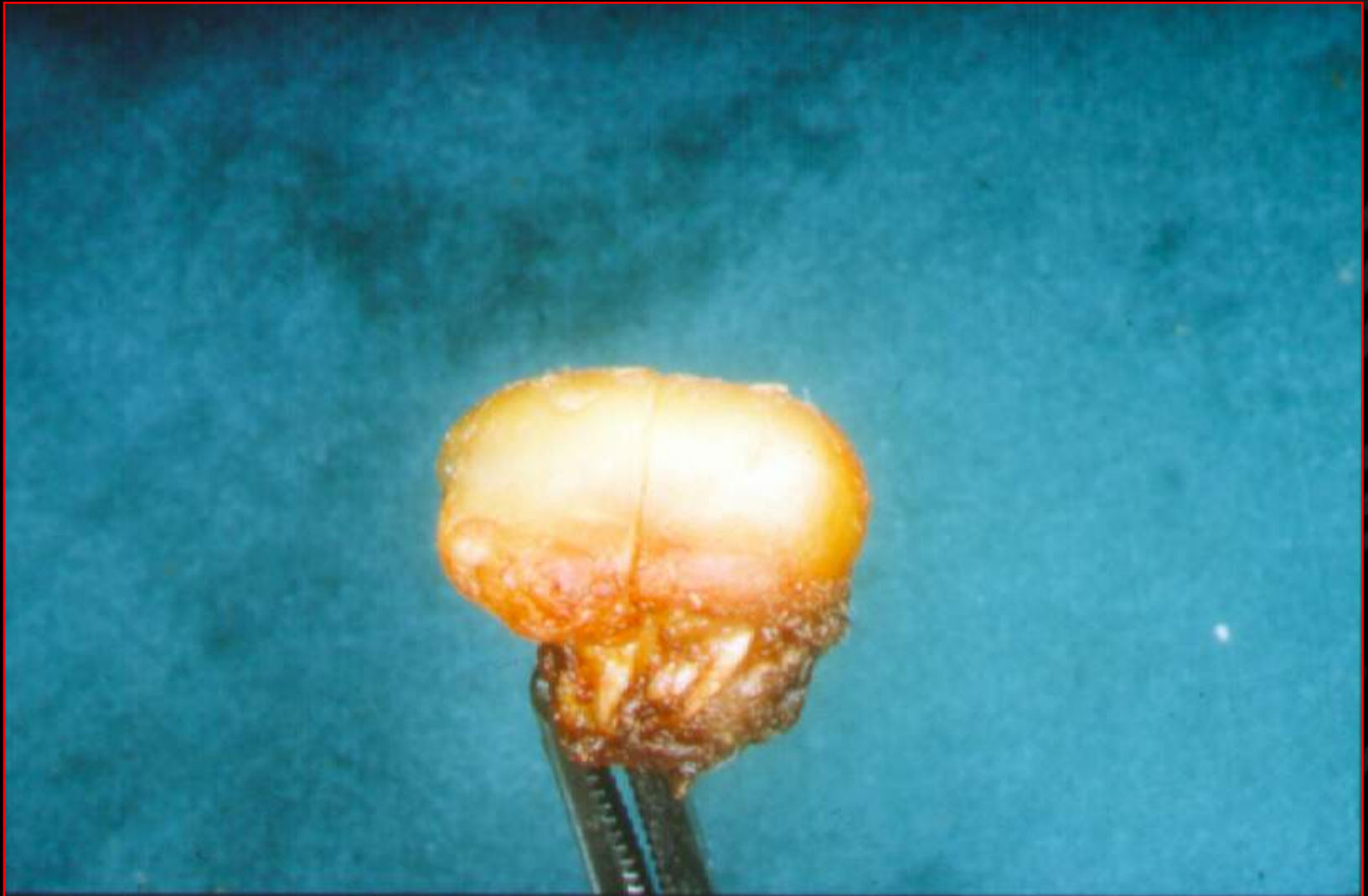
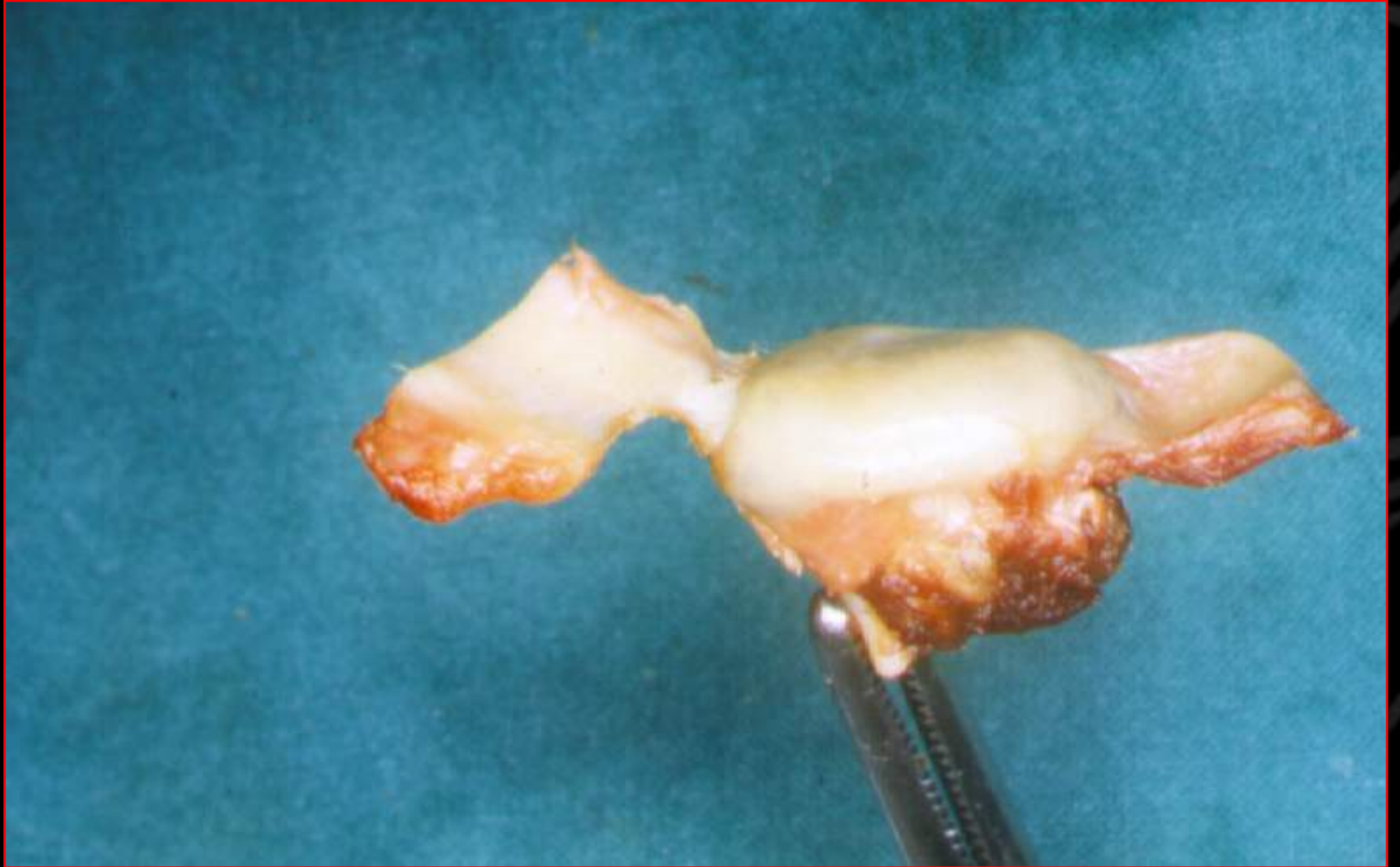


