

PHYSIOTHERAPY

-COURSE 3-

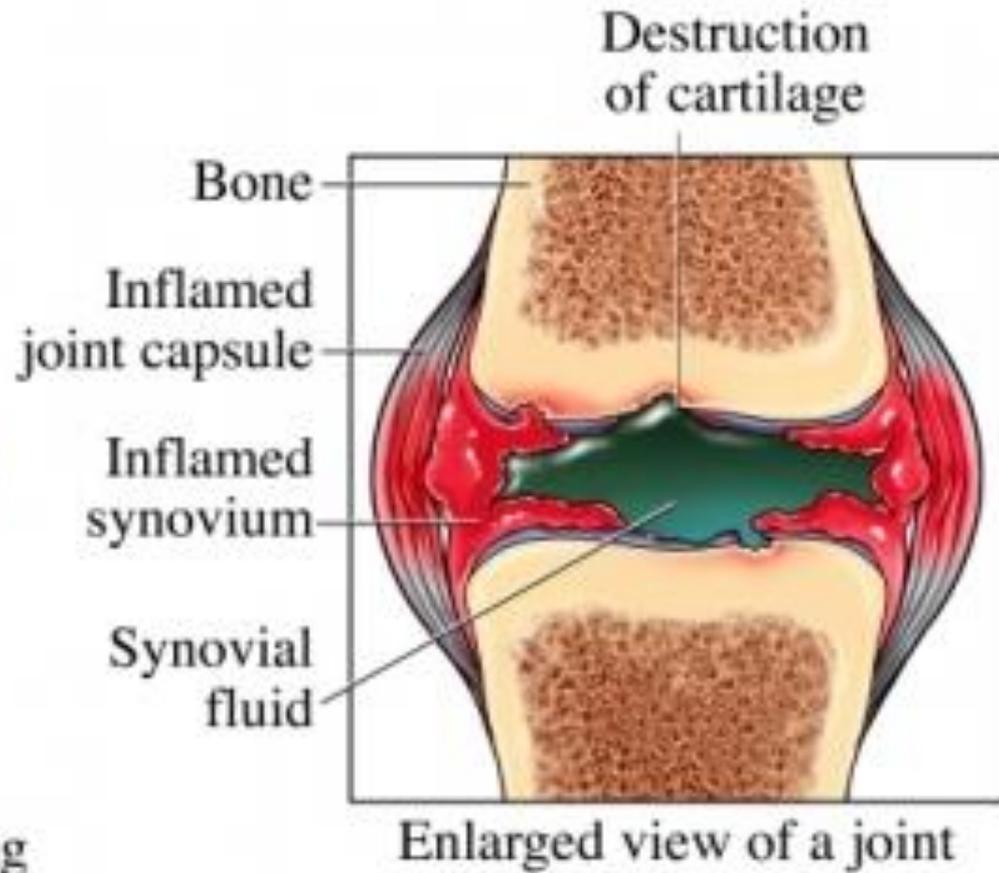
INFLAMMATORY RHEUMATIC DISEASES

RHEUMATOID ARTHRITIS (RA)

- * Long-term autoimmune disorder that primarily affects **joints**.
- * It typically results in warm, swollen, and painful joints.
- * Pain and stiffness often worsen following rest.
- * Most commonly, the wrist and hands are involved, with the same joints typically involved on both sides of the body.