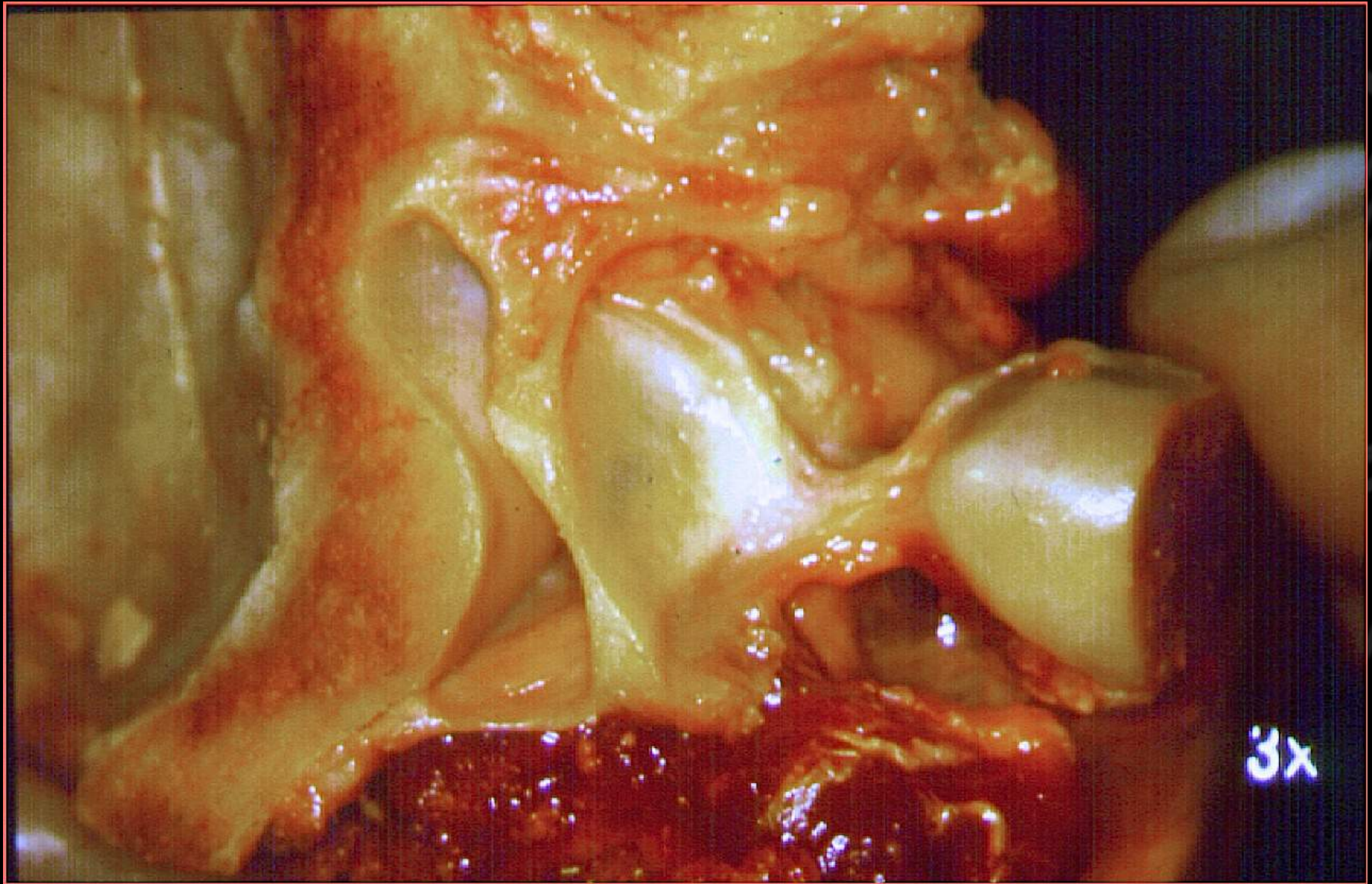
Fig. 4-5



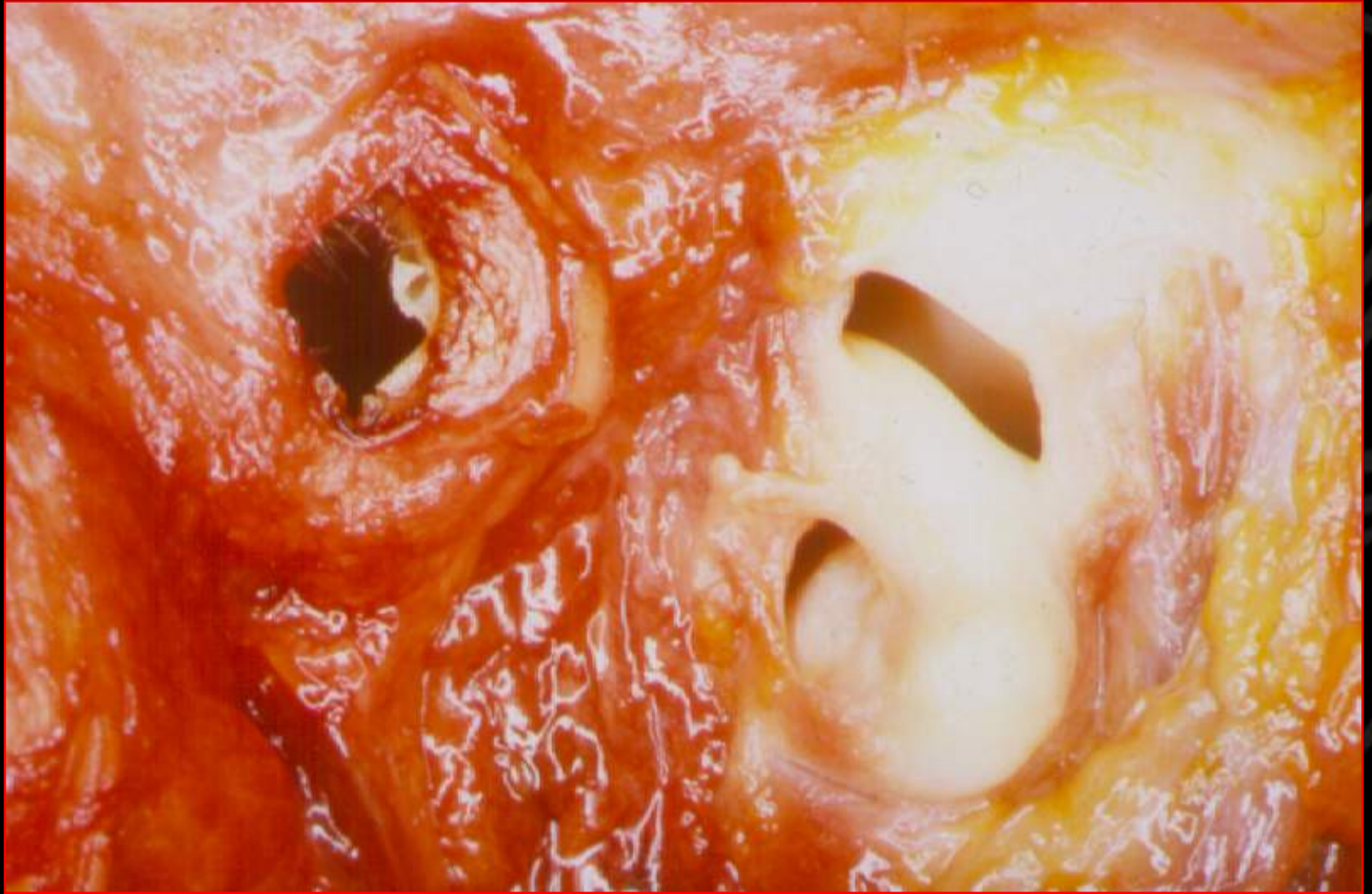


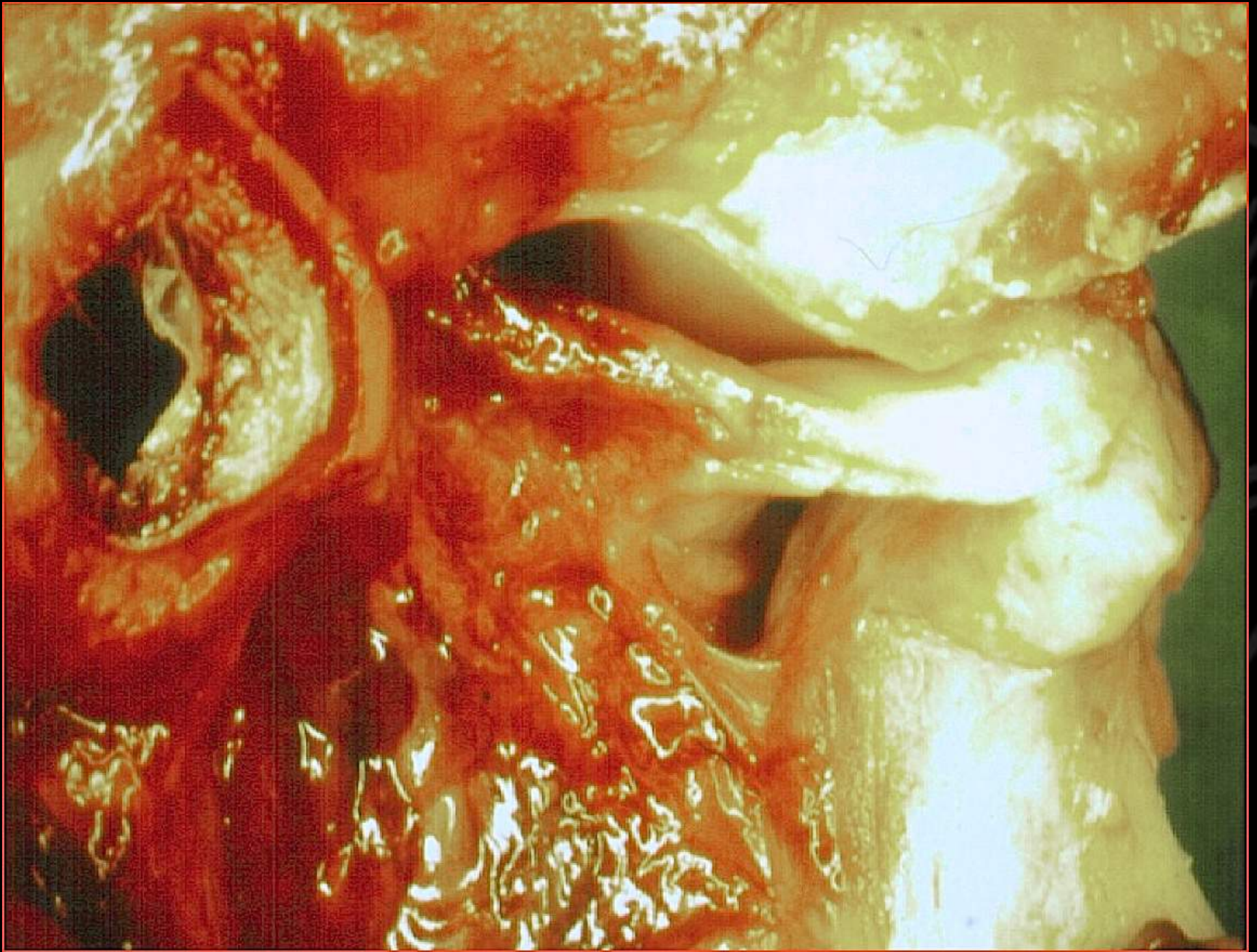


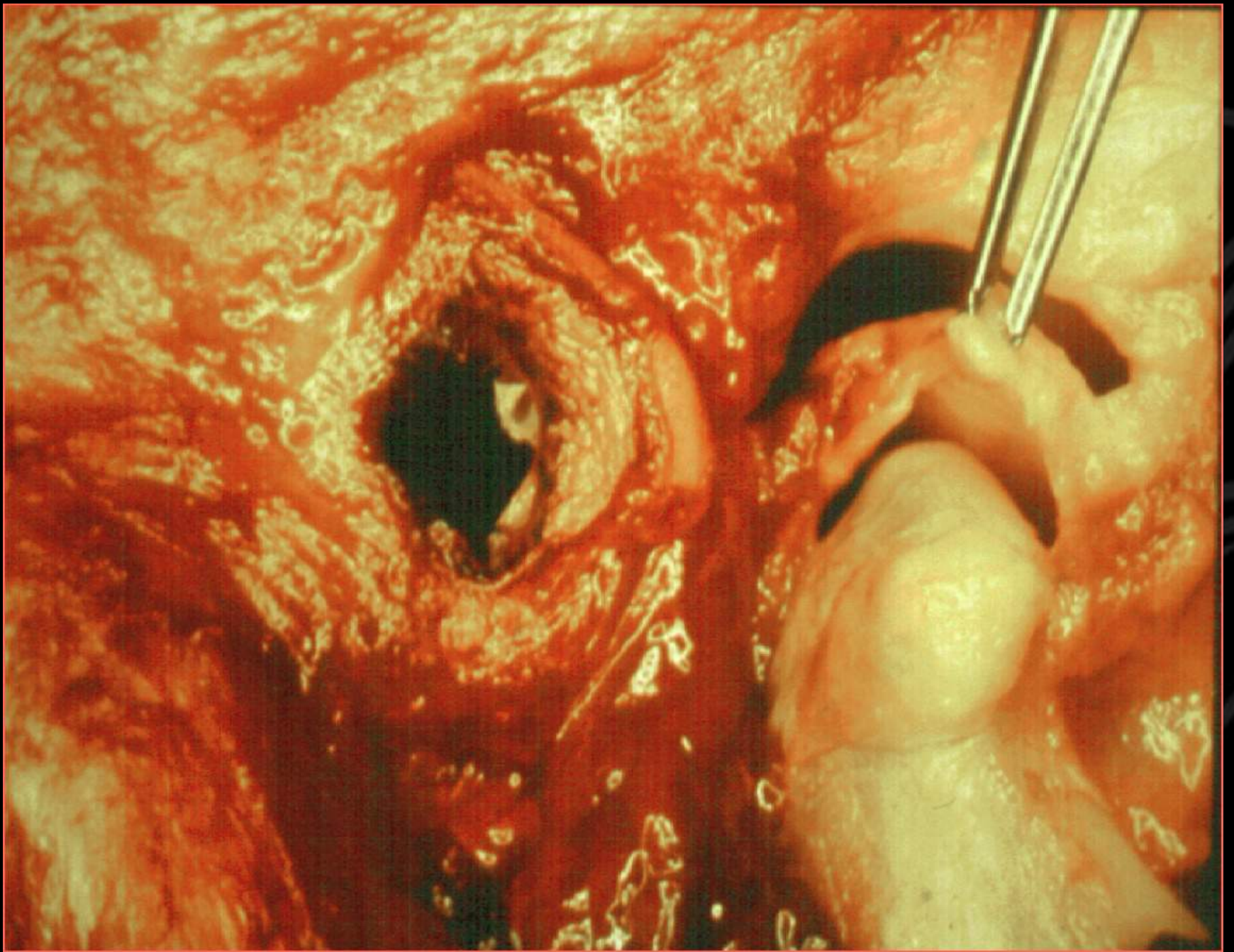


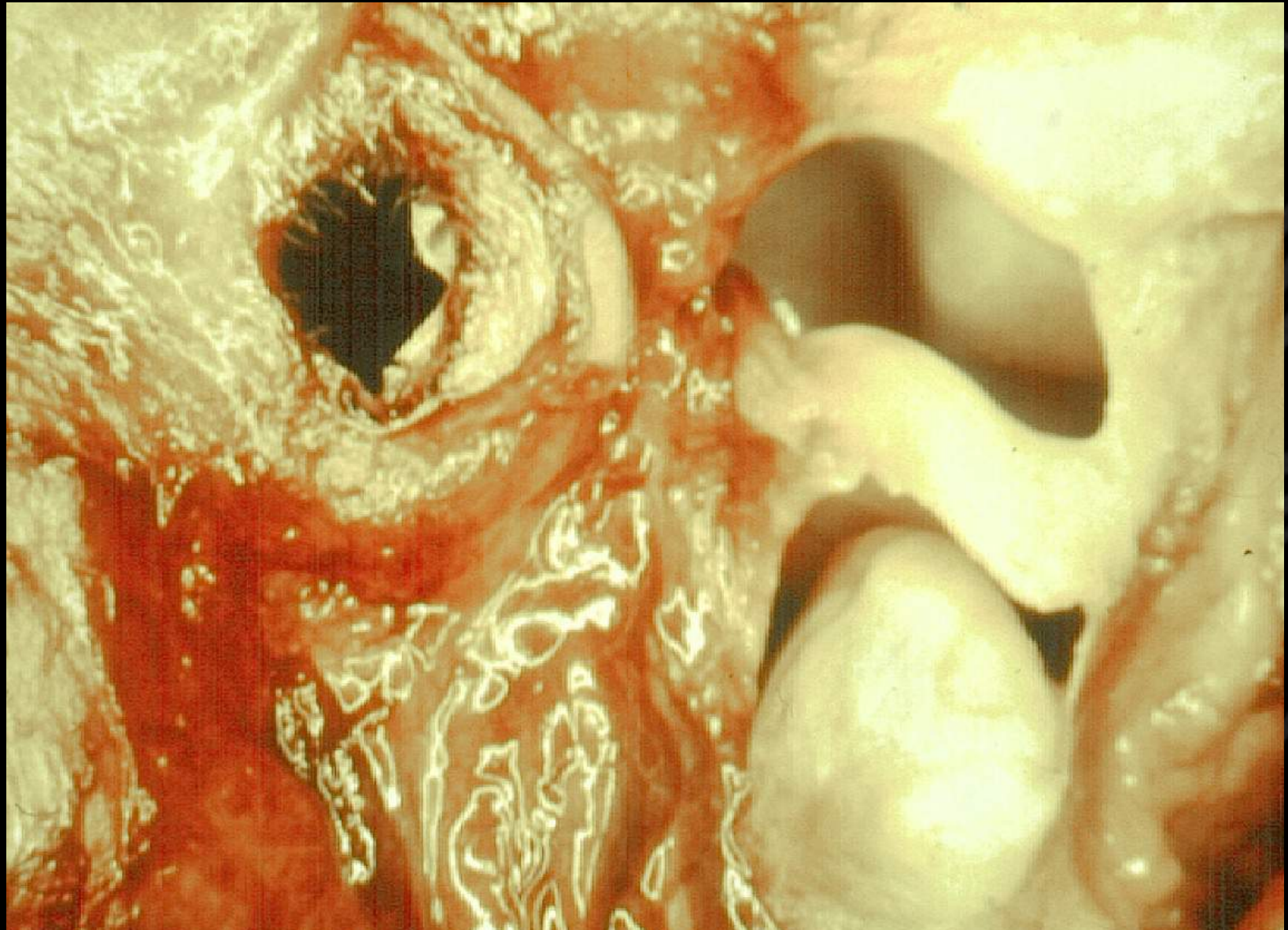


3x

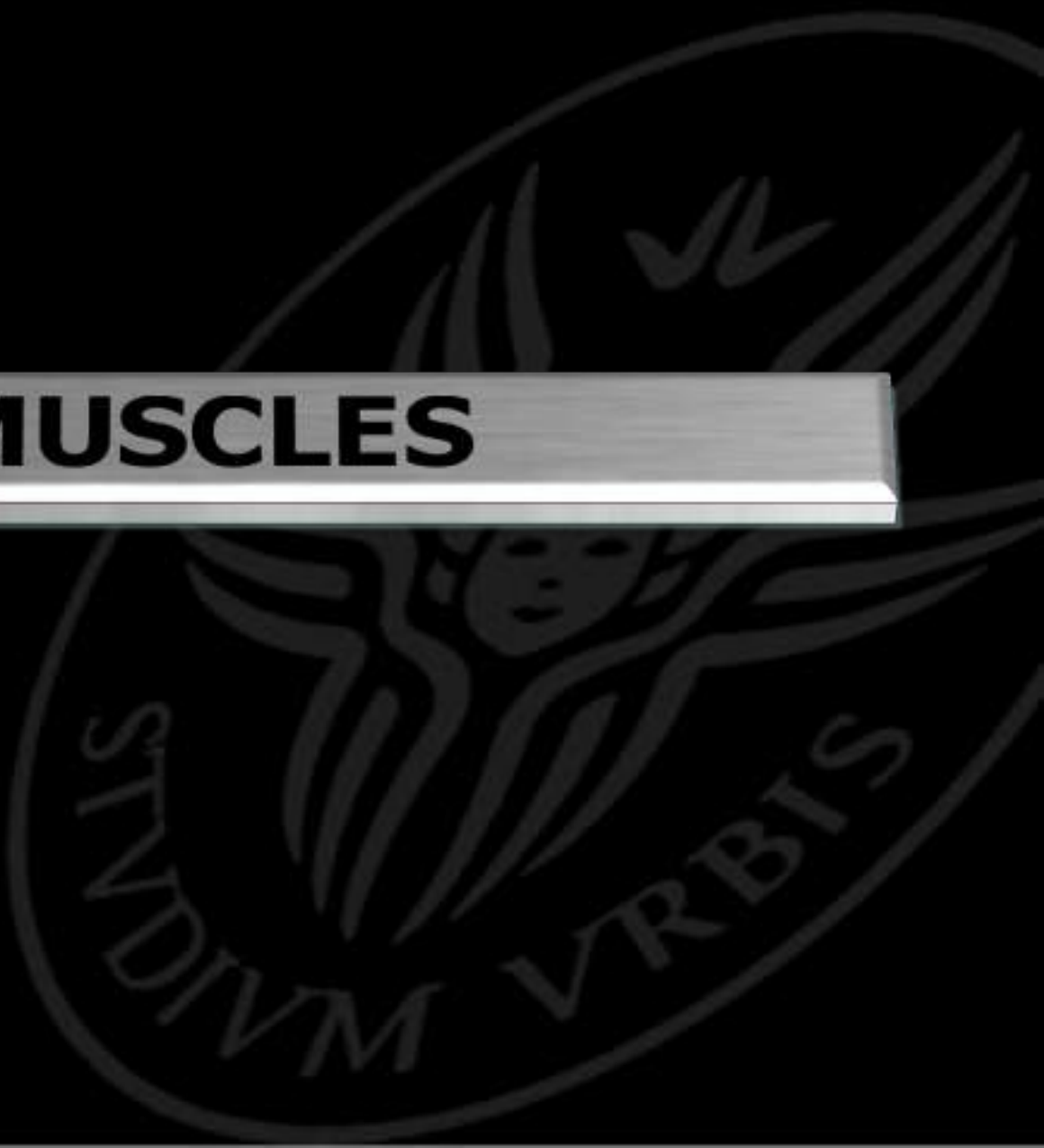


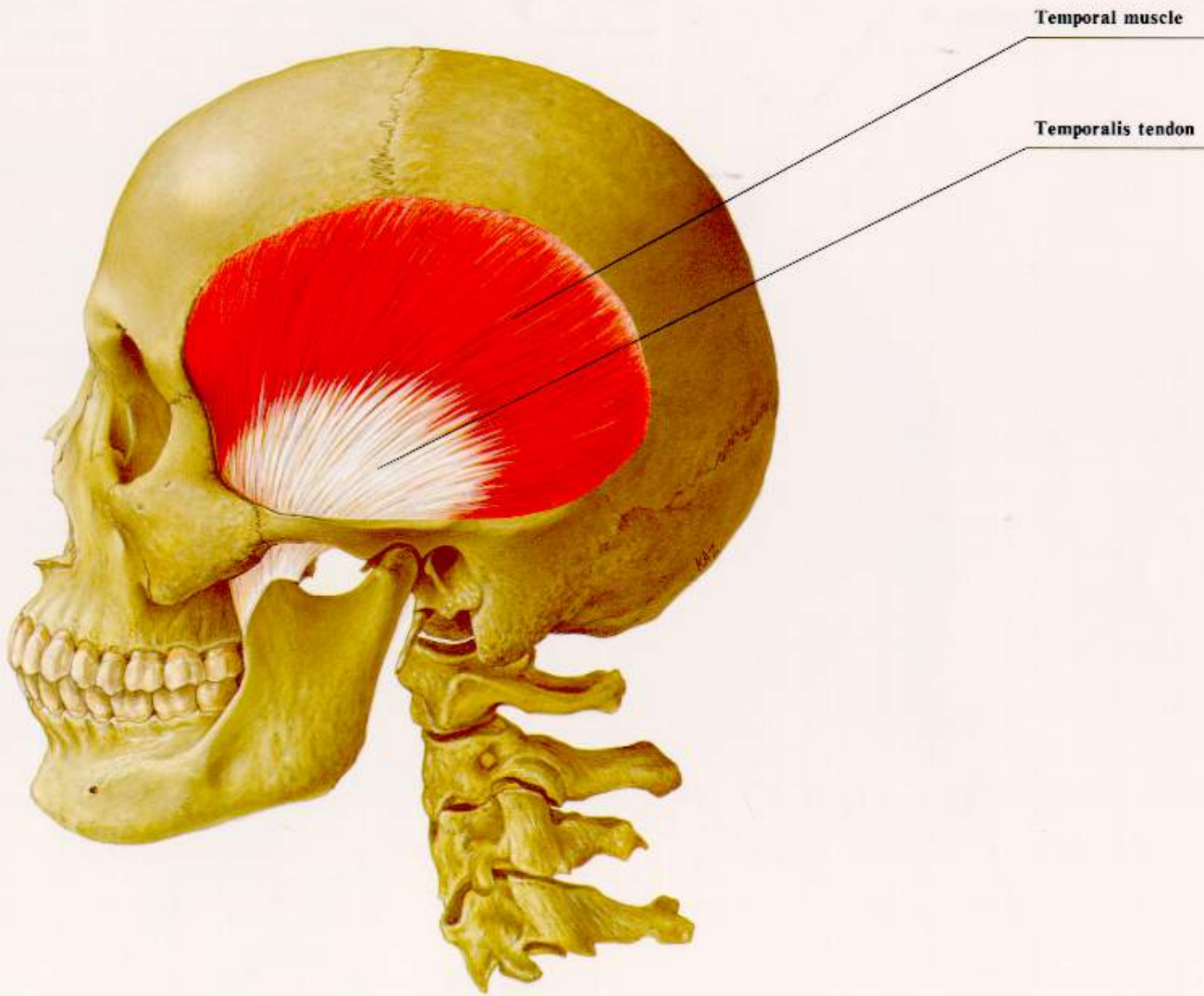


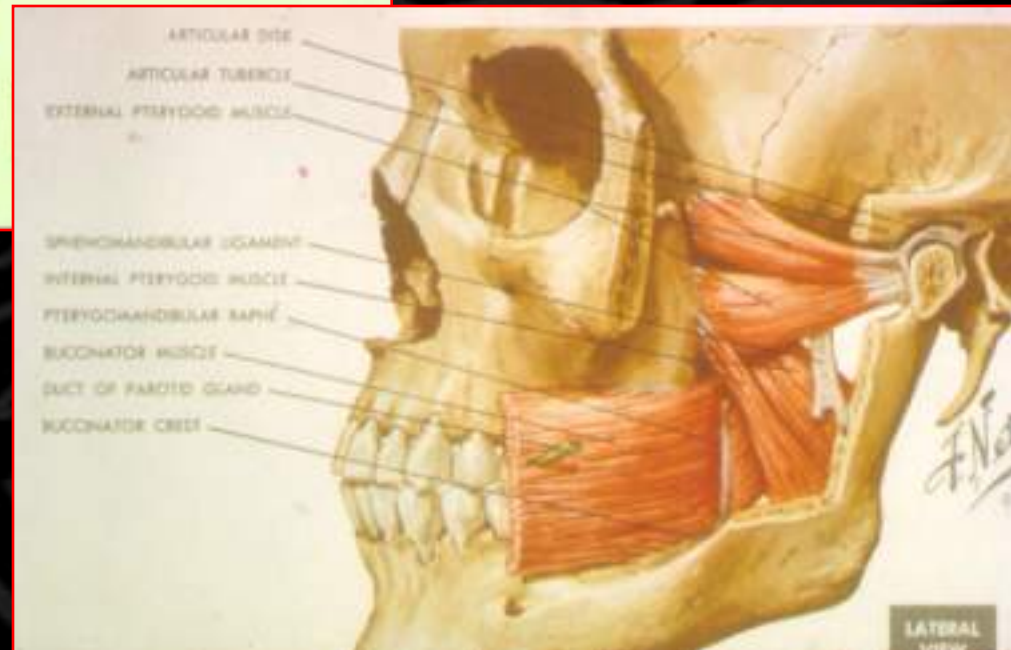
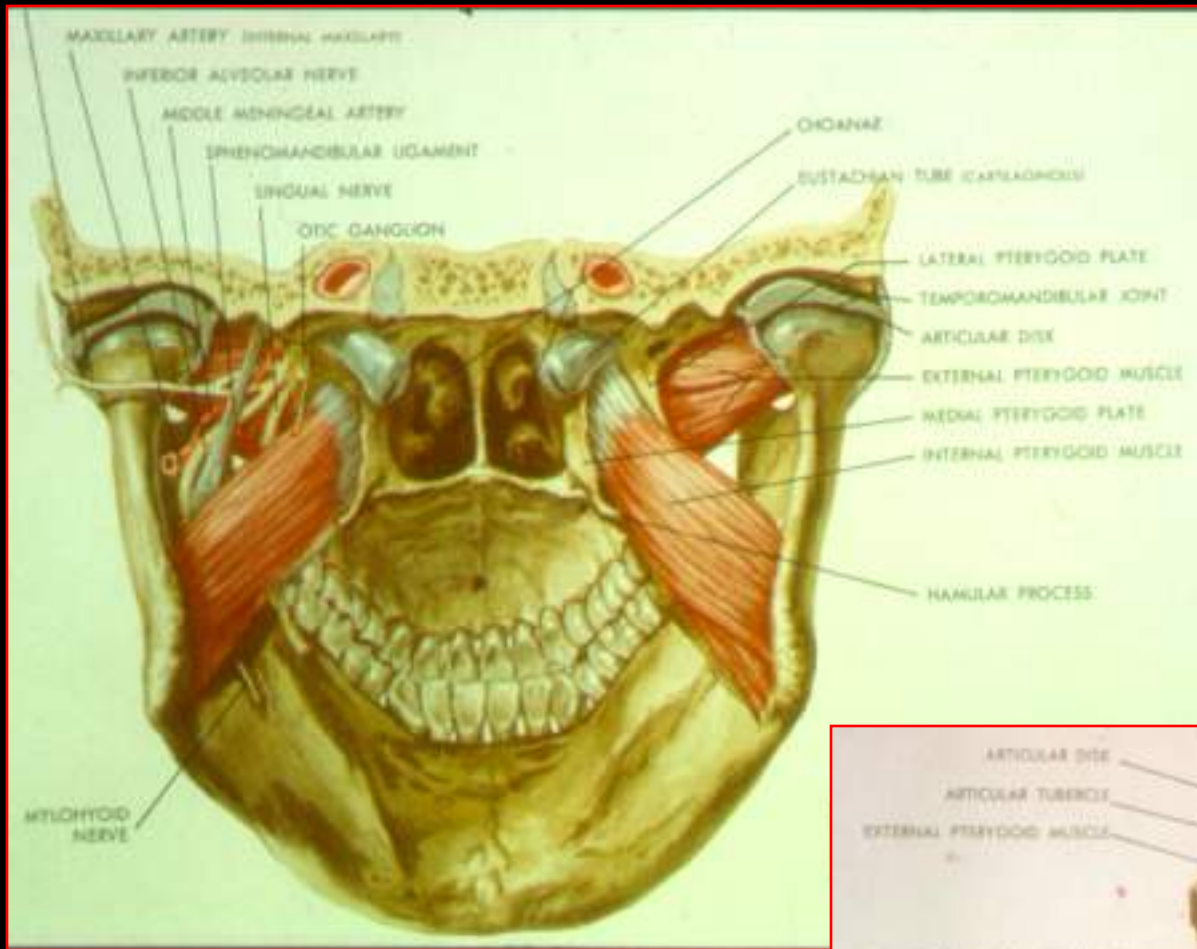


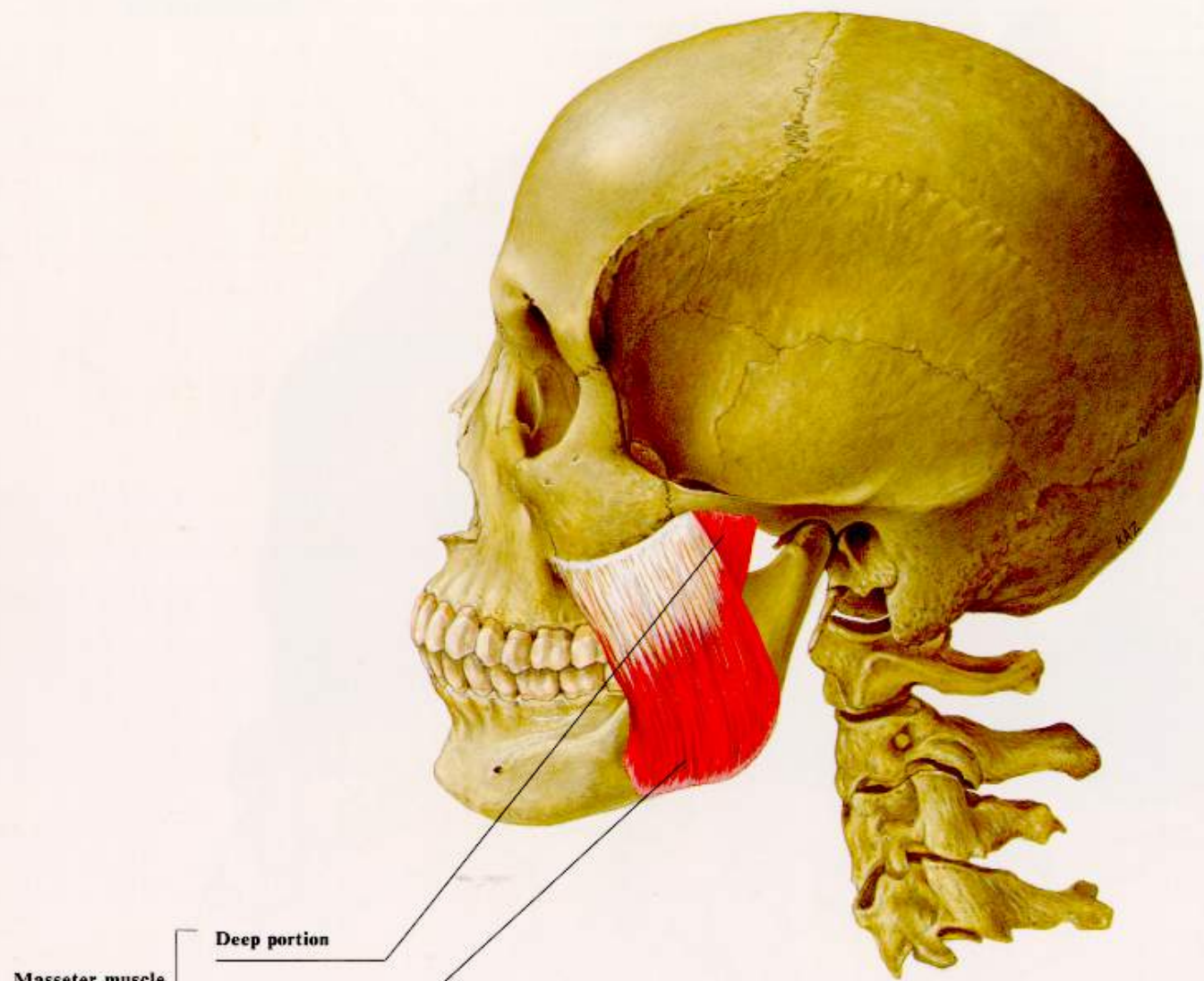


MUSCLES





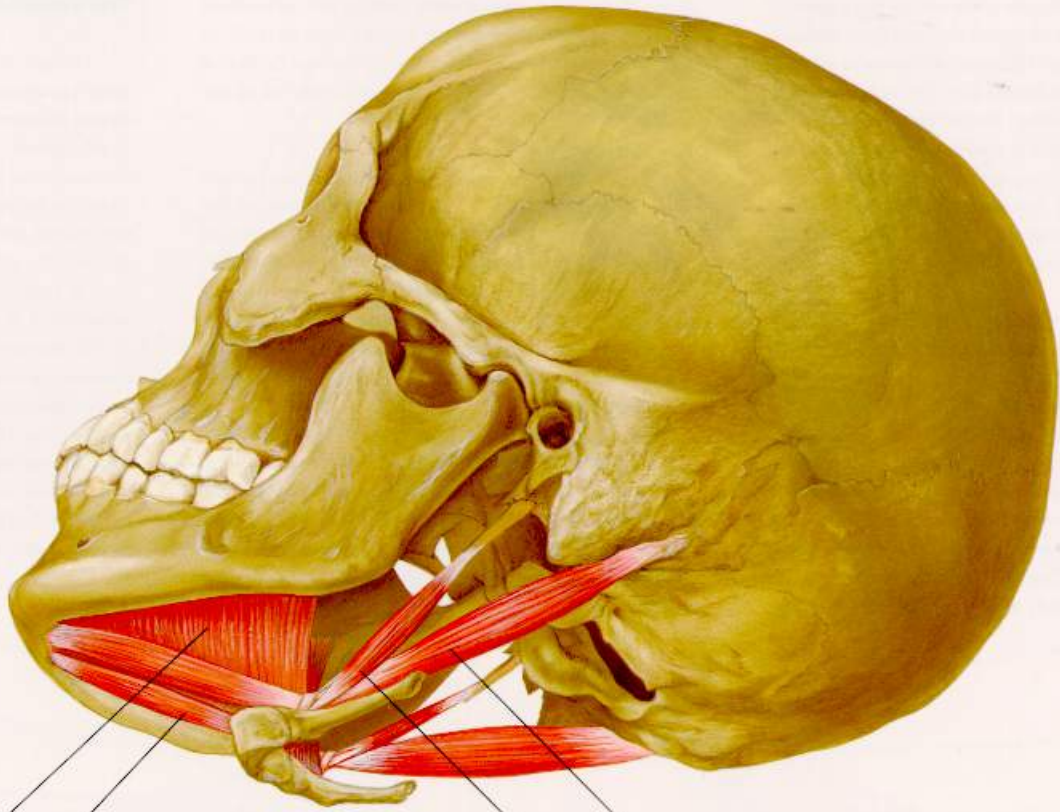




Masseter muscle

Deep portion

Superficial portion



Mylohyoid muscle

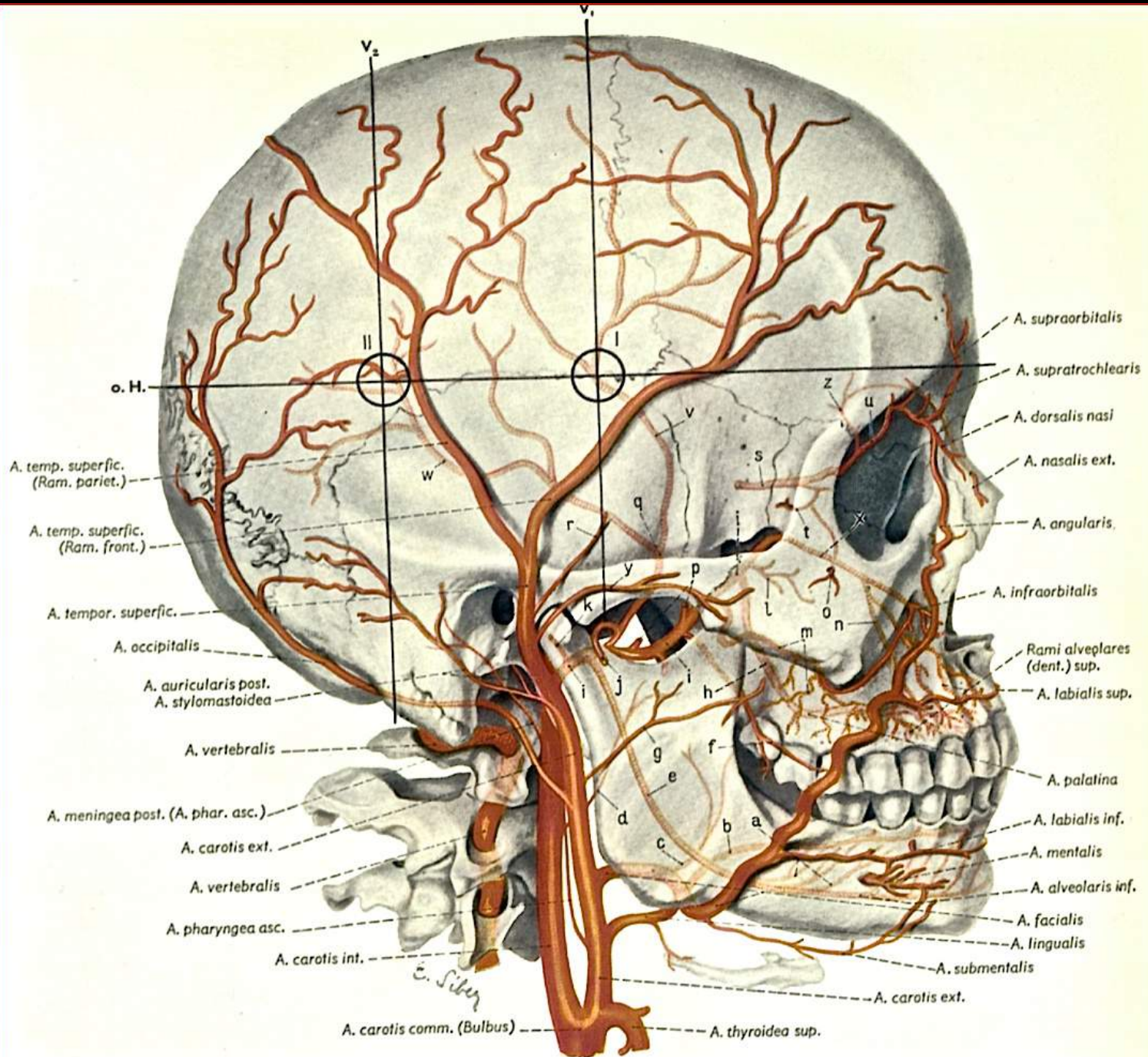
**Digastric muscle,
anterior belly**

**Digastric muscle,
posterior belly**

Stylohyoid muscle

VESSELS





- A. supraorbitalis
- A. supratrochlearis
- A. dorsalis nasi
- A. nasalis ext.
- A. angularis
- A. infraorbitalis
- Rami alveplares (dent.) sup.
- A. labialis sup.
- A. palatina
- A. labialis inf.
- A. mentalis
- A. alveolaris inf.
- A. facialis
- A. lingualis
- A. submentalis
- A. carotis ext.
- A. thyroidea sup.
- A. carotis int.
- A. pharyngea asc.
- A. vertebralis
- A. meningea post. (A. phar. asc.)
- A. carotis ext.
- A. vertebralis
- A. auricularis post.
- A. stylomastoidea
- A. occipitalis
- A. tempor. superfic.
- A. temp. superfic. (Ram. front.)
- A. temp. superfic. (Ram. pariet.)
- A. supraorbitalis

E. Sibir

NERVES

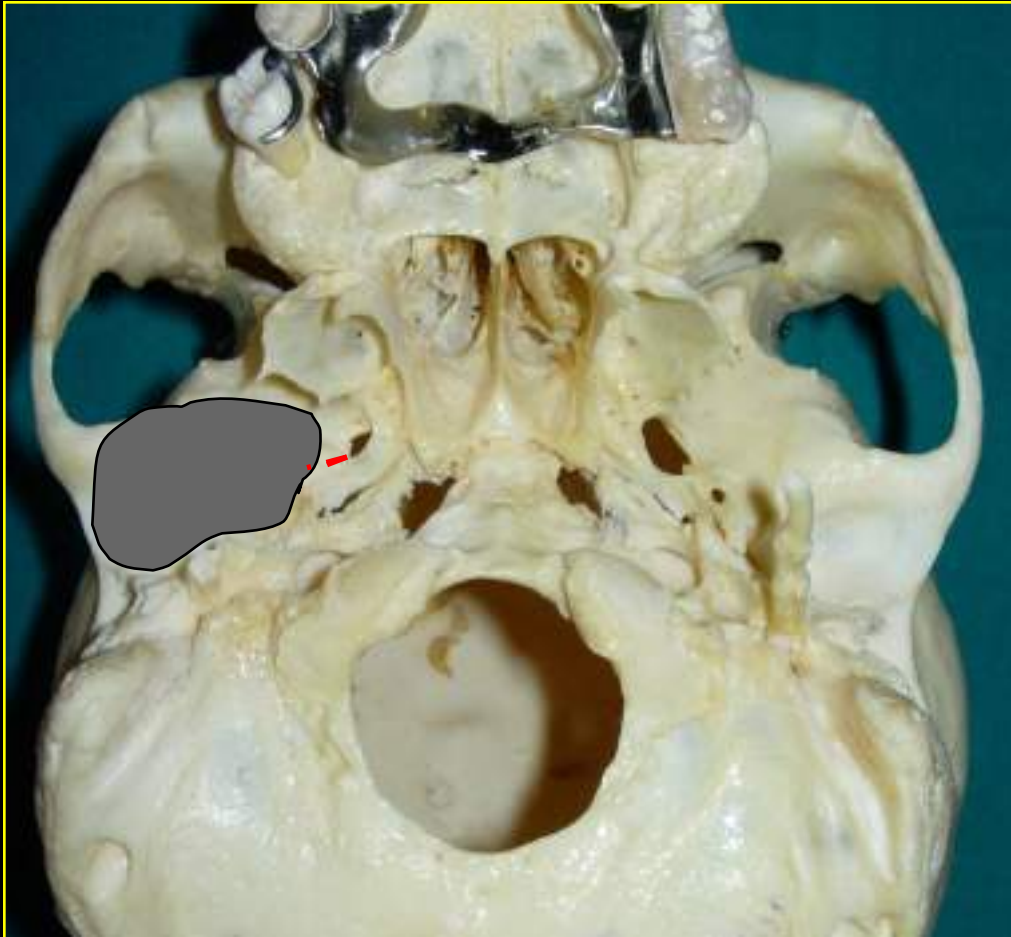


FORAMEN OVALE

MANDIBULAR NERVE



MANDIBULAR NERVE



The mandibular nerve exits the middle cranial fossa through the foramen ovale.

Its average intracranial length between the trigeminal ganglion and the foramen ovale measured 6.63 mm (range 2.9-11.1)

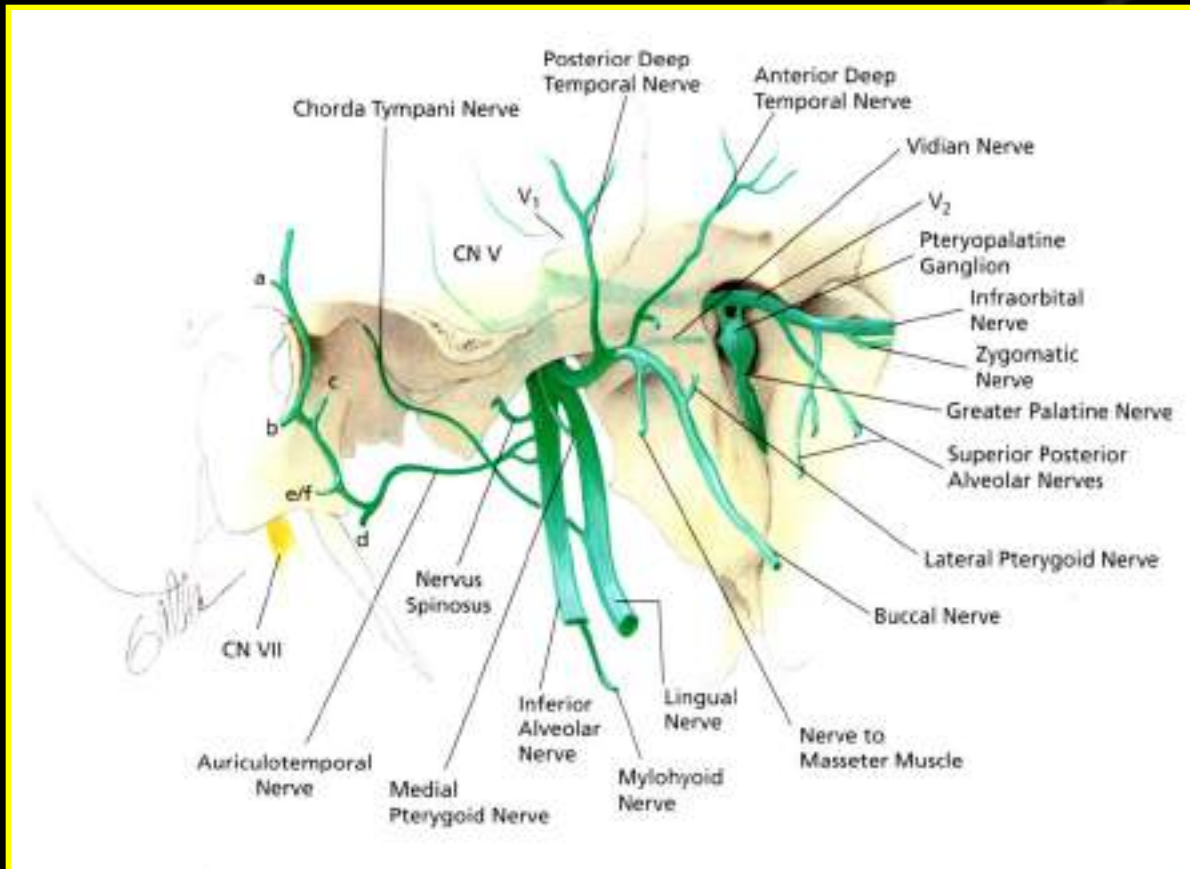
The foramen ovale also transmits

- the accessory meningeal artery
- the lesser superficial petrosal nerve

MANDIBULAR NERVE

INFRATEMPORAL FOSSA

DIVISIONS OF THE MANDIBULAR NERVE



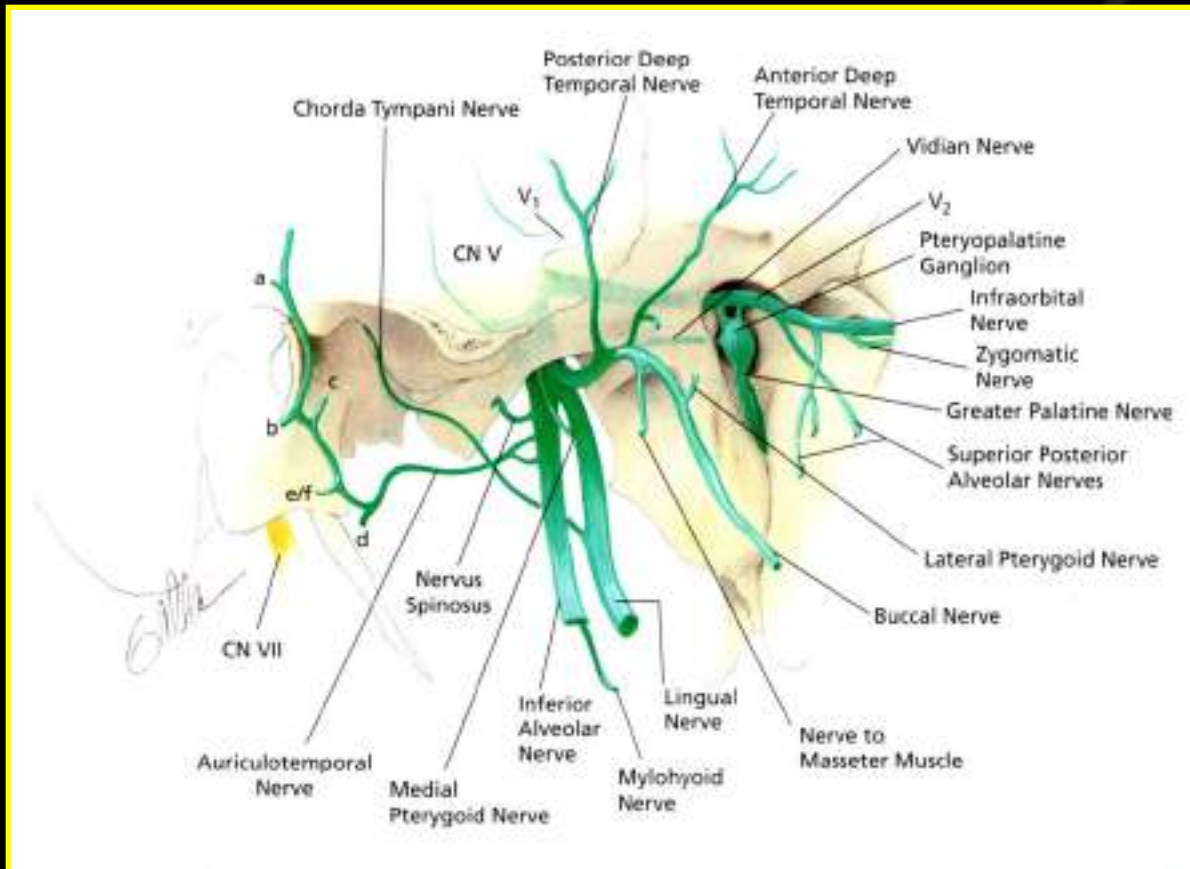
ANTERIOR DIVISION

- Anterior and posterior deep temporalis nerves
- Lateral pterygoid nerve
- Buccal branch
- Masseteric nerve

MANDIBULAR NERVE

INFRATEMPORAL FOSSA

DIVISIONS OF THE MANDIBULAR NERVE



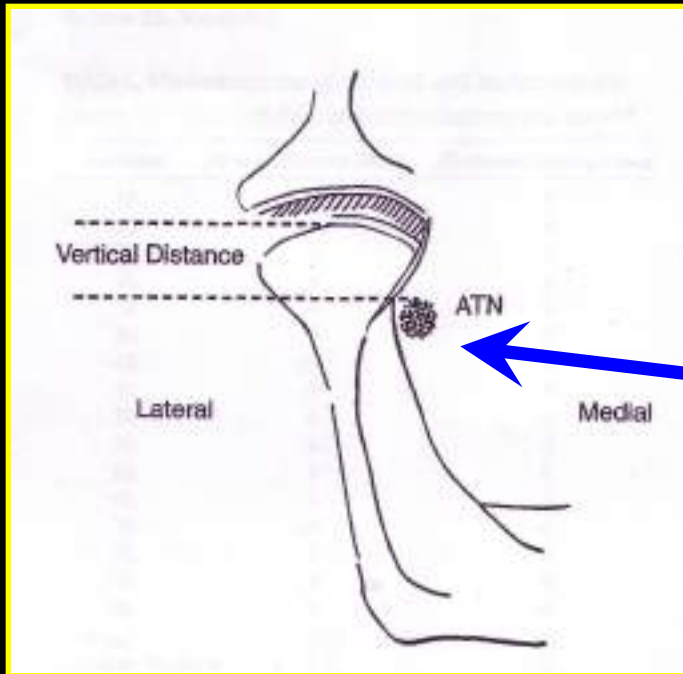
POSTERIOR DIVISION

- Lingual nerve
- Inferior Alveolar nerve
- Auriculotemporal nerve

**IS THERE A LINK
BETWEEN TRIGEMINAL
PATHWAY AND TMD?**



TMJ AND MANDIBULAR NERVE RELATIONSHIP



**AT THE POSTERO – INFERIOR
BORDER OF THE LATERAL
PTERYGOID MUSCLE THE ATN IS
ADHERENT TO THE CONDILAR
NECK**

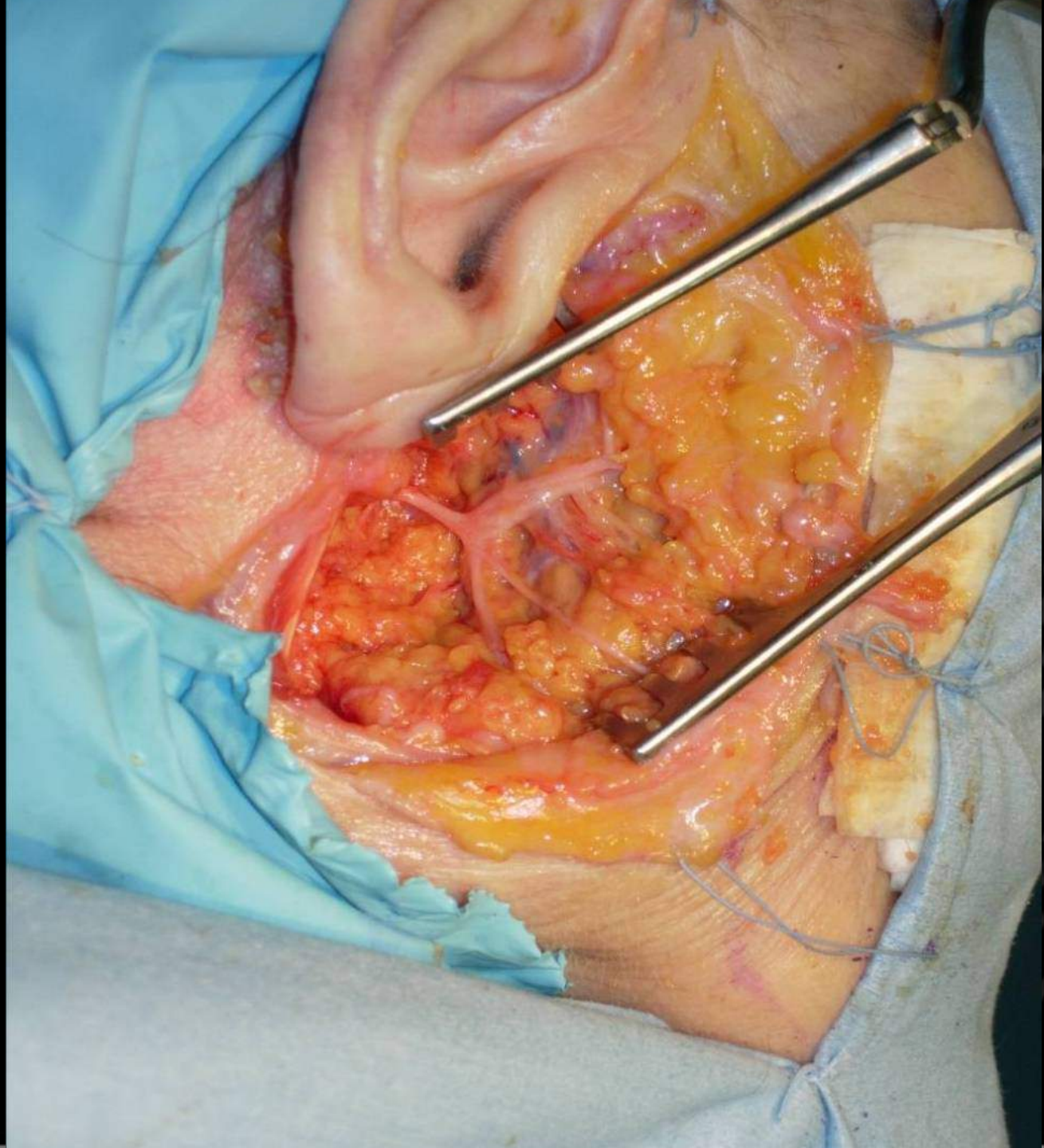
Schmidt BL, Pogrel MA, Necoechea M and Kearns G. The distribution of the auriculotemporal nerve around the temporomandibular joint. Oral Surg Oral Med Oral Pathol Oral Radiol Endod 1998; 86: 165-8.

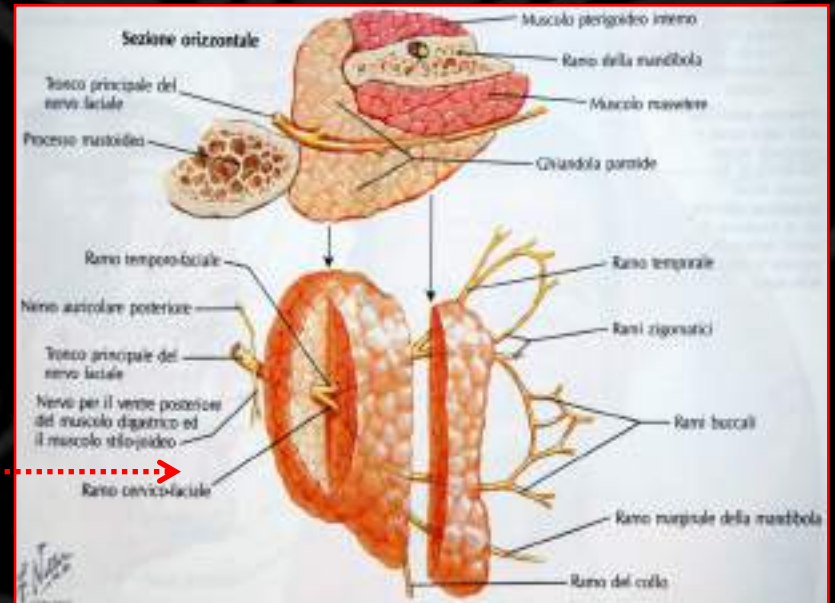
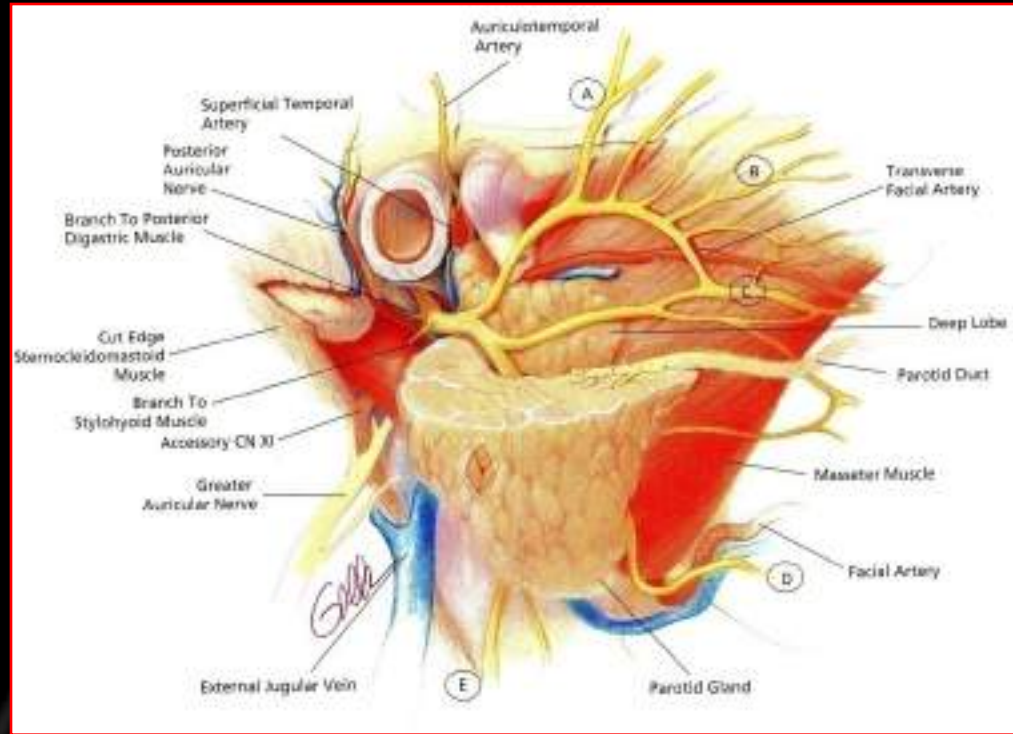
Johansson A, Isberg A, Isacsson G. A radiographic and Histologic study of the topographic relations in the temporomandibular joint region. J Oral Maxillofac Surg 1990; 48: 953- 61.