Joint pain occurring in various joints



Destruction of cartilage

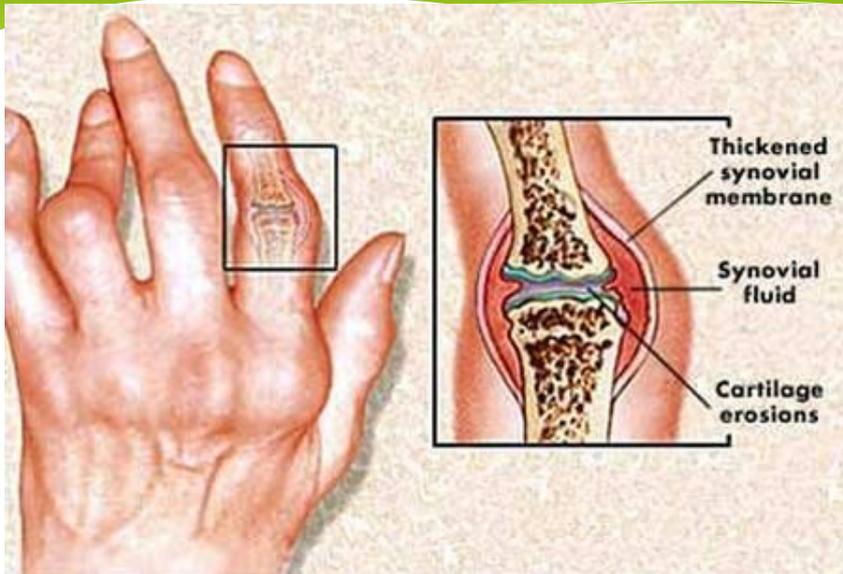
Bone

Inflamed joint capsule

Inflamed synovium

Synovial fluid

Enlarged view of a joint



Rheumatoid arthritis (late stage)

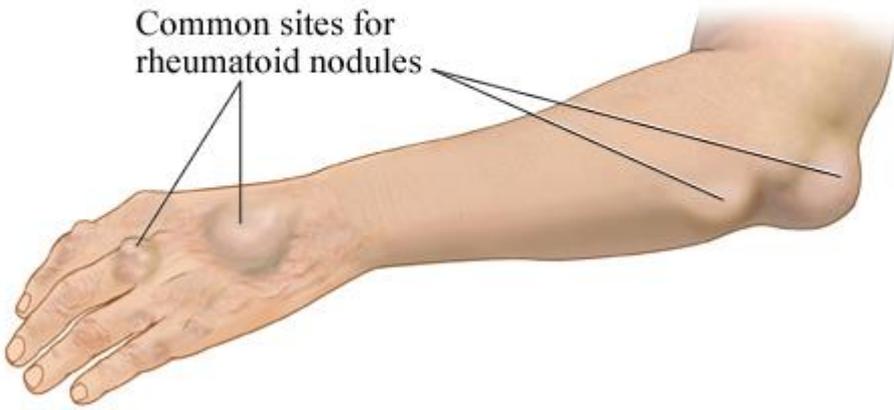
Boutonniere
deformity
of thumb

Ulnar deviation of
metacarpophalangeal
joints

Swan-neck deformity
of fingers







RHEUMATOID ARTHRITIS (RA)

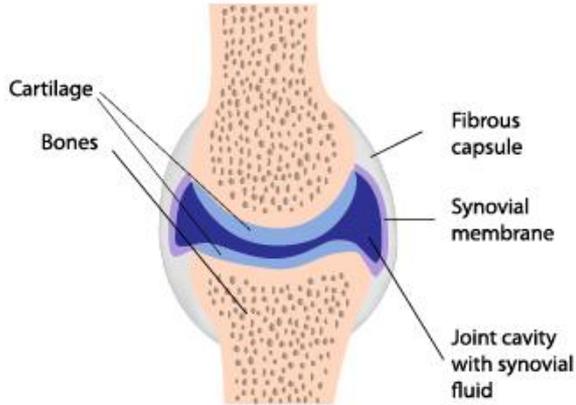
- * While the cause of rheumatoid arthritis is not clear, it is believed to involve a combination of genetic and environmental factors.
- * The underlying mechanism involves the body's immune system attacking the joints.
- * This results in inflammation and thickening of the joint capsule. It also affects the underlying bone and cartilage.

RHEUMATOID ARTHRITIS (RA)

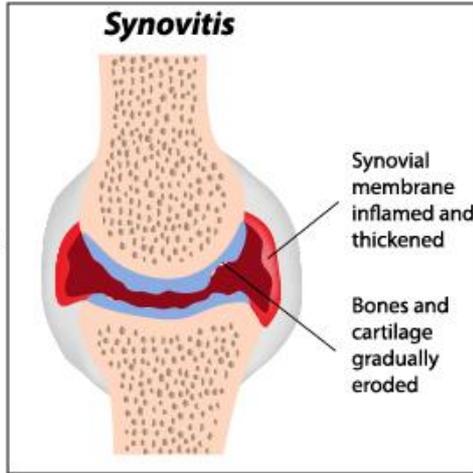
- * Arthritis of joints involves inflammation of the synovial membrane.
- * Joints become swollen, tender and warm, and stiffness limits their movement.
- * With time, multiple joints are affected (polyarthritis).