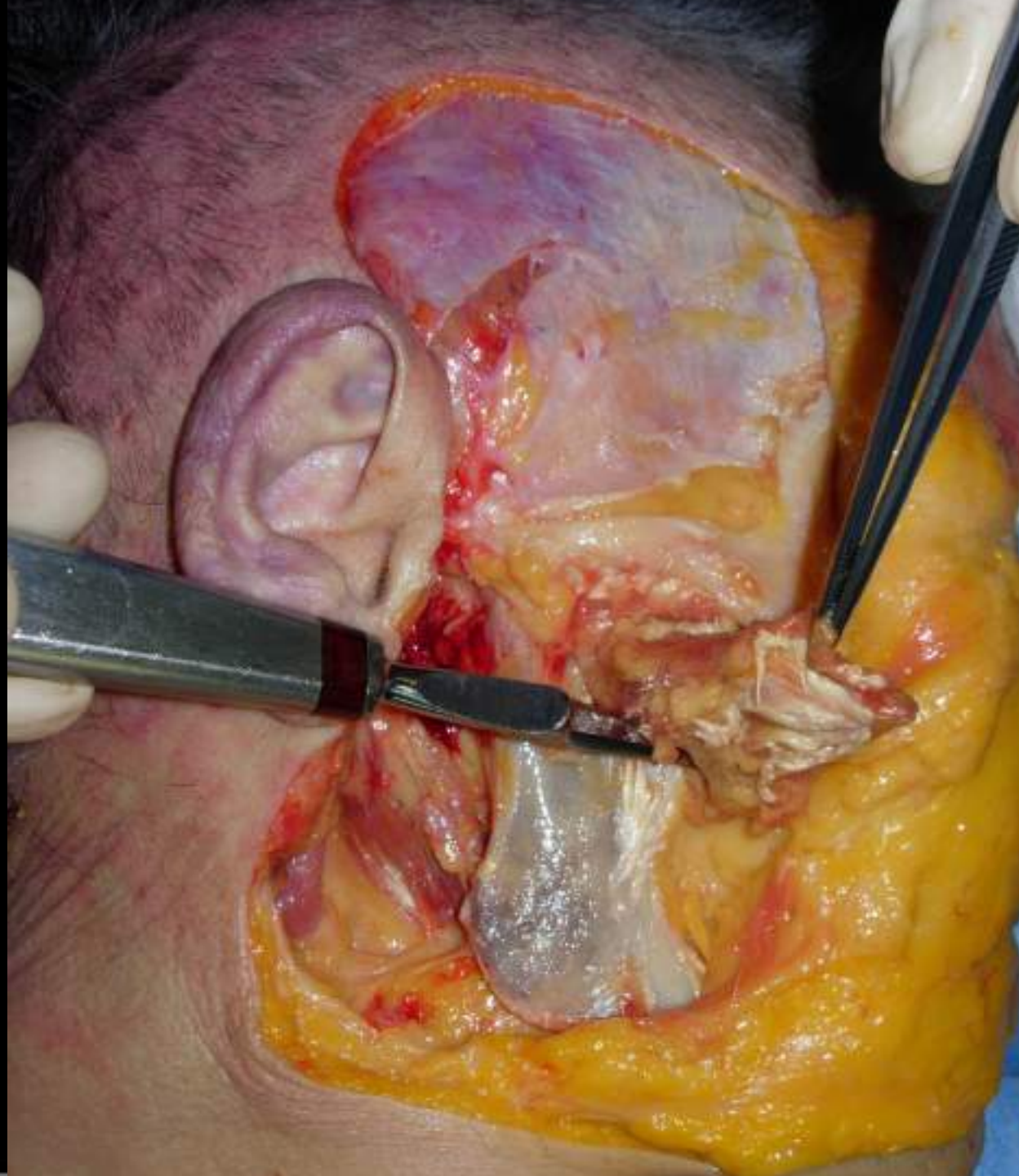




















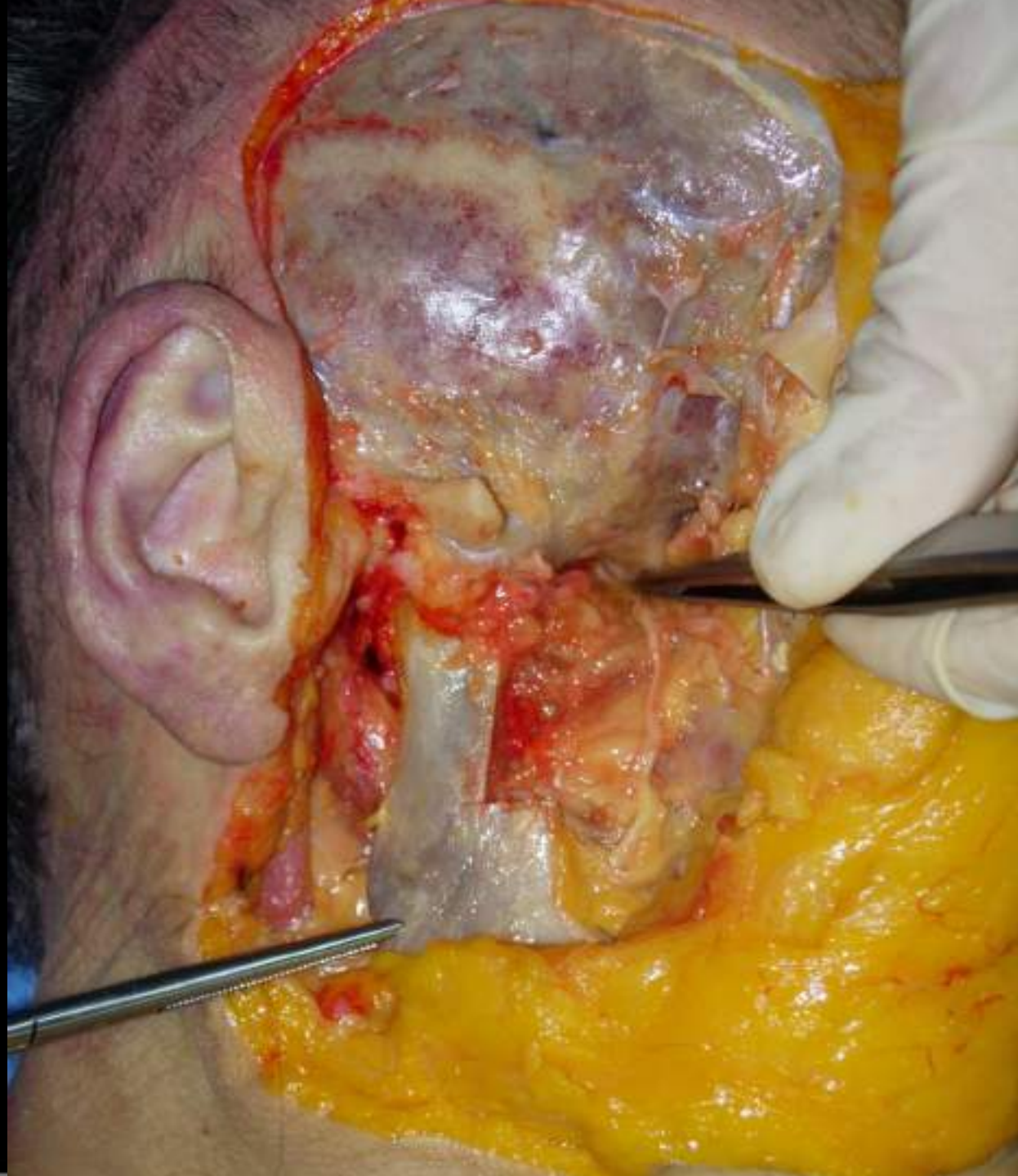






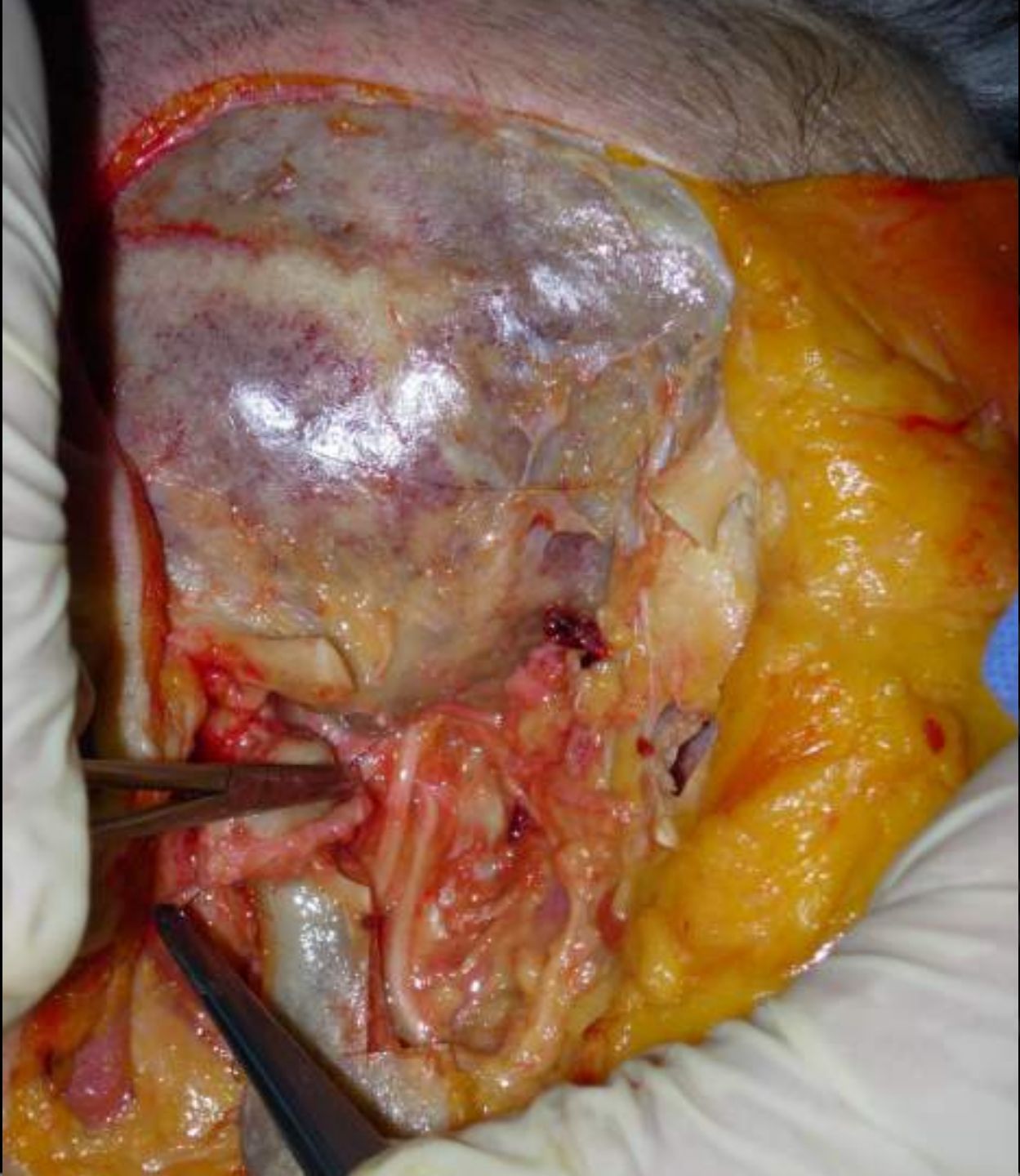




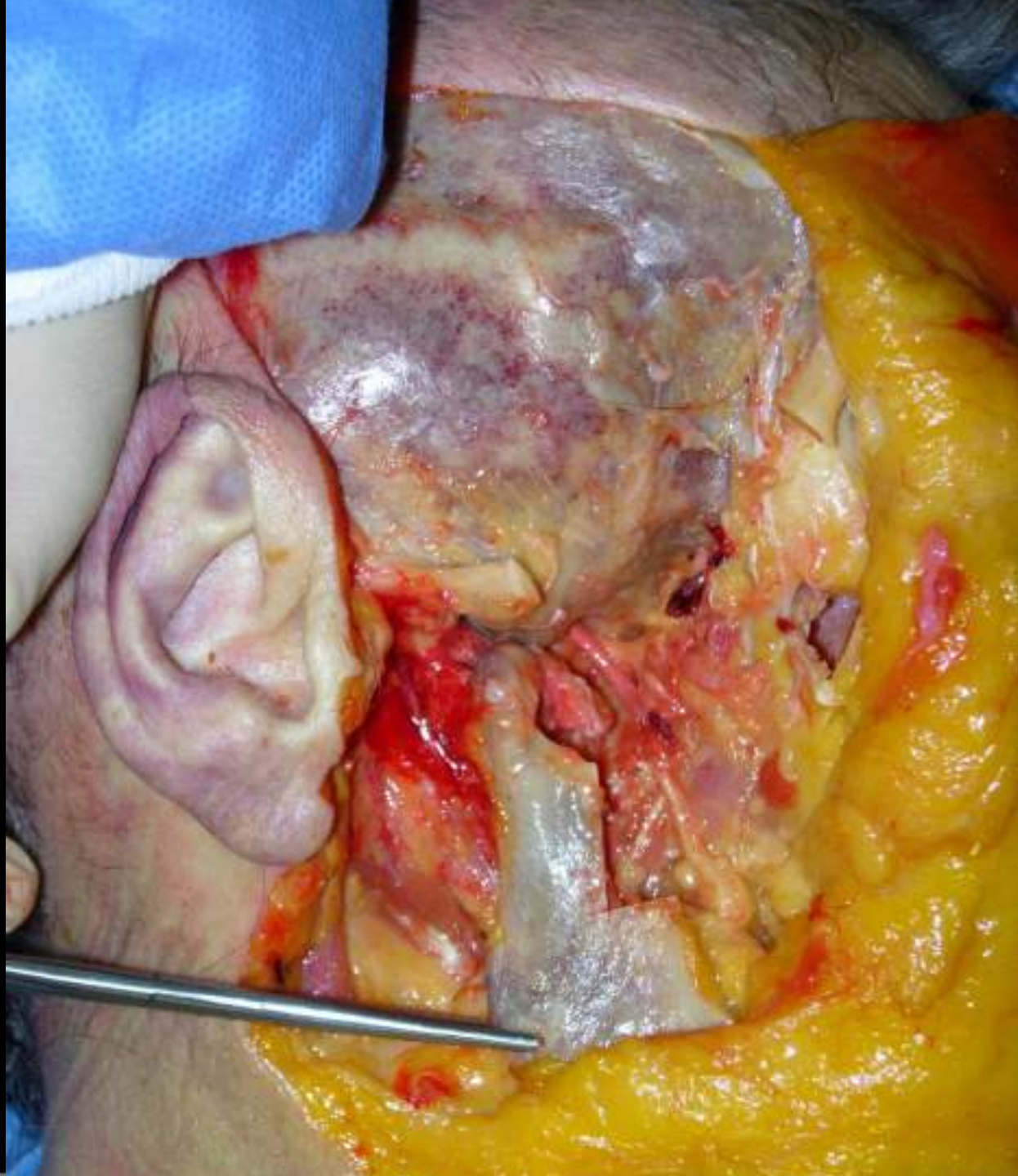












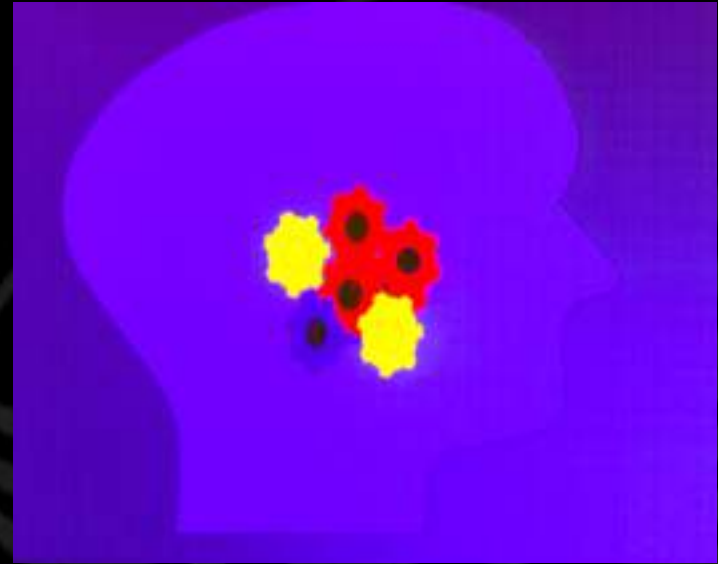
TMJ AND MANDIBULAR NERVE RELATIONSHIP

- THE INTERRELATION BETWEEN DISC DISPLACEMENT AND TRIGEMINAL NERVE
- THE IMPORTANCE OF A CORRECT DISCAL REPOSITIONING

The background features a large, faint watermark of the University of Wrocław seal. The seal is circular and contains a central emblem with a crown and a bird, surrounded by the Latin text "SIGILLUM UNIVERSITATIS VROBIS".

TMJ BIOMECHANICAL RESTRICTIONS

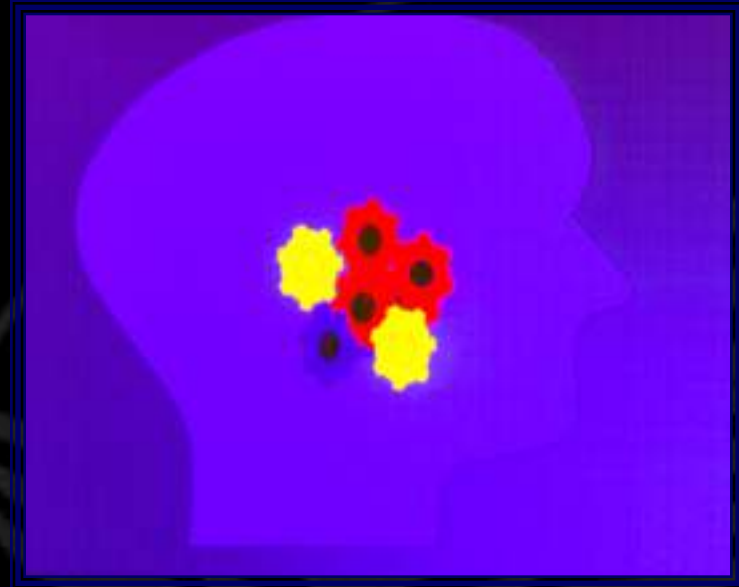
TMJ BIOMECHANICAL RESTRICTIONS



“No matter what directions force is applied to a door it can only swing, open or close in the direction constrained by its hinges”

Osborn JW. “The TM ligament and the articular eminence as constraints during jaw opening” J Oral Rehab, 1989.

TMJ BIOMECHANICAL RESTRICTIONS



“No matter what directions force is applied to a door it can only swing, open or close in the direction constrained by its hinges”

Osborn JW. “The TM ligament and the articular eminence as constraints during jaw opening” J Oral Rehab, 1989.

STOMATHOGNATIC BIOMECHANICAL RESTRICTIONS

MUSCLES AND NERVES

DIRECTIONS AND LIMITS OF
MANDIBULAR MOVEMENTS
ARE CONTROLLED BY..