Synovitis

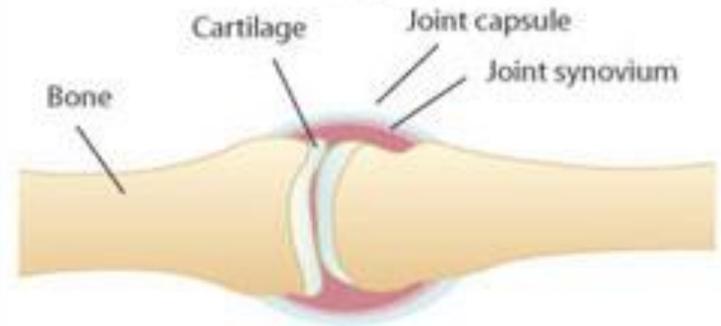
Healthy joint



Synovitis

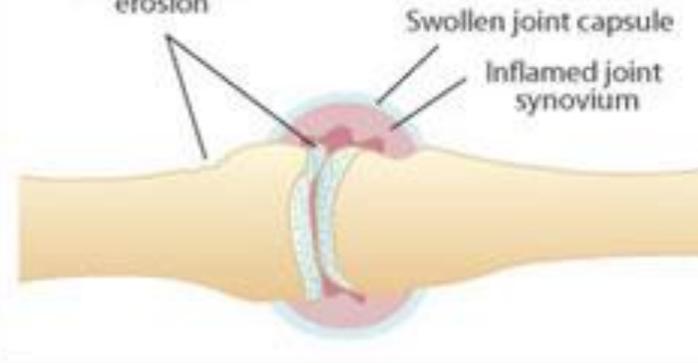


Normal joint

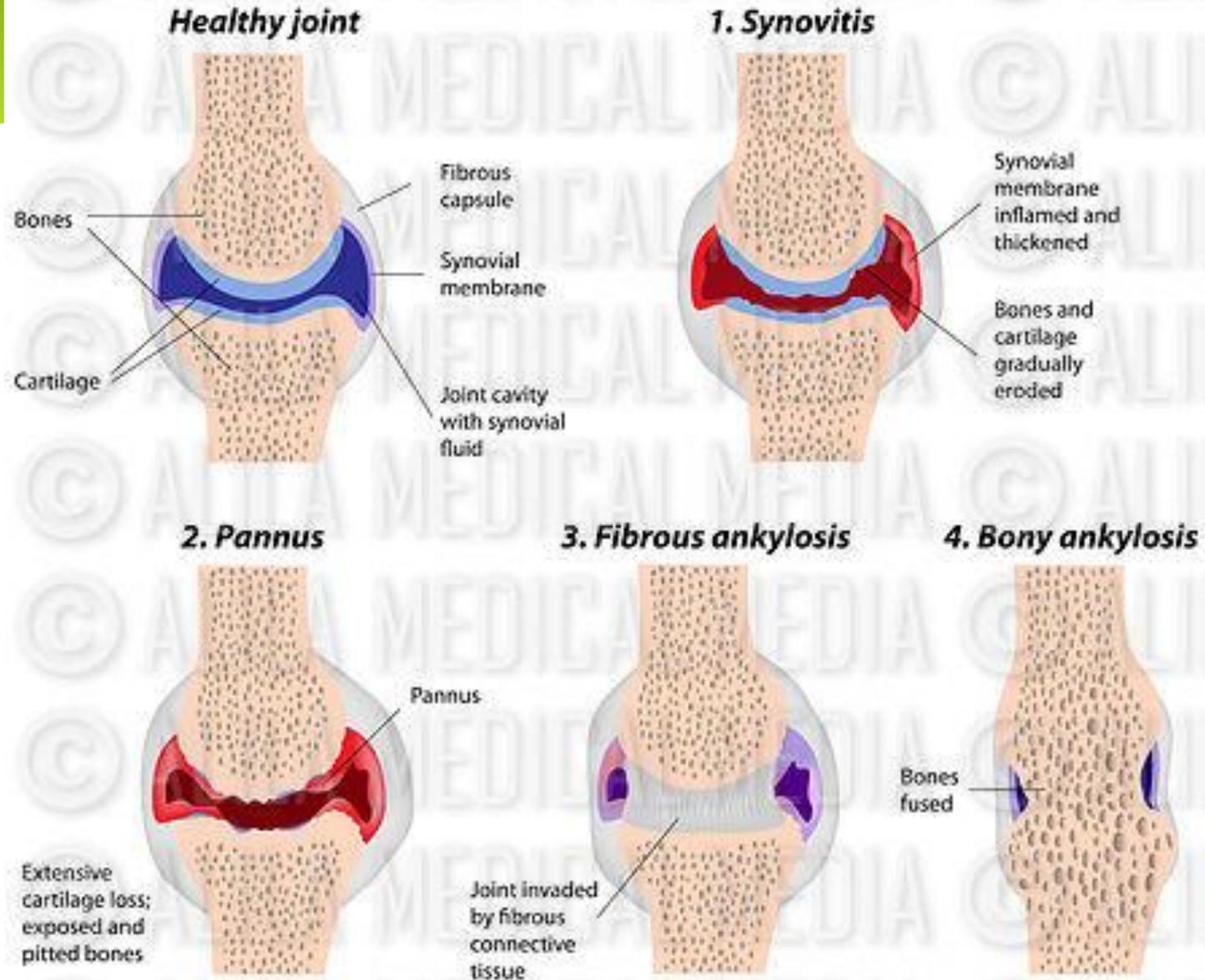


Joint affected by rheumatoid arthritis

Bone and cartilage erosion



Stages of Rheumatoid Arthritis



RHEUMATOID ARTHRITIS (RA)

- * Most commonly involved are:
 - small joints of the hands and feet
 - cervical spine
- * Larger joints like the shoulder and knee can also be involved.
- * Synovitis can lead to tethering of tissue with **loss of movement** and **erosion of the joint surface** causing deformity and loss of function.

RHEUMATOID ARTHRITIS (RA)

- * The prevalence of RA is **1%** worldwide.
- * RA affects women more commonly than men in 3:1 ratio
- * Age ranges between 35 and 45 years.

RHEUMATOID ARTHRITIS (RA)

- * Temporomandibular joint (TMJ) is very rare to be affected in the early phase of the disease, thus posing diagnostic challenges for the dentist.
- * The TMJ is affected in 17% of adults and children with RA, but it is usually among the last joints involved.

RHEUMATOID ARTHRITIS (RA)

* **Clinical findings:**

- Pain
 - Swelling
 - Limited movement
 - Crepitation
-
- Malocclusion of the teeth and anterior open bite may occur in advanced stages.

RHEUMATOID ARTHRITIS (RA)

- * Preauricular pain or sensitivity during joint movement.
- * The joints are tender upon pressure, and there is morning stiffness usually lasting more than 30 min and decreased masticatory force.
- * It has been suggested that compression of retrodiscal tissue may be the cause of pain in TMJ.
- * Other suggested causes are inflammatory changes secondary to internal derangement, stretching of the joint capsule and synovitis.

RHEUMATOID ARTHRITIS (RA)

- * In children, destruction of the condyle results in mandibular growth disturbance and facial deformity.
- * Ankylosis may follow.
- * TMJ ankylosis secondary to RA is generally found in the later stages of the disease, but it is a rare finding and is not well documented.

RHEUMATOID ARTHRITIS (RA)

- * X-rays of the TMJ are usually negative in early stages but later show bone destruction, which may result in an anterior open-bite deformity.
- * The diagnosis is suggested by TMJ inflammation associated with polyarthritis and is confirmed by other findings typical of the disease.

RHEUMATOID ARTHRITIS (RA)

- * The radiographic changes of TMJ include:
 - flattening of the mandibular head
 - cortical erosion
 - gradual decrease in joint space due to granulation
 - deossification
 - pencil head or spiked deformity of the condylar head
 - sub cortical cysts.

- * Destruction of the TMJ in RA patients is correlated to the severity and duration of the disease.