BIOMECHANICAL RESTRICTIONS

STOMATHOGNATIC BIOMECHANICAL RESTRICTIONS

Constraints that guide and at the same time limit the movements of the temporo mandibular joint activated by the masticatory muscle forces



BIOMECHANICAL RESTRICTION

OCCLUSION

**TMJ STRUCTURES AND
ASSOCIATED LIGAMENTS**



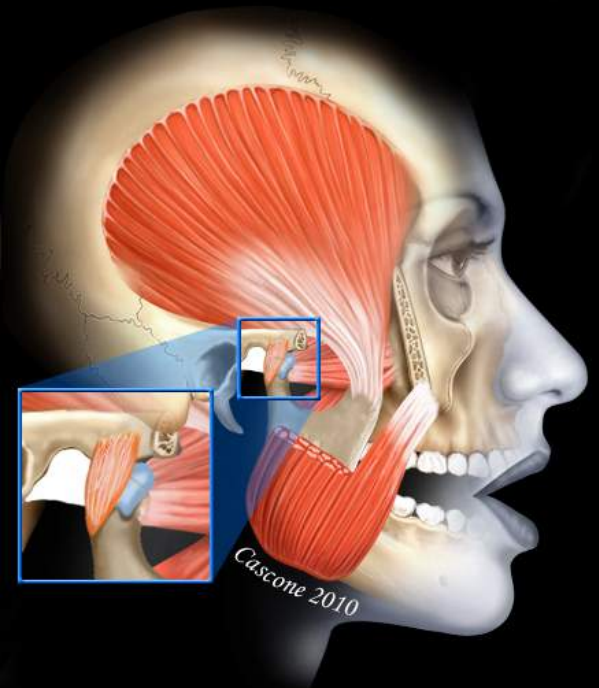
TMJ BIOMECHANICAL RESTRICTIONS

TEMPOROMANDIBULAR JOINT

- Temporo mandibular ligament Osborne 1987
- Retrodiscal tissue Kino 1993
- Articular disc Osborne 1985
- Lateral ligament of the disc Cascone 1990
- Synovial membrane Nitzan 2002
- Synovial fluid Cascone 2002
- Synovial fluid Nitzan 2004

OCCLUSAL

- RAMFJORD S.P., 1983
- PARKER M.W., 1984
- WILLIAMSON E.H., 1984
- RIISE C., 1984
- DAWSON P.E., 1985

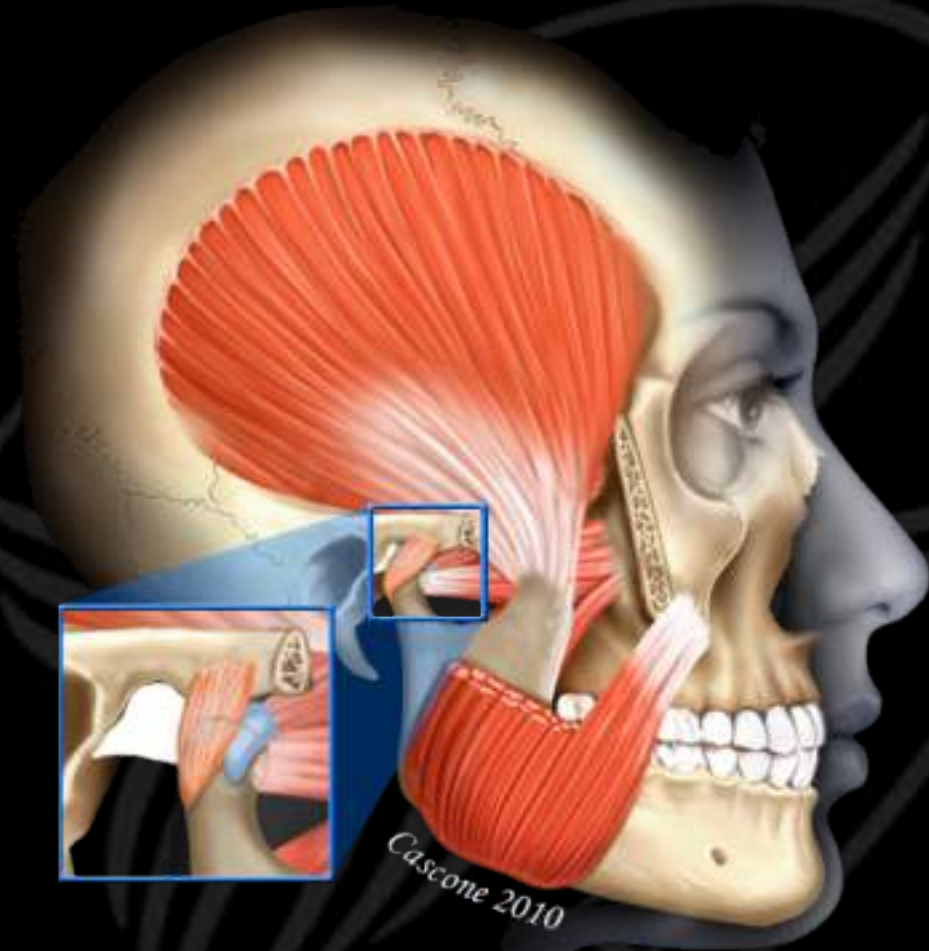


Temporo mandibular ligament

1) During jaw opening the digastric muscle's traction pushes backwards the mandible keeping in tension

the temporo-mandibular ligament

2) The temporo-mandibular ligament produces the mandibular translation squeezing the disc between the articular surface

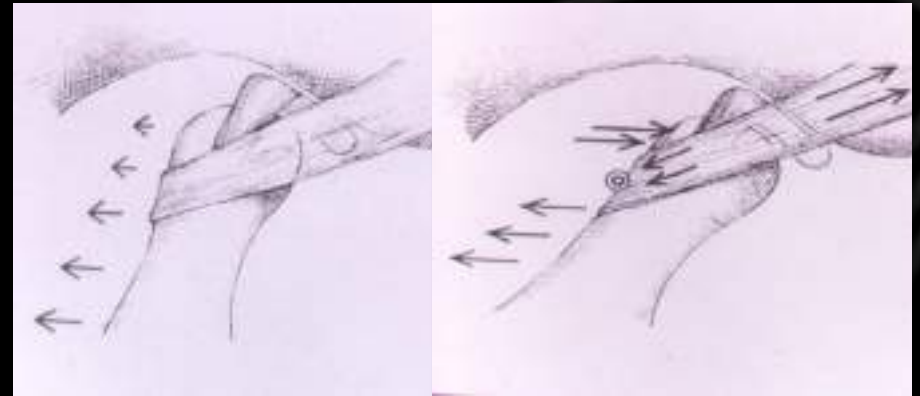


TMJ BIOMECHANICAL RESTRICTIONS

- **Temporo mandibular ligament Osborne 1987**

3) The taut temporo mandibular ligament changes the rotational axis of the condyle and promotes the sliding movement of the condylo-discal complex upon the articular eminence

4) Condyle is restricted by the temporo-mandibular ligament and by the articular eminence to move downwards and forwards



Osborn JW. The temporomandibular ligament and the articular eminence as constraints during jaw opening. J Oral Rehabil 1989;16:323-333

RETRODISCAL TISSUE

As the condyle moves forward the elastic fibers expand the inner space of the plexus and the blood flow is pulled into the plexus

Venous blood is dislodged backward or forward around the condyle to help the balance of the changing tissue tensions and pressures when the condyle moves up or down on the articular eminence



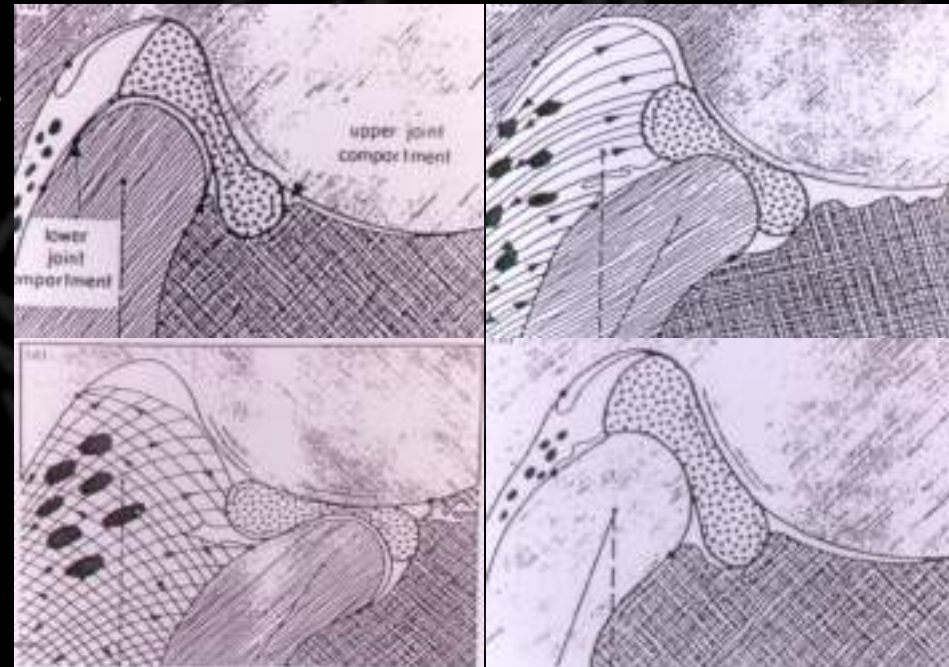
Kino K. "Reconsiderations of the bilaminar zone in the retro discal area of the TMJ" in Oral Surg Oral Med Oral Path 75, 1993.

TMJ BIOMECHANICAL RESTRICTIONS

- Retrodiscal tissue Kino 1993

Venous blood is dislodged backward or forward around the condyle to help the balance of the changing tissue tensions and pressures when the condyle moves up or down on the articular eminence

During the mouth-closing phase the blood flows out due to the pressure of the condyle



Kino K. "Reconsiderations of the bilaminar zone in the retro discal area of the TMJ" in Oral Surg Oral Med Oral Path 75, 1993.

TMJ BIOMECHANICAL RESTRICTIONS

LATERAL LIGAMENT OF THE DISC

The lateral ligament prevents the antero-medial dislocation of the articular disc in rest position.



The lateral ligament prevents the antero-medial dislocation of the articular disc in rest position.

Cascone P. "Dinamica funzionale dell' ATM: importanza del legamento capsulare laterale" Dental Cadmos 4, 1990

TMJ BIOMECHANICAL RESTRICTIONS

SYNOVIAL FLUID

BIOMECHANICAL FUNCTION OF SYNOVIAL FLUID CHANGES UNDER LOAD



Adhesive force: the underlying cause of the disc anchorage to the fossa and/or eminence in the temporomandibular joint – A new concept. Nitzan DW, Etsion I. Int J Oral Maxillofac Surg, 2002; 31: 94-9.

Hyaluronic acid's biomechanical stabilization function in the temporomandibular joint. Cascone P, Fonzi Dagger L, Aboh IV J Craniofac Surg. 2002 Nov; 13(6):751-4

INTERNAL DERANGEMENT

LUXATION OR SUBLUXATION

DISK DISPLACEMENT WITH REDUCTION (CLICK)

DISK DISPLACEMENT WITHOUT REDUCTION (LOCK)

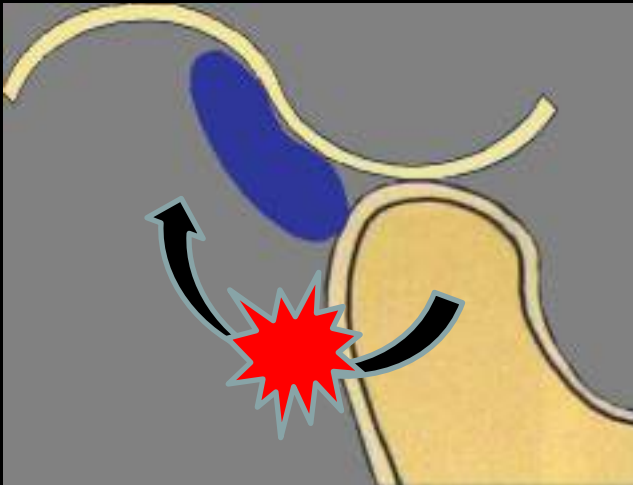
DEGENERATIVE JOINT DISEASE

MANDIBULAR LUXATION OR OPEN LOCK

WHEN THE PATIENT CAN REDUCE THE DISLOCATION HIMSELF THIS IS REFERRED AS SUBLUXATION. WHEN THE PATIENT NEEDS THE ASSISTENT OF THE CLINICIAN THIS IS REFERRED TO LUXATION.

COMPLETE LOSS OF CONNECTION BETWEEN DISC-CONDYLE AND GLENOID FOSSA, IMPOSSIBLE TO CLOSE THE MOUTH.

MUSCULAR DISORDER AND LIGAMENT LAXITY



SPORADIC (1- 2 EPISODES)

RELAPS (2- 3 EPISODES)

RECURRENT (>4 EPISODES)

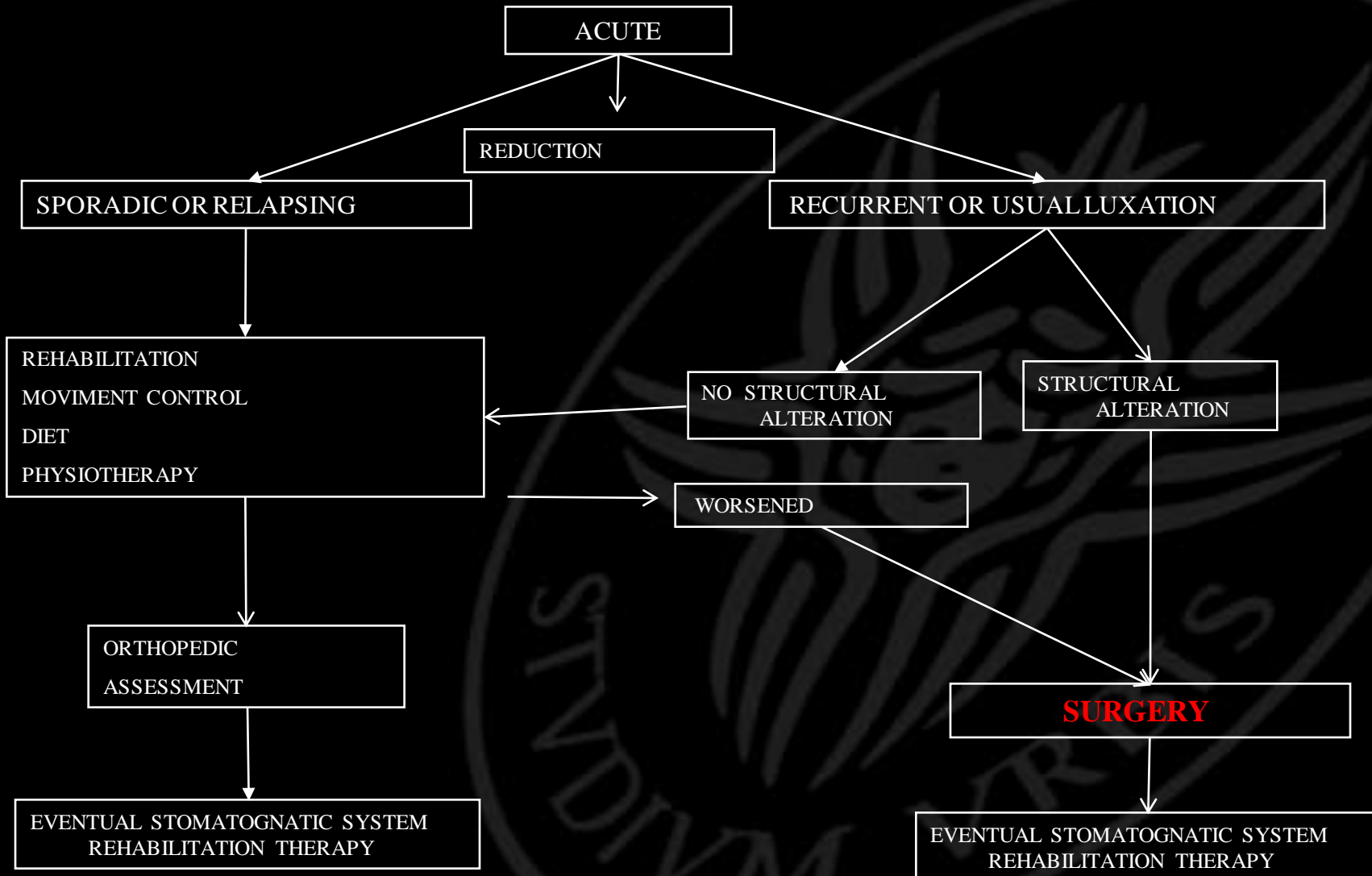
USUAL (EVERY MOUTH OPENING)

PAIN AND MUSCULAR CONTRACTION

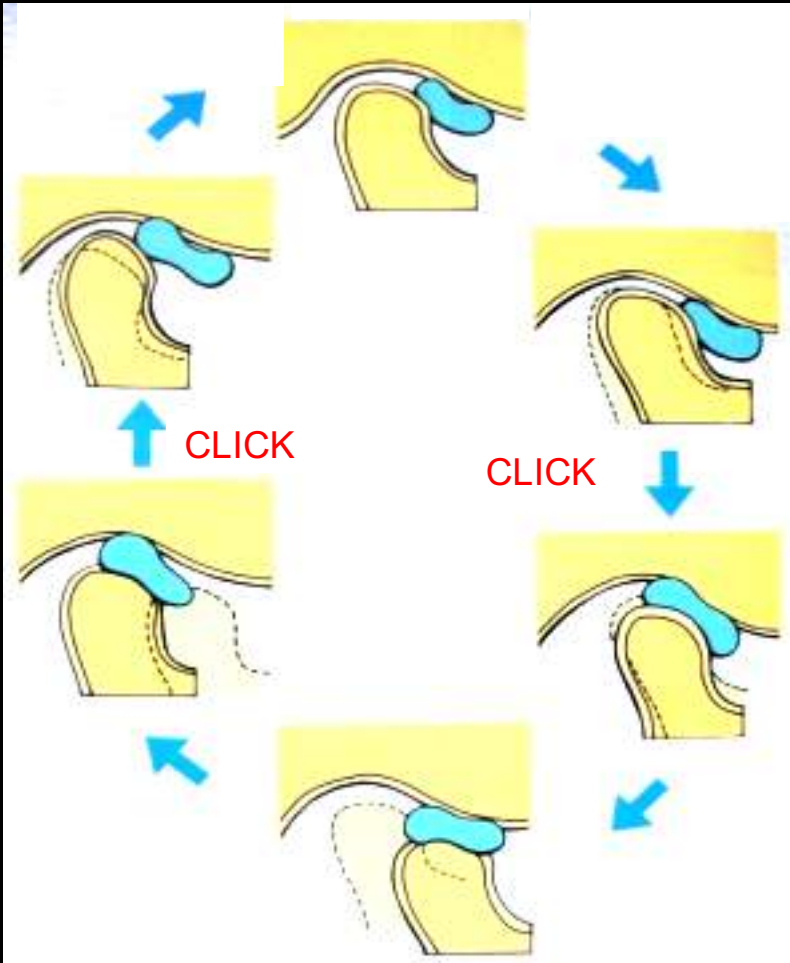
LIMITED MOUTH OPENING

SIGNS AND SIMPTOMS OF NEURO-VEGETATIVE IRRITATION

MANDIBULAR LUXATION



DISC DISPLACEMENT WITH REDUCTION



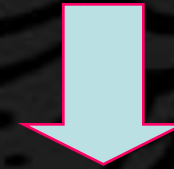
ANTERIOR-MEDIAL DISC DISLOCATION
(CLICK)

MODIFIED ANATOMICAL CONNECTION
BETWEEN DISC AND CONDYLE

DISC DISPLACEMENT WITH REDUCTION

- CONSENSUAL ARTICULAR NOISE (CLICKING)
- MANDIBULAR KINETICS ALTERATION
- LOCAL PAIN
- HEADACHE
- NECK PAIN
- ARMS PAIN
- TINNITUS
- HEARING LOSS
- AURICULAR FULNESS
- ATYPICAL TRIGEMINAL SYMPTOMS
- DIZZINESS

- EARLY CLICK
- INTERMEDIATE CLICK
- LATE CLICK



AN EARLY CLICK IS SIGN OF EARLY
DISC RECAPTURE BY CONDYLE

A LATE CLICK IS SIGN OF IMMINENT
ARTICULAR LOCK

(LATE AND DIFFICULT RECAPTURE)

CLICK

INFORM AND EDUCATE THE PATIENT

PATIENT IMPROVED
OR HEALED

SPLINT
THERAPY

PATIENT STABLE
OR WARSEN

NEW ETIOLOGIC
ASSESSMENT

ORTHOPEDIC ASSESSMENT

EXTRA TMJ CAUSES

TMJ CAUSES

STABLE
DEFINITIVE STABILIZATION
THERAPY

UNSTABLE
STOP SPLINT THERAPY

SPECIFIC
THERAPY

NO PAIN

PAIN

ORTHODONTIC THERAPY
PROSTESIS
ORTHOGNATIC SURGERY
(SPLINT IF NECESSARY)

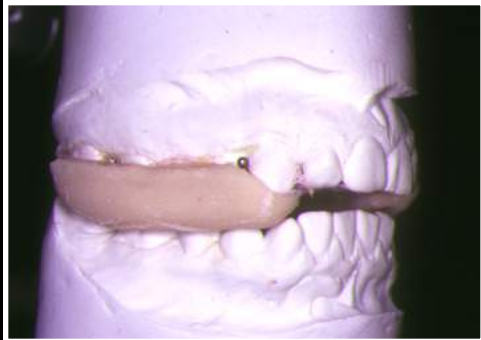
NEGATIVE RESULT
OCCLUSAL
STABILIZATION
SURGERY

POSITIVE RESULT
WAIT AND SEE
(SPLINT IF
NECESSARY)

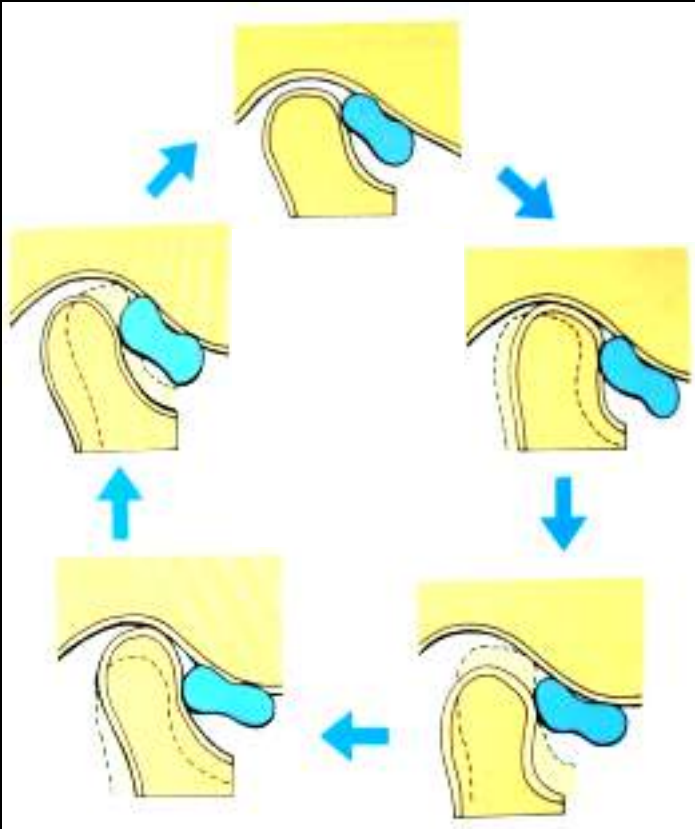
OCCLUSAL
STABILIZATION
SURGERY



SPLINT THERAPY



CLOSED LOCK



ANTERIOR-MEDIAL DISC DISLOCATION
PERMANENT LOSS OF CONDYLE-DISC
CONNECTION

AN EVOLUTION OF ANTERIOR DISC
DISLOCATION

CLOSED LOCK – SIGNS AND SYMPTOMS

- PREVIOUS CLICK POSITIVE HISTORY
- MOUTH OPENING SEVERE LIMITATION
- MANDIBULAR KINETIC ALTERATION
- OROFACIAL PAIN
- HEADACHE
- NECK PAIN
- ARMS PAIN
- TINNITUS
- HEARING LOSS
- AURICULAR FULNESS
- ATYPICAL TRIGEMINAL SYMPTOMS
- DIZZINESS

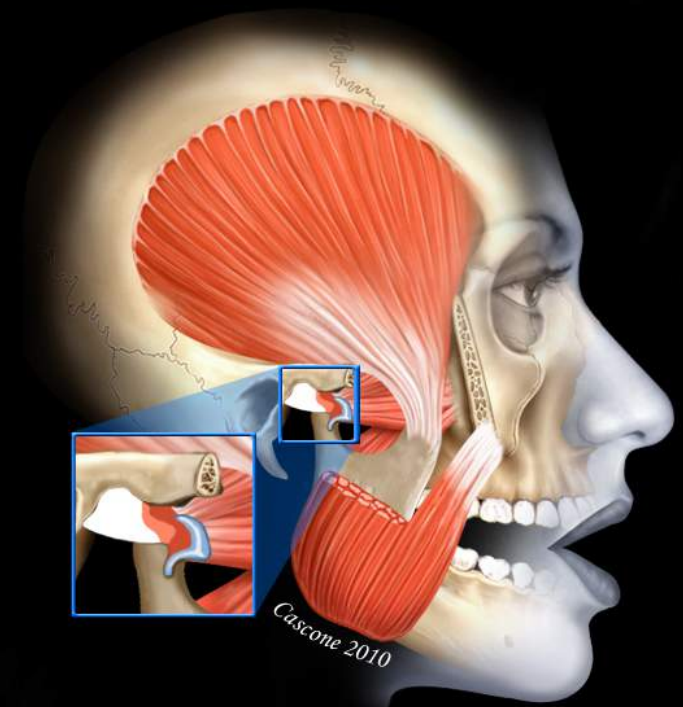
ACUTE

SPORADIC

RELAPSING

CHRONIC/PERMANENT (IPO-MOBILITY > 30 DAYS)

CHRONIC/TERMINAL



CLOSED LOCK

INFORM AND EDUCATE THE PATIENT

UNLOCKING THERAPY: SPLINT THERAPY, MANIPULATION, ARTHROCENTESIS, ARTHROSCOPY, SUPPORT THERAPY

IMPROVED
OR
HEALED

STABLE
WORSEN

KEEP ON
CLICK
THERAPY

SEVERE DISORDER
LIMITATION
PAIN

MILD DISORDER
MILD LIMITATION
NO PAIN

OCCLUSAL
STABILIZATION

NOT STABLE
OCCLUSION

STABLE
OCCLUSION

SURGERY

OCCLUSAL
STABILIZATION

WAIT AND SEE

IMPROVED

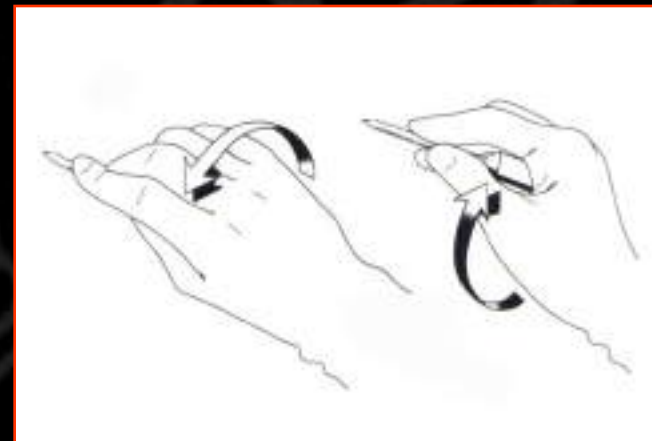
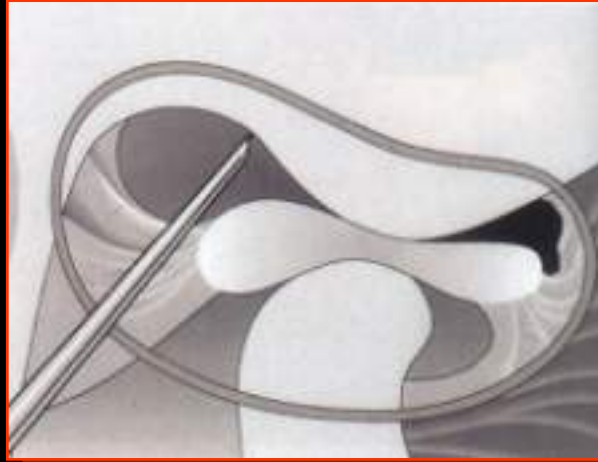
WORSEN

SURGERY

ARTHROCENTESIS



ARTHROSCOPY



SPLINT THERAPY



RA.DI.CA.

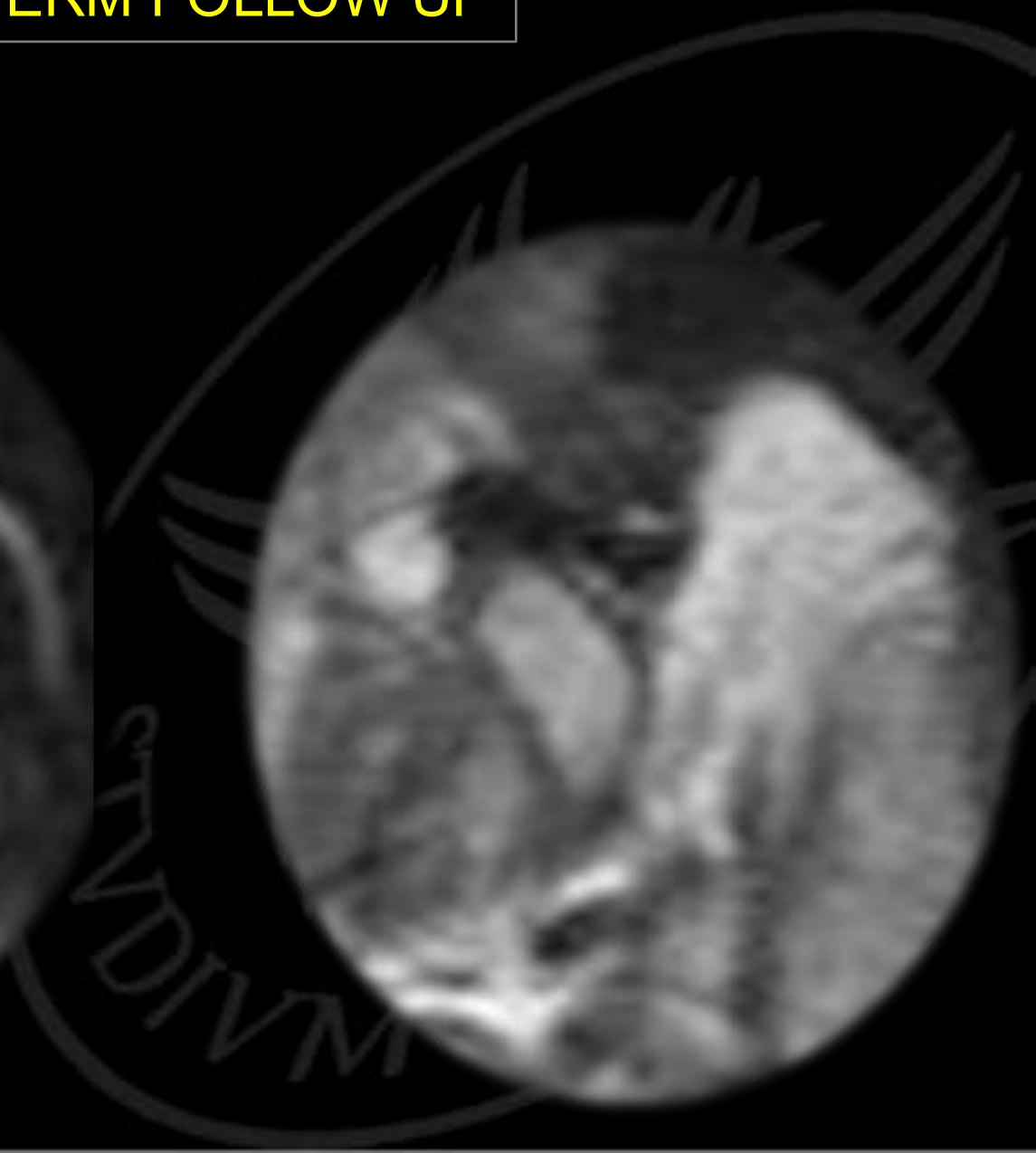
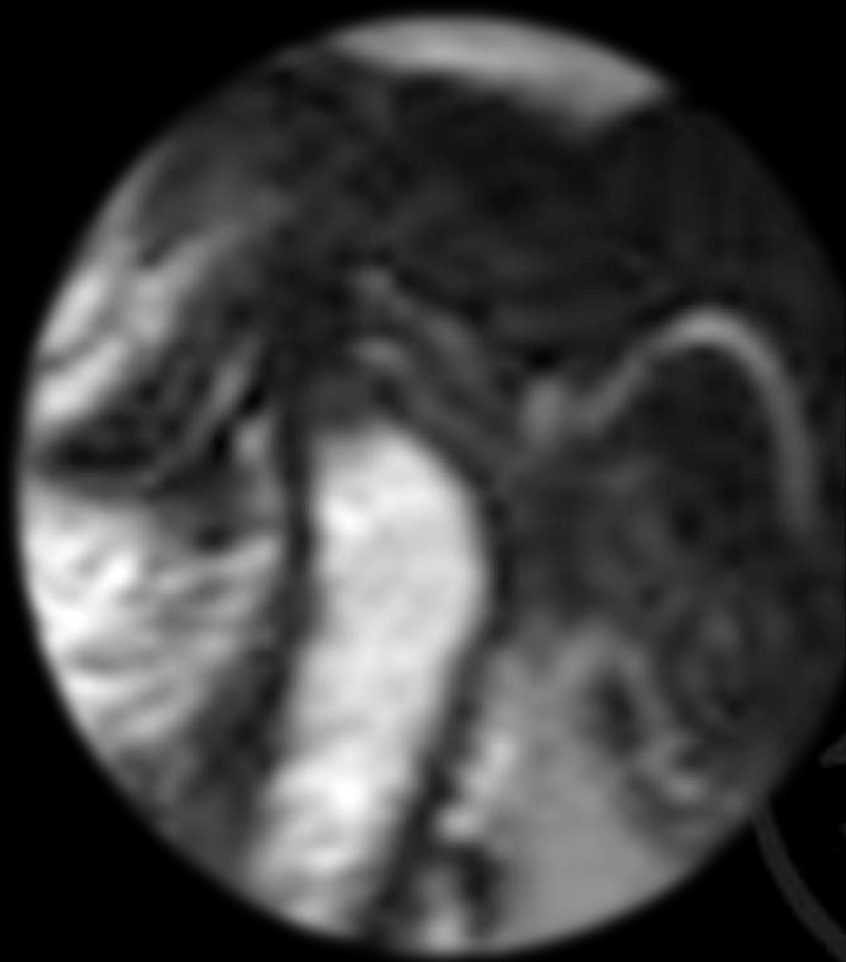
TMJ DISTRACTION DEVICE

DIVM VRBIS





LONG TERM FOLLOW UP



OSTEOARTHRISIS

ARTICULAR SYMPTOMS WITH CARTILAGE INJURY , BONE AND SURROUNDING TMJ REGION MODIFICATION (*American Rheumatism Association*)



TERMINAL EVOLUTION OF DISC-CONDYLE INCOORDINATION
TEMPOROMANDIBULAR DISORDER CAUSED BY SYSTEMIC
DESEASE

SEVERE AND ANOMALOUS MANDIBULAR KINETICS
LIMITATION

TMJ NOISE

ORO-FACIAL PAIN

SYSTEMIC ARTHROPATY

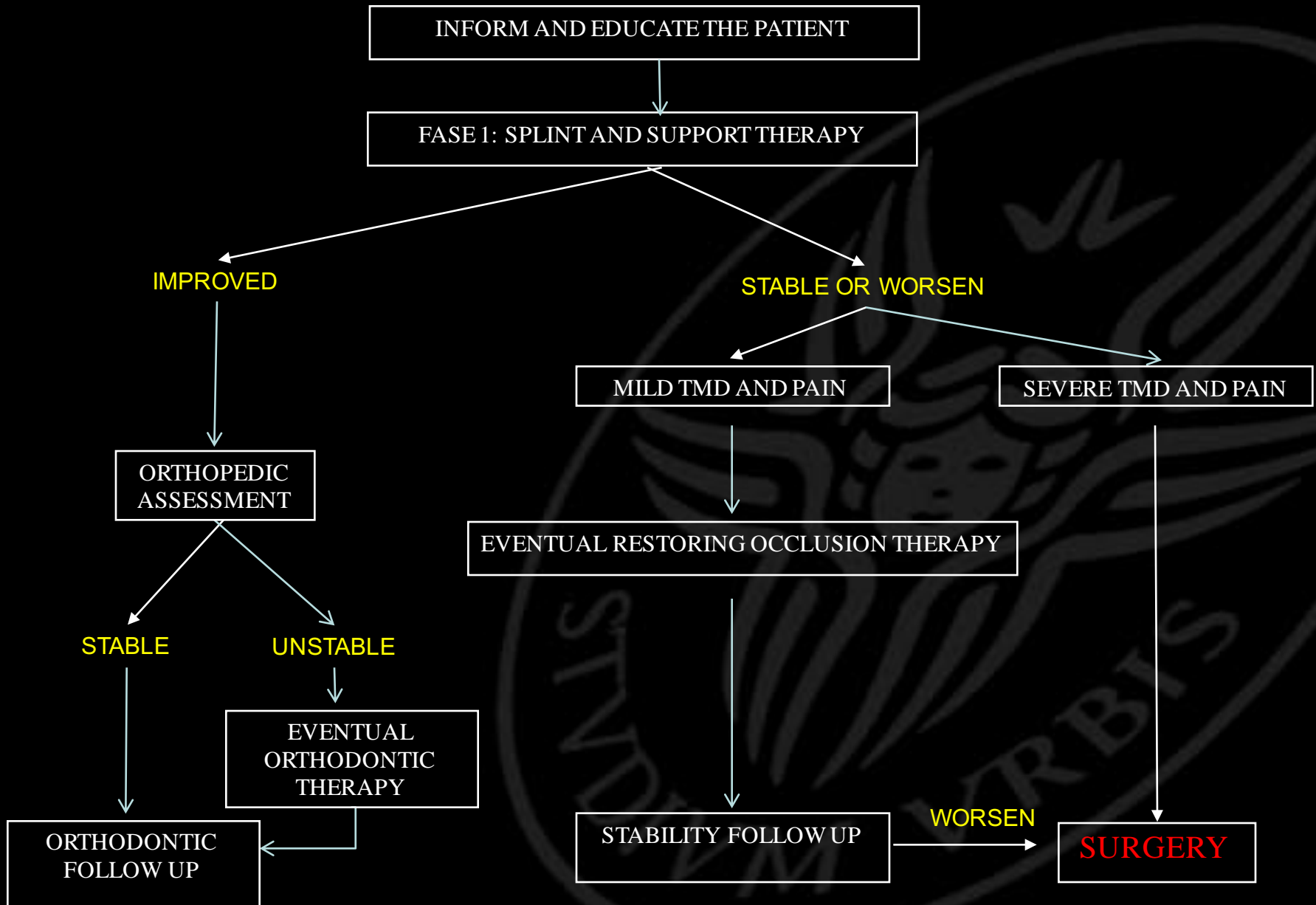
TEMPOROMANDIBULAR DISORDER HISTORY

OSTEOARTHRISIS – SIGNS AND SYMPTOMS

- TEMPOROMANDIBULAR DISORDER POSITIVE HISTORY
- SEVERE MOUTH OPENING PAIN
- NON CONSENSUAL TMJ NOISE
- MANDIBULAR KINETIC ALTERATION
- OROFACIAL PAIN
- HEADACHE
- NECK PAIN
- ARMS PAIN
- TINNITUS
- HEARING LOSS
- AURICULAR FULNESS
- ATYPICAL TRIGEMINAL SYMPTOMS
- DIZZINESS
- SYSTEMIC ARTHROPATHY



TEMPORO-MANDIBULAR OSTEOARTHRITIS



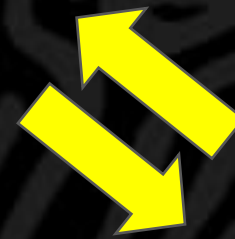
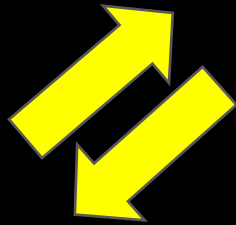
TMJ FUNCTIONAL OPEN SURGERY



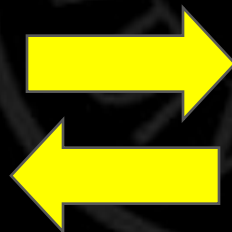
THE INTERNAL DERANGEMENT: A 35 YEARS EXPERIENCE IN FUNCTIONAL OPEN SURGERY

SURGERY: WHEN ?

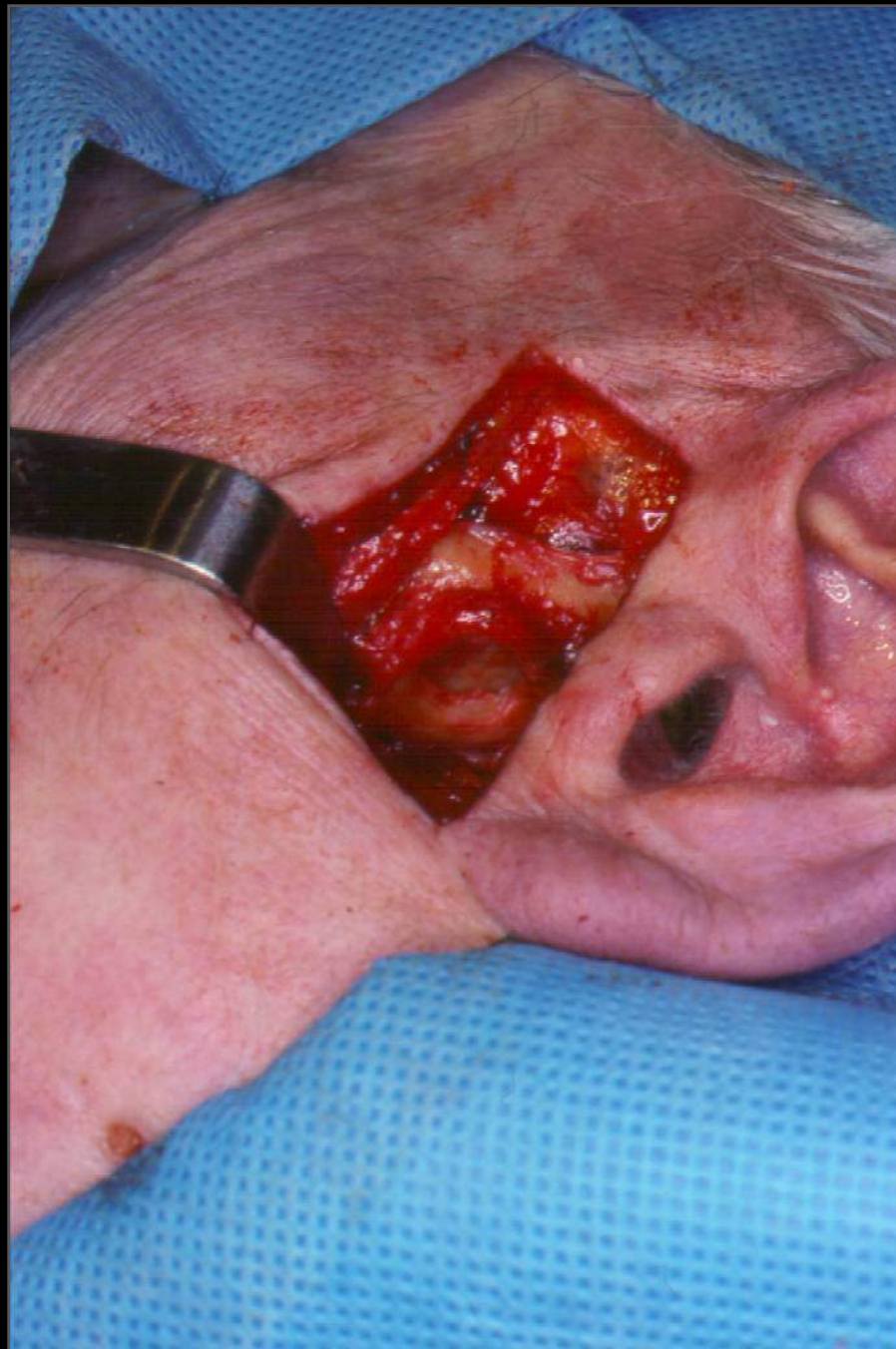
**IRREVERSIBLE
DAMAGE**



**IRREVERSIBLE
TMJ DYSFUNCTION
SYMPTOMS**



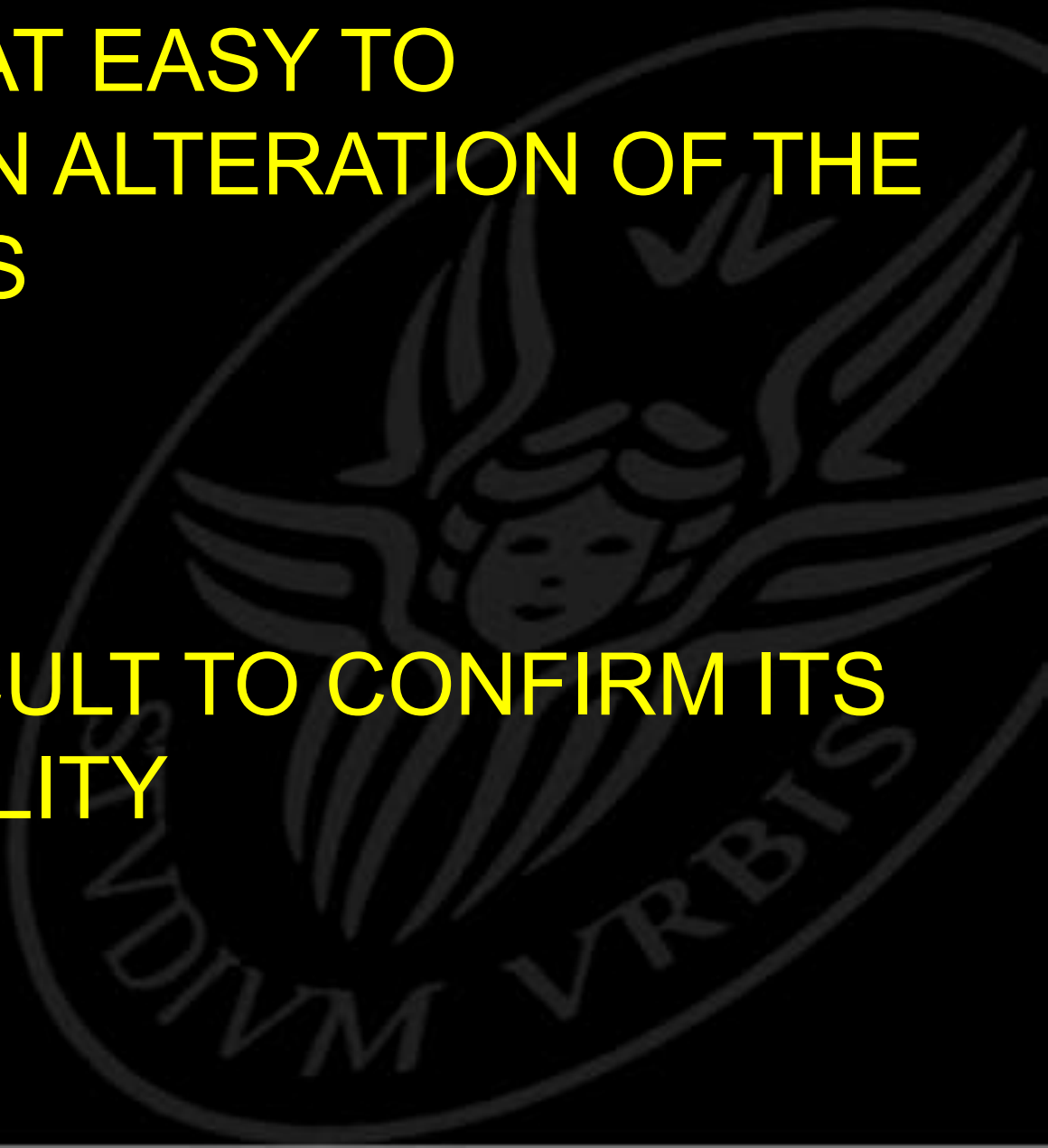
**IRREVERSIBLE LOCAL
OR DIFFUSE
ORO-FACIAL PAIN**



IT IS NOT THAT EASY TO
DIAGNOSE AN ALTERATION OF THE
STRUCTURES

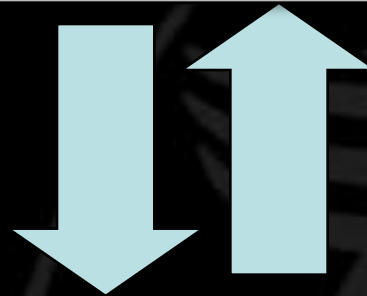
AND

QUITE DIFFICULT TO CONFIRM ITS
IRREVERSIBILITY



TWO ARE THE MAIN REASONS TO DECIDE FOR SURGERY

MORPHOFUNCTIONAL
RECOVERY



PATIENT' S WELLNESS

TWO ARE THE MAIN REASONS TO DECIDE FOR SURGERY

MORPHOFUNCTIONAL
RECOVERY



PATIENT' S WELLNESS

“...Disaster of alloplastic disc replacements...”