Rheumatoid arthritis (RA) is a disease in which one's immune system mistakes healthy tissues (primarily the joints) to be pathogens. This results in inflammation, cartilage and bone destruction, and deformity.

People of all ages get RA... even kids. The treatments are often as disabling as the disease itself. There is no cure. Spread the word - awareness can lead to further research and the destruction of harmful arthritis misconceptions.

**NORMAL JAW JOINT (TMJ).
NOTICE HOW IT IS ROUND.**



RHEUMATOID ARTHRITIS (RA)

* The severity of the radiographic changes is graded according to Larsen's classification into six grades (0–V) based on the radiographic appearance:

0: Normal

I: Slight abnormality, joint space is slight narrow

II: Early abnormality, joint space is slightly narrow, with erosion,
III-moderate destruction, joint space is narrow and eroded

IV-severe destruction, joint space is narrow, with erosions and bone deformity

V-mutilating abnormality, disappearance of joint space, with erosion and bone deformity.

RHEUMATOID ARTHRITIS (RA)

* Blood tests

- **rheumatoid factor** (RF, a non-specific antibody)
- **ACPAs** (measured as anti-CCP antibodies)
- Erythrocyte sedimentation rate (ESR)
- C-reactive protein
- Full blood count
- Kidney function
- Liver enzymes

JUVENILE RHEUMATOID ARTHRITIS

- * Juvenile idiopathic arthritis (JIA) is the most common rheumatic disease in childhood.
- * It affects synovial joints and can involve the TMJ.

JUVENILE RHEUMATOID ARTHRITIS

- * Regularly measuring the maximum mouth opening is recommended in patients with JIA.
- * Restricted or decreasing mouth opening should be considered a sign of TMJ involvement even in the absence of pain, tenderness or mandibular asymmetry.
- * The use of ultrasound for the screening for early TMJ arthritis in patients with JIA is not recommended at this point in time as its sensitivity is too low to detect TMJ arthritis before structural damage has occurred.

JUVENILE RHEUMATOID ARTHRITIS

* **Active arthritis**

It was diagnosed when at least two of the following six criteria were met:

- a history of TMJ pain
- maximum mouth opening (with correction for overbite) <40 mm
- deviation in opening/closure of the mandible
- crepitation on either TMJ
- pain on maximum mouth opening or on compression/distraction test or on TMJ palpation
- pain on palpation of the masticatory muscles.

JUVENILE RHEUMATOID ARTHRITIS

- * Currently **MRI** appears to be the only method able to diagnose early TMJ arthritis, but its validity needs to be studied further.
- * Prospective studies need to be initiated to find risk factors for TMJ involvement in patients with JIA and to develop a feasible screening method for the early diagnosis of TMJ arthritis.

RHEUMATOID ARTHRITIS (RA)

- * Though the treatment of RA is complex, multidisciplinary and noncurative, the goal is
 - to maintain function
 - to prevent joint and organ damage until the disease enters remission.