(Dimitroulis G. Int. J. Oral Maxillofac. Surg. 2005; 34: 231–237)

TWO ARE THE MAIN REASONS TO DECIDE FOR SURGERY

MORPHOFUNCTIONAL
RECOVERY



PATIENT'S WELLNESS

“...discectomy...complete resolution in pain and restriction free diet...”

Ericksson L, Westersson P-L. Temporomandibular joint discectomy. Oral Surg Oral Med Oral Pathol 1992; 4: 259–272.

McKenna SJ. Discectomy for the treatment of internal derangements of the temporomandibular joint. J Oral Maxillofac Surg 2001; 59: 1051–1056.

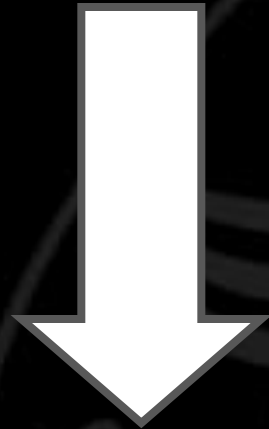


**MORE WE UNDERSTAND
ANATOMY AND FUNCTION
BETTER WILL BE THE CHOICE
OF SURGICAL TREATMENT**

GOALS IN TMJ BIOMECHANICAL PATHOLOGY THERAPY

- **ARTICULAR BIOMECHANIC
RESTRICTIONS RECOVERY**
- **OCCLUSAL BIOMECHANICAL
RESTRICTIONS RECOVERY**

**WHICH IS THE TARGET OF
TMJ FUNCTIONAL
SURGERY?**



THE MORFOFUNCTIONAL REPAIR

**IN MY EXPERIENCE
THE MAIN TECHNIQUE
IS REPRESENTED BY**

- **SUPERIOR COMPARTMENT
ARTHROSCOPY**
- **HIGH CONDYLECTOMY**
- **DISC REPOSITIONING**
- **RETRODISCAL PERFORATION REPAIR**
- **LATERAL LIGAMENT
RECONSTRUCTION**

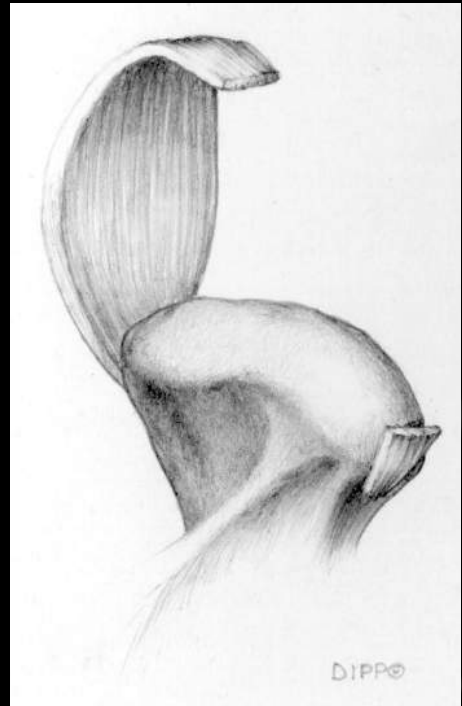
PIVOTS OF SURGICAL TECHNIQUE

HIGH CONDYLECTOMY

DISC REPOSITIONING

LATERAL LIGAMENT RECONSTRUCTION

Cascone P. Terapia chirurgica della lussazione anteriore del menisco. Dental Cadmos. 1987; 11:17-29.

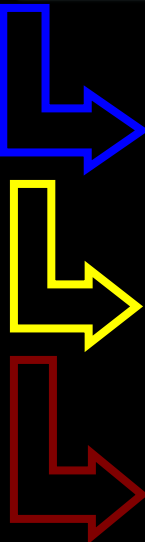
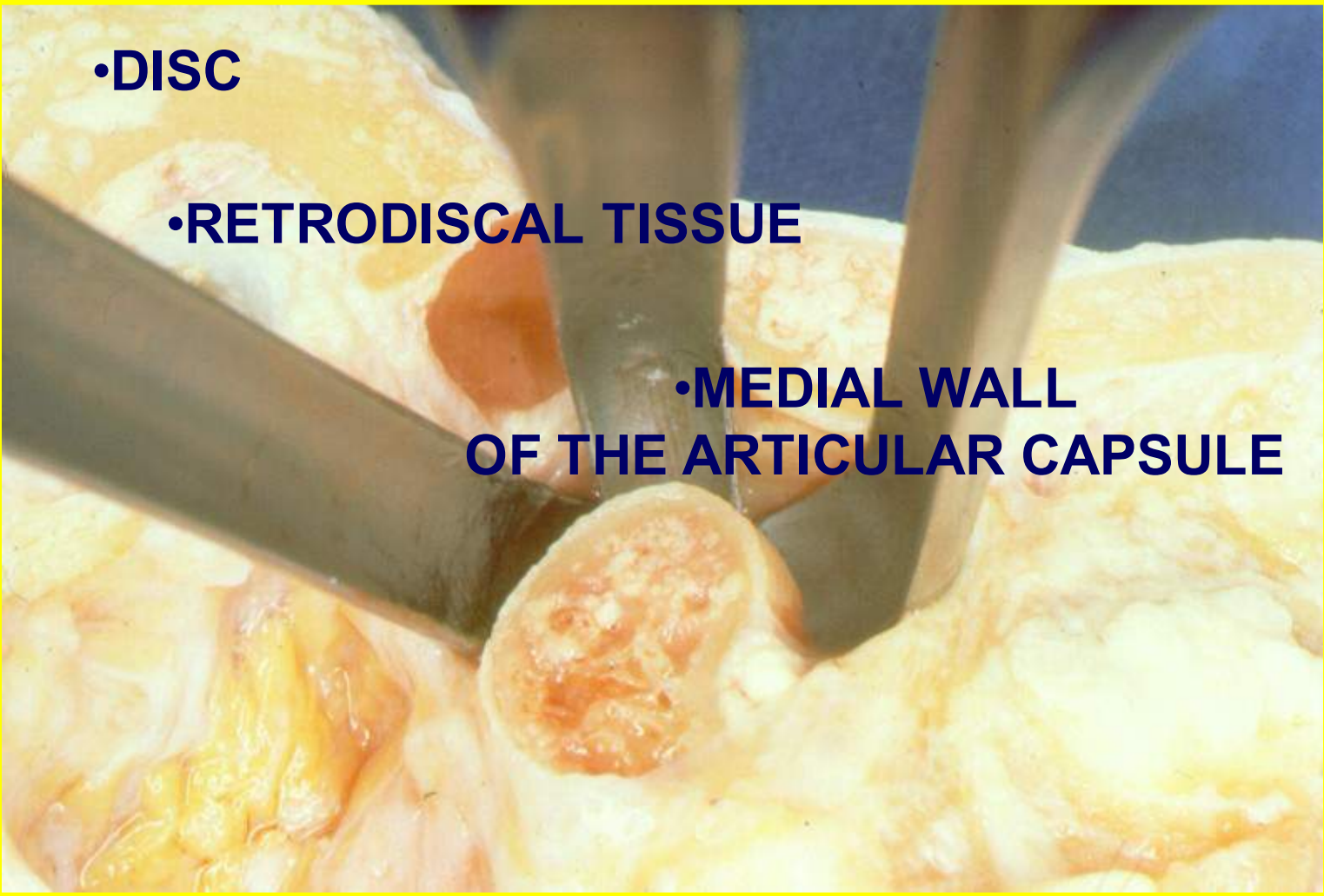


SPECIAL SURGICAL RETRACTORS USED TO PROTECT:

•DISC

•RETRODISCAL TISSUE

**•MEDIAL WALL
OF THE ARTICULAR CAPSULE**





“SAPIENZA” Università di Roma
Facoltà di Medicina
Maxillofacial Surgery Department

**PATIENTS TREATED FOR INTERNAL DERANGEMENT
FROM 1982 TO 2005 : 565**

FOLLOW UP SAMPLE:	352
TOTAL OF TMJ	696

•FOLLOW UP



•RANGE: 3 TO 26 YEARS

•AVERAGE 12.5

UNIVERSITÄT WÜRZBURG

352 PATIENTS SAMPLE

•PATIENTS



•MALES: 15%

•FEMALES: 85%

•AGE



•FROM 16 TO 68 YEARS

•AVERAGE 32 YEARS



WILKES CLASSIFICATION

STAGE	CLINICAL	IMAGING	SURGICAL
I. EARLY	Painless clicking No restricted motion	Slightly forward disc, reducing Normal osseous contours	Normal disc form Slight anterior displacement Passive incoordination (clicking)
II. EARLY/ INTERMEDIATE	Occasional painful clicking Intermittent locking Headaches	Slightly forward disc, reducing Early disc deformity Normal osseous contours	Anterior disc displacement Thickened disc
III. INTERMEDIATE	Frequent pain Joint tenderness, headaches Locking Restricted motion Painful chewing	Anterior disc displacement, reducing early progressing to non-reducing late Moderate to marked disc thickening Normal osseous contours	Disc deformed e displaced Variable adhesions No bone changes
IV. INTERMEDIATE/ LATE	Chronic pain, headache Restricted motion	Anterior disc displacement non-reducing Marked disc thickening Abnormal bone contours	Degenerative remodeling of bony surfaces Osteophytes Adhesions, deformed disc without perforation
V. LATE	Variable pain Joint crepitus Painful function	Anterior disc displacement Non-reducing with perforation and gross disc deformity Degenerative osseous changes	Gross degenerative changes of disc and hard tissues; Perforation Multiple adhesions

SYMPTOMS: 696 TMJ



LUXATION 5,2%

TMJ PAIN 6,5%

CLICKING 22,3%

CLOSED-LOCK 39,3%

CREPITUS 24,7%

WILKES STAGE

I

I – II

III – IV

V

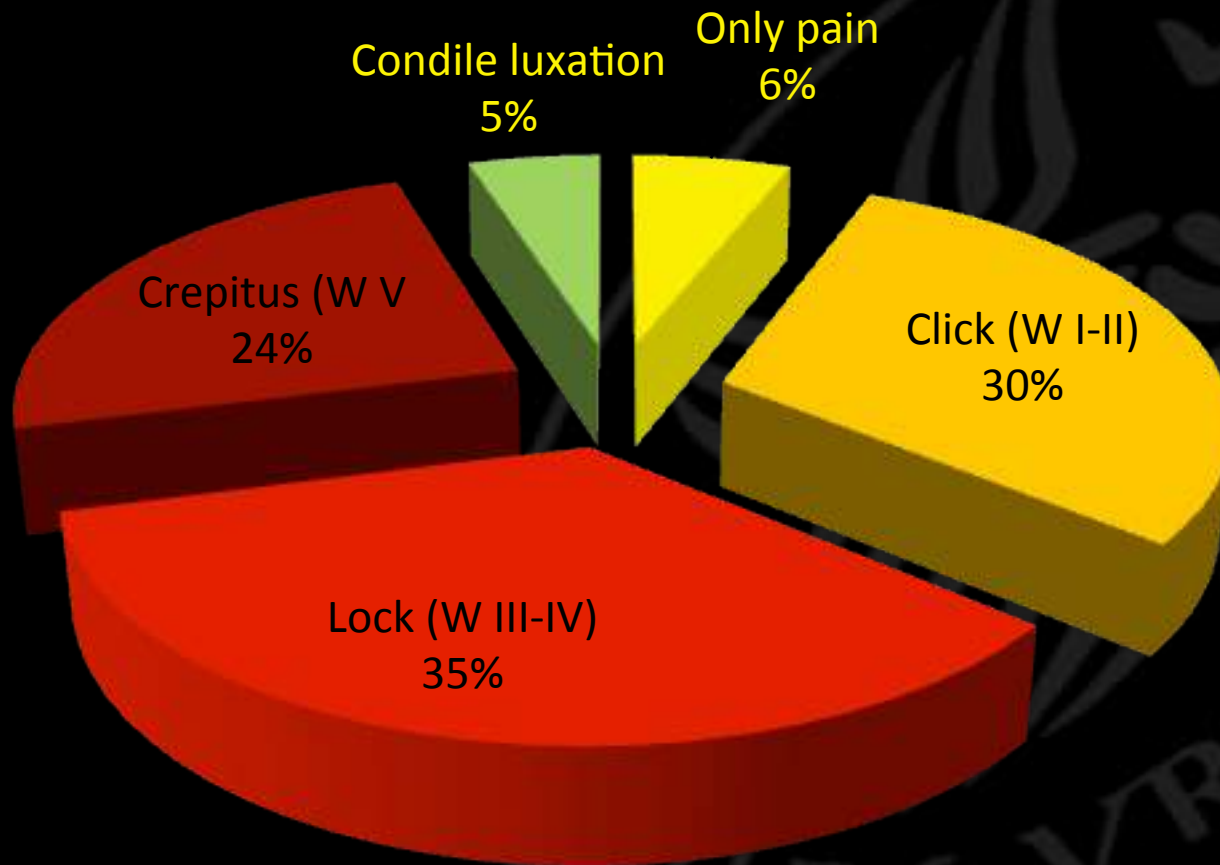
SYMPTOMS: 352 PATIENTS



HEADACHE AND NECK PAIN

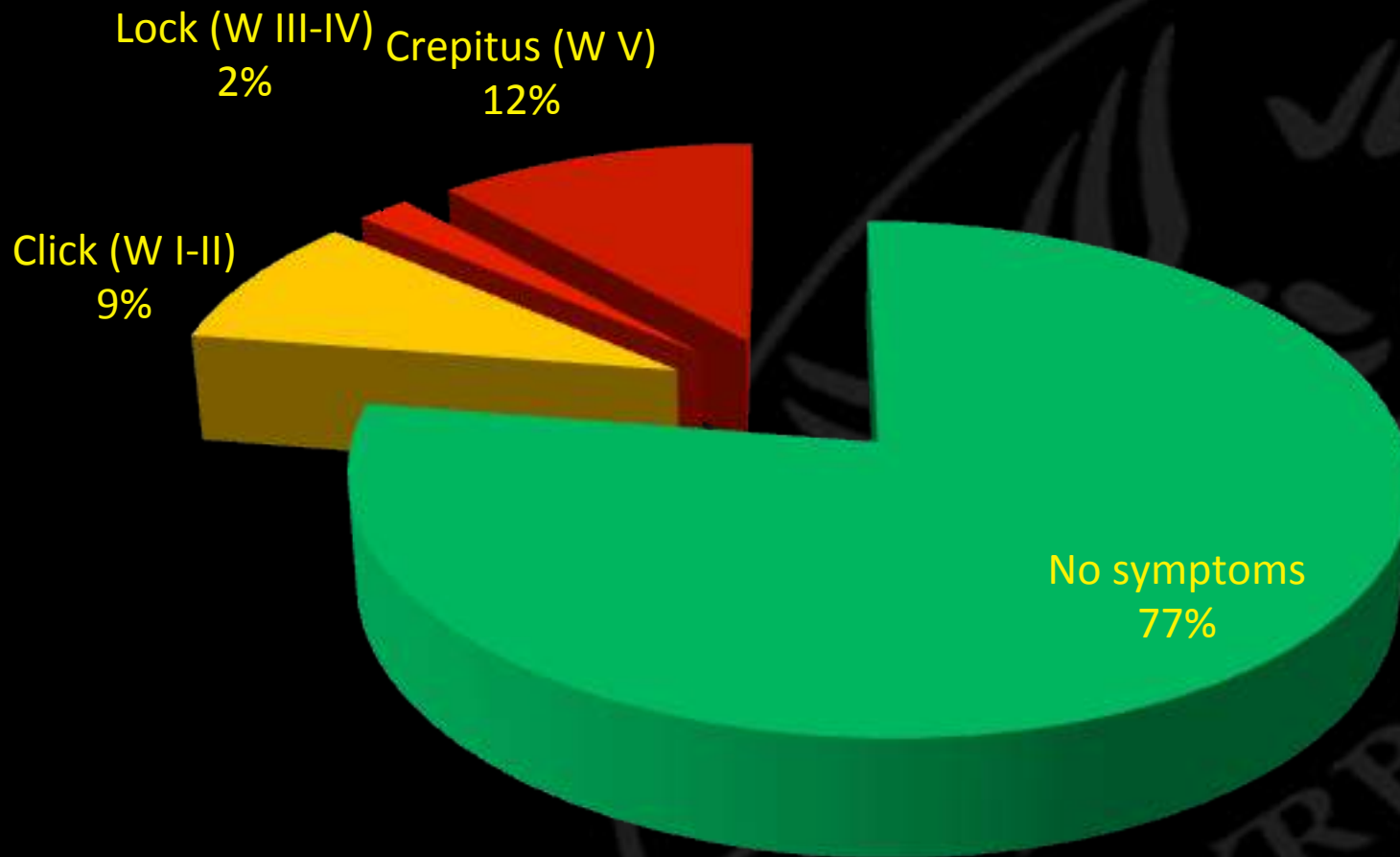
RESTRICTED JAW MOVEMENTS

MAIN SYMPTOMS 696 TMJ



PRE

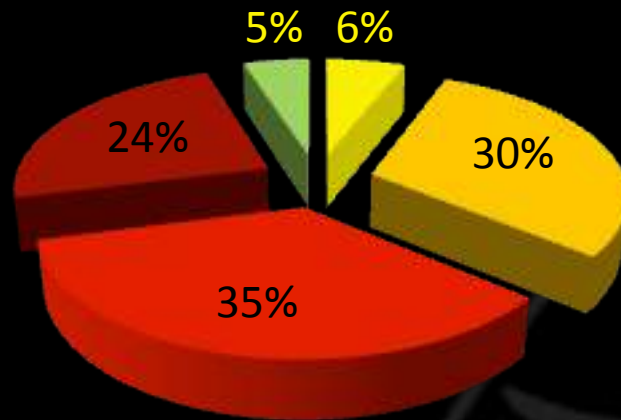
MAIN SYMPTOMS 696 TMJ



POST

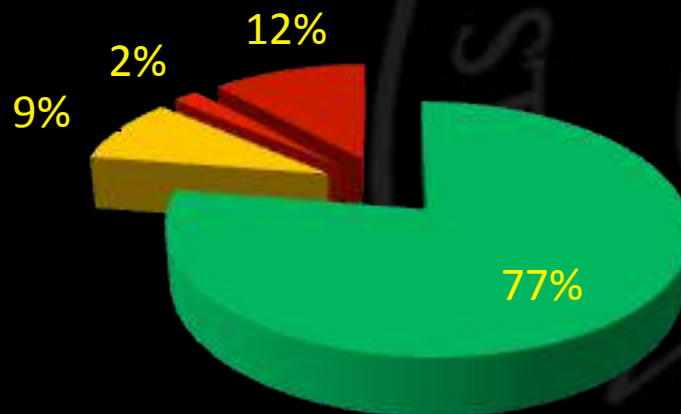
MAIN SYMPTOMS 696 TMJ

PRE



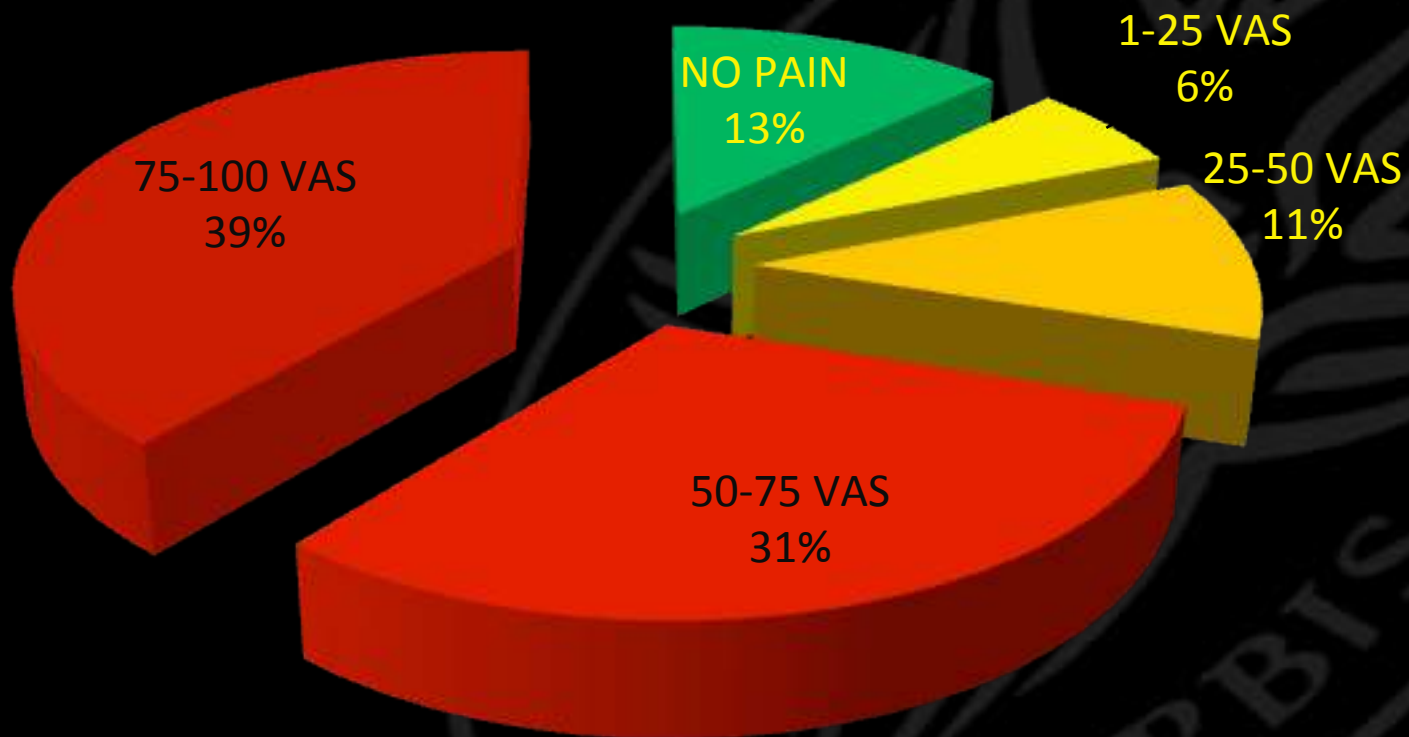
- Only pain
- Click (W I-II)
- Lock (W III-IV)
- Crepitus (W V)
- Condile luxation

POST



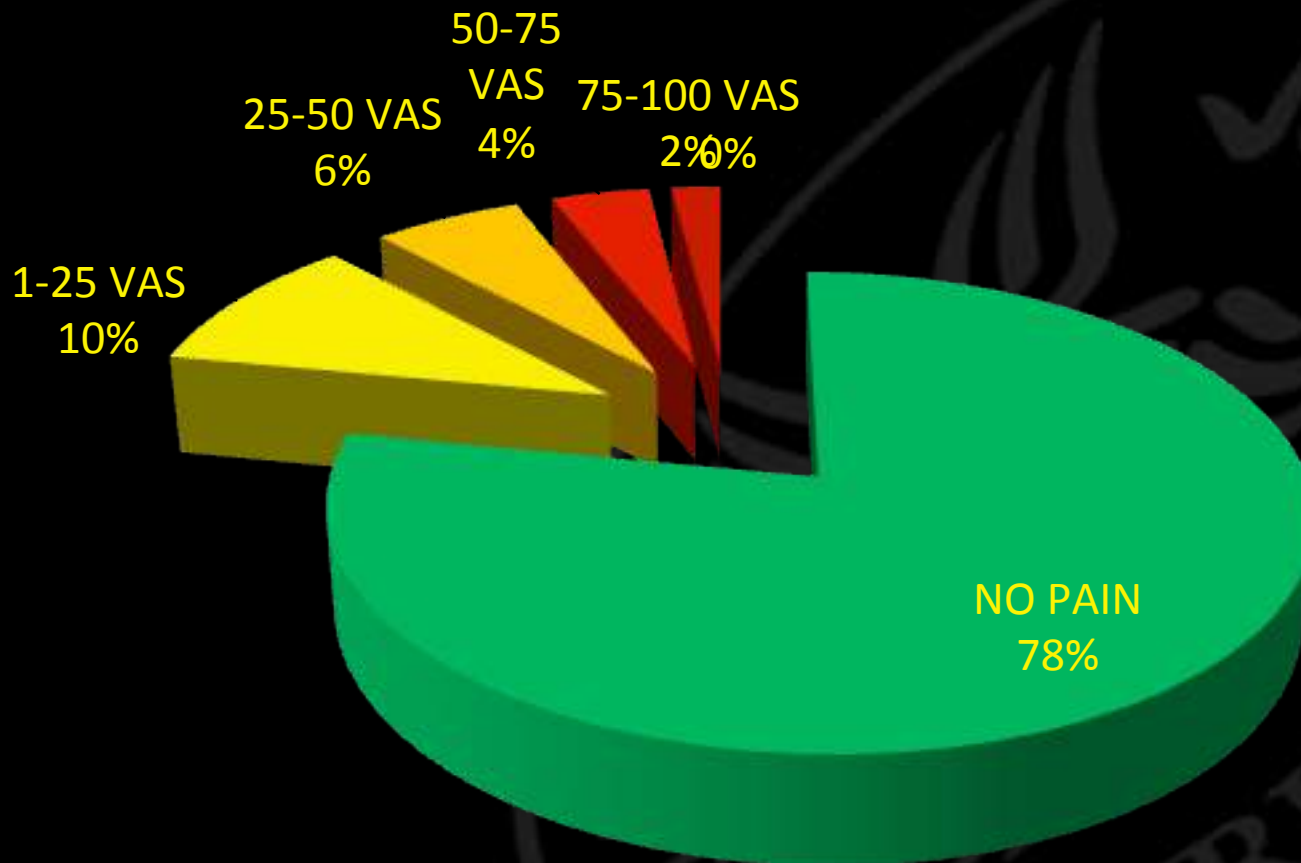
- No symptoms
- Click (W I-II)
- Lock (W III-IV)
- Crepitus (W V)

LOCAL PAIN 696 TMJ



PRE

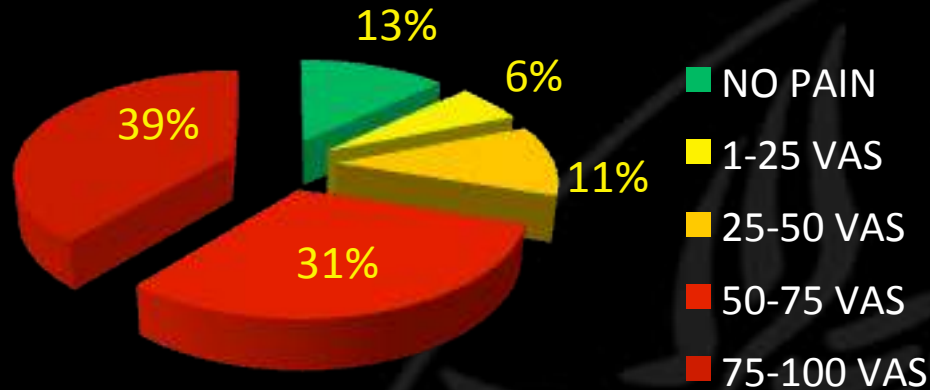
LOCAL PAIN 696 TMJ



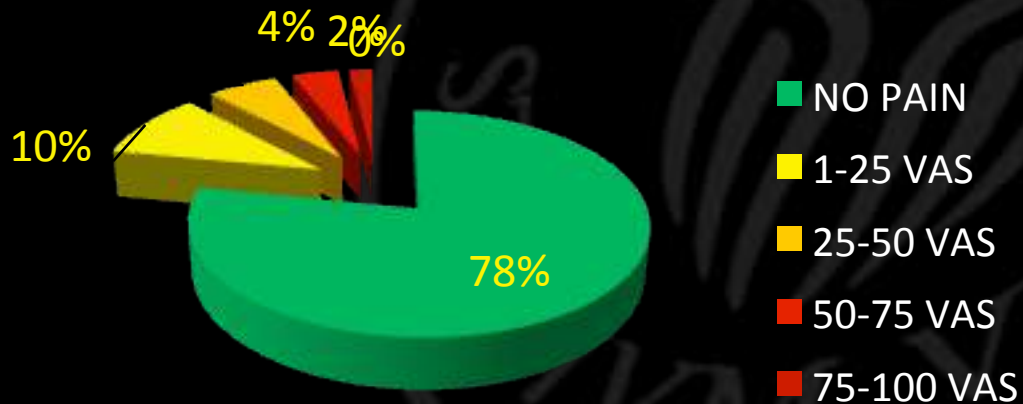
POST

LOCAL PAIN 696 TMJ

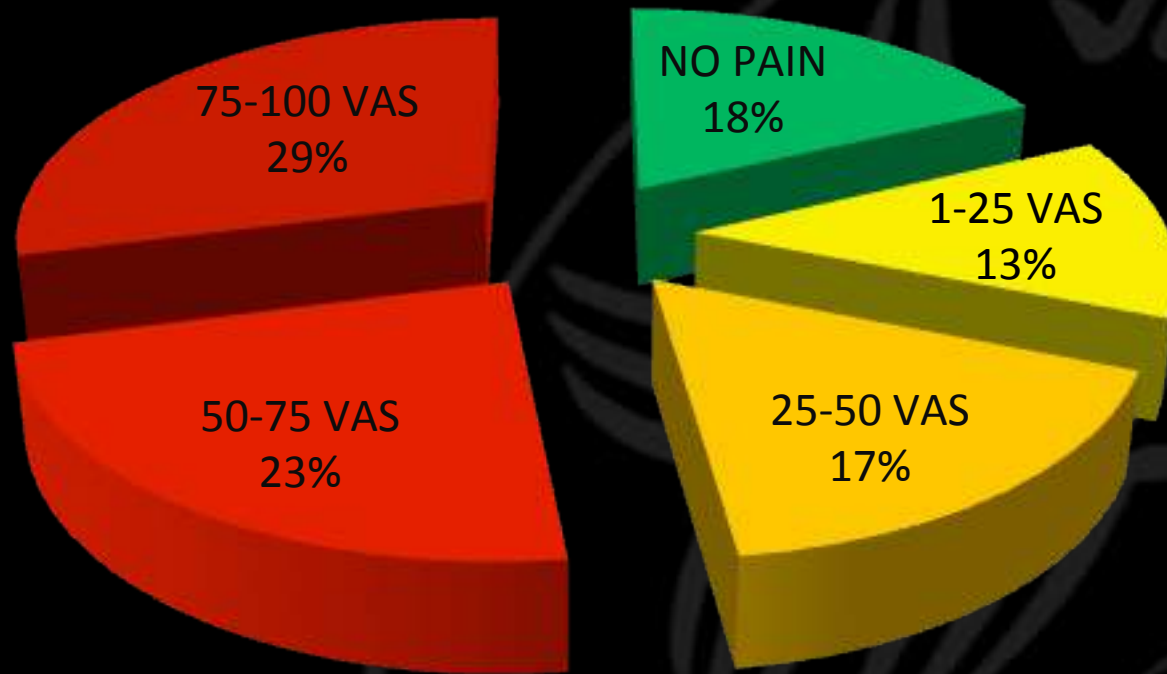
PRE



POST

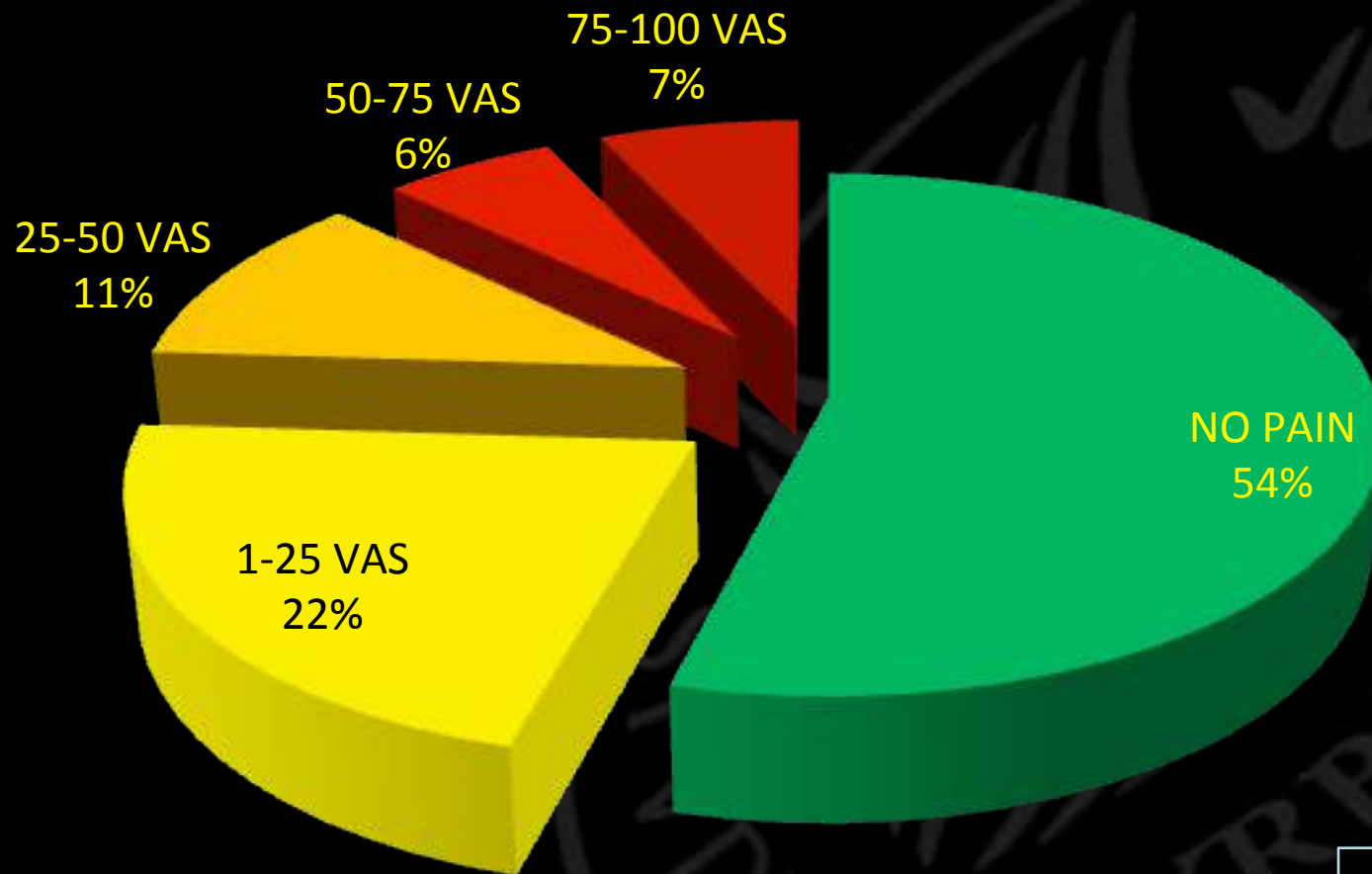


HEADACHE AND NECK PAIN 352 PATIENTS



PRE

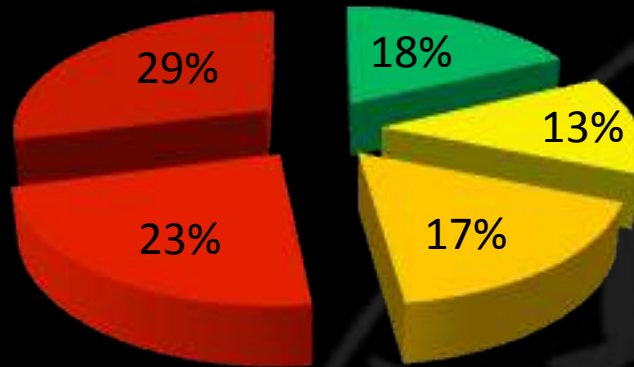
HEADACHE AND NECK PAIN 352 PATIENTS



POST

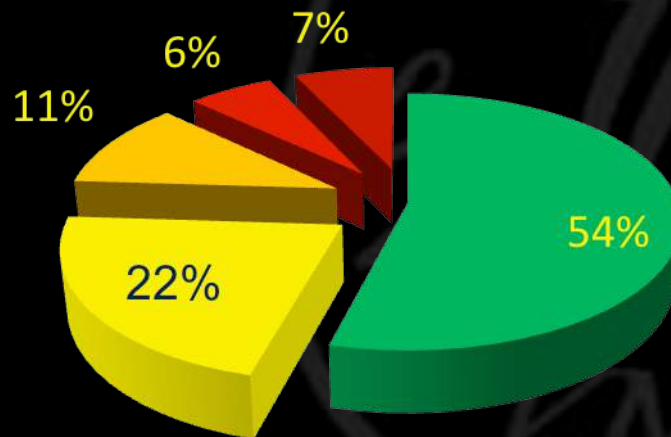
HEADACHE AND NECK PAIN 352 PATIENTS

PRE



- NO PAIN
- 1-25 VAS
- 25-50 VAS
- 50-75 VAS
- 75-100 VAS

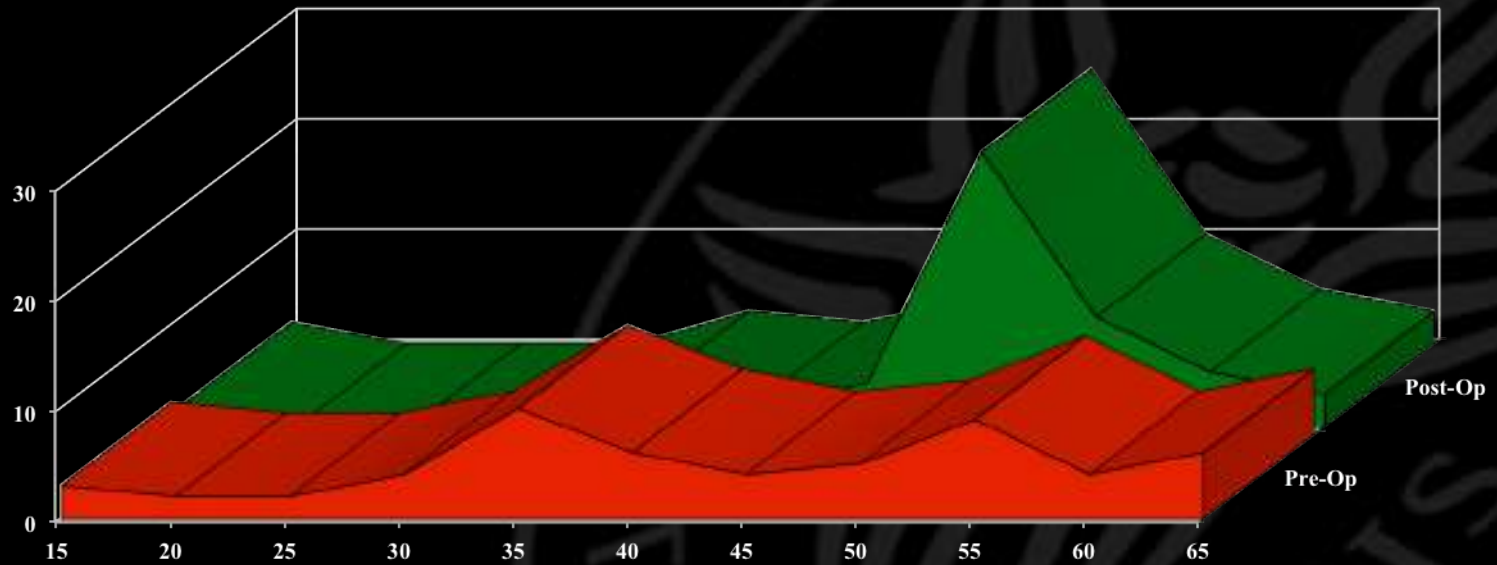
POST



- NO PAIN
- 1-25 VAS
- 25-50 VAS

MAXIMUM MOUTH WIDE OPENING 352 PATIENTS

TMJ Dysfunction Surgery



maximum mouth opening (mm)

EARLY COMPLICATIONS (352 pts)



Transient ipofunction of the frontal branch of the facial nerve	3,4%
Extra articular/intra-articular haematoma	0,2%
Infections	0
Other	0,4%

LATE COMPLICATIONS (352 pts)



facial nerve paralysis	0
ankilosys	0
Recurrence (need of further surgical intervention)	3%
Others	0

SAMPLE OF 352 FOLLOW-UP PATIENTS

90.5% OF THE PATIENTS OF THE SAMPLE WOULD UNDERGO FURTHER SURGICAL INTERVENTION EVEN IN CASE OF RECURRENCE



• **317 YES**

• **35 NO**

ADEQUATE SURGICAL APPROACH



ACCURATE DIAGNOSIS

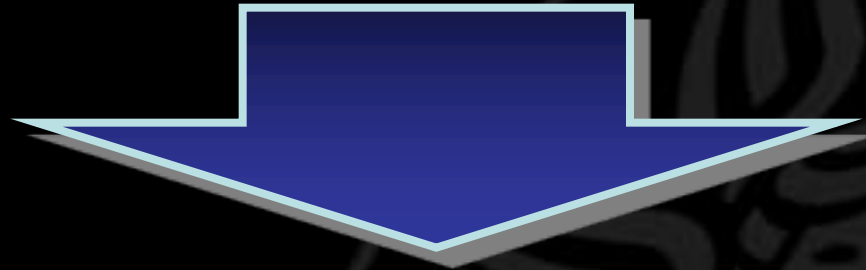
EVALUATION OF BIOMECHANIC RESTICTIONS

PRE-SURGICAL OCCLUSAL REHABILITATION

MINI-INVASIVE SURGICAL PROCEDURE

ACCURATE FOLLOW-UP

MANDATORY



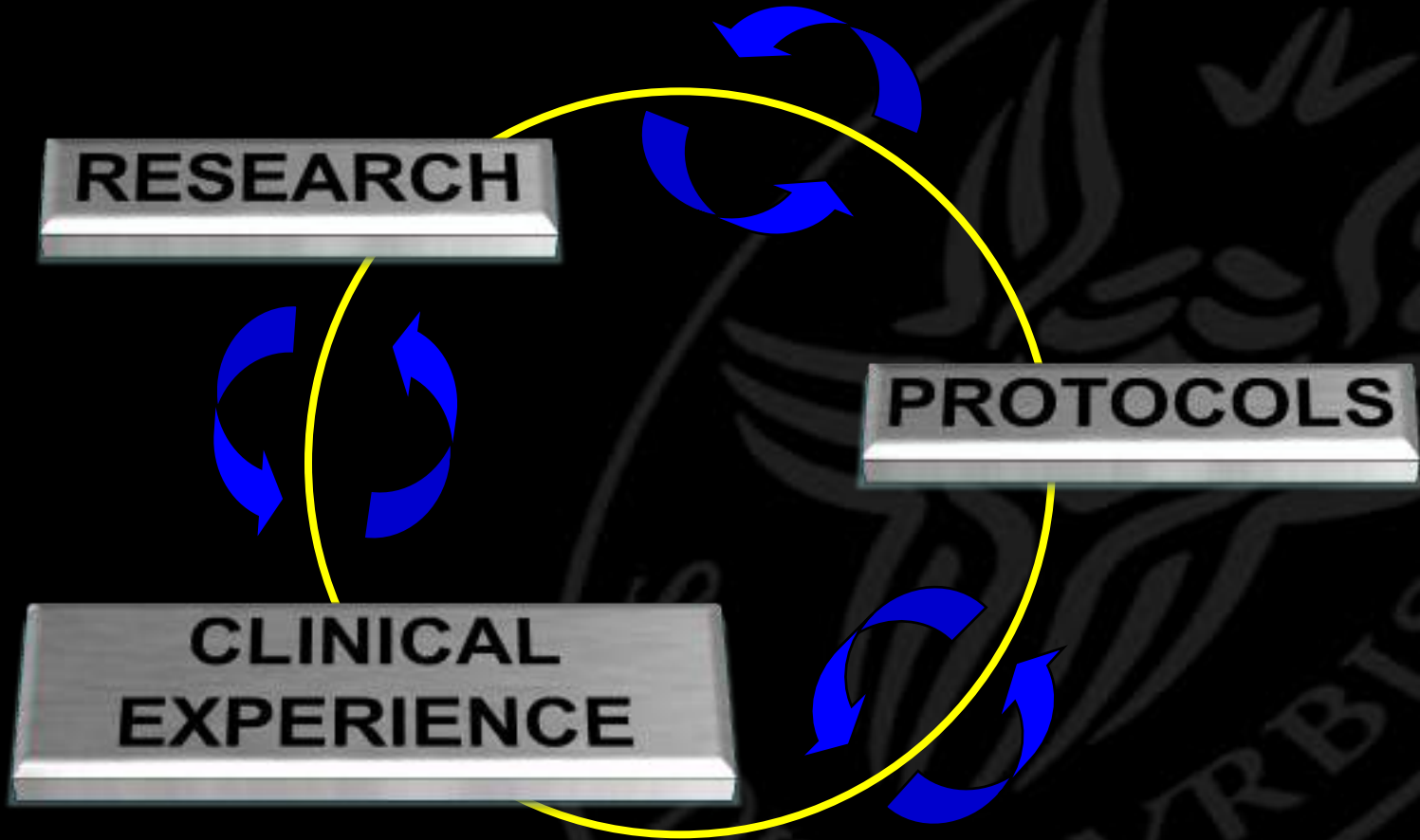
MULTIDISCIPLINARY APPROACH

CONCLUSIONS

RESEARCH

PROTOCOLS

**CLINICAL
EXPERIENCE**



IN COLLABORATION WITH



GIULIO BOSCO MD 3RD YEAR MAXILLO-FACIAL RESIDENT



Thank you!