TEMPOROMANDIBULAR JOINT OSTEOARTHRITIS

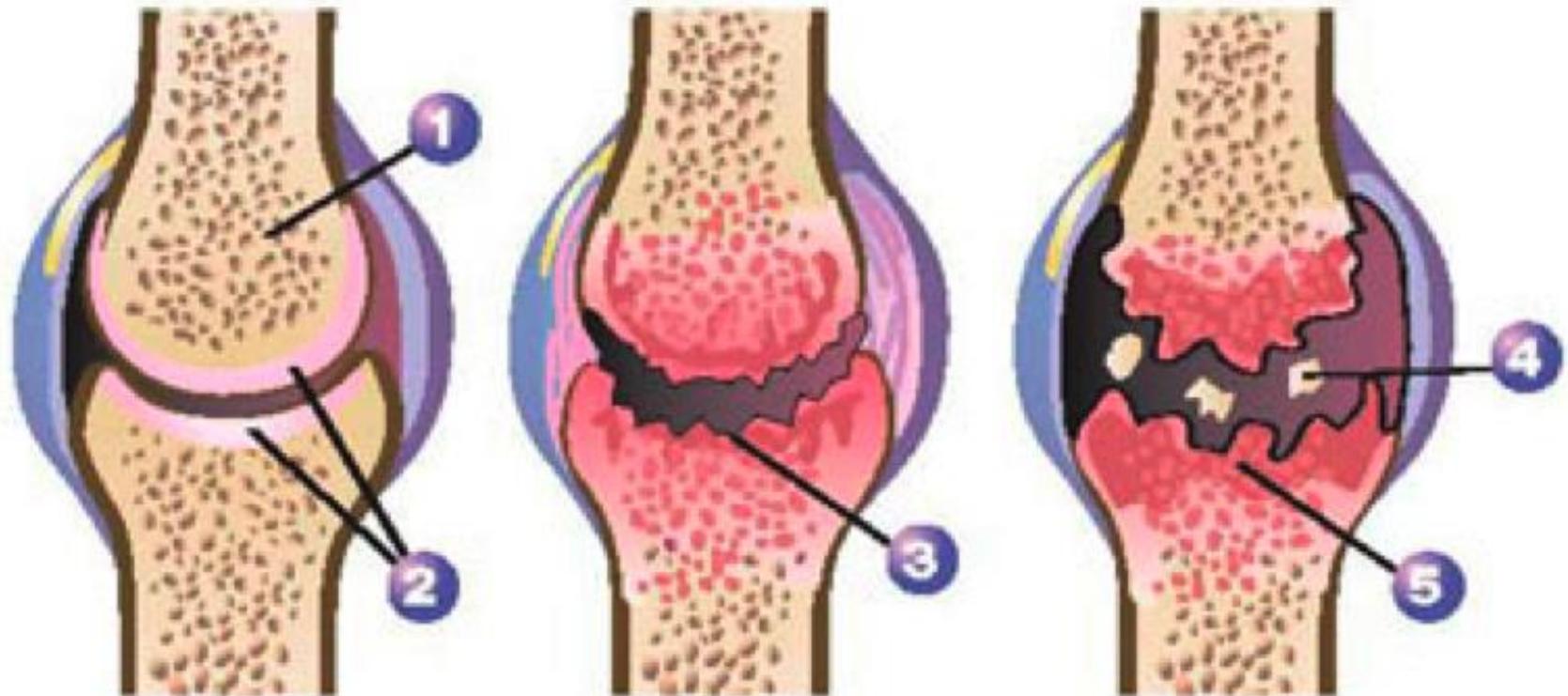
Definition

- * Temporomandibular joint osteoarthritis (OA) is a chronic disease, which manifests with progressive degenerative changes of joint structures.
- * OA develops because of imbalance between reparative and degenerative processes of the joint.

Definition

- * TMJ OA is an age-related degenerative joint disease.
- * It results in progressive destruction of articular tissues in the TMJ condyle and glenoid fossa.

Evolution of Osteoarthritis



1. *Bone*
2. *Cartilage*
3. *Thinning of cartilage*

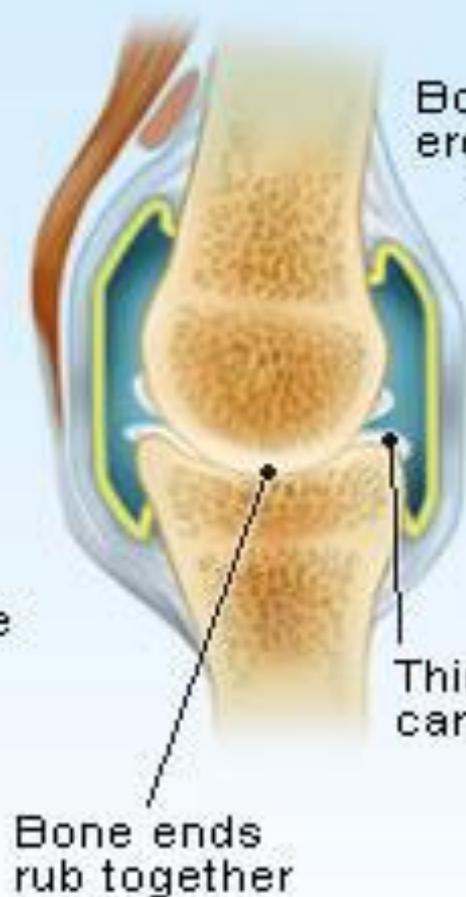
4. *Cartilage remnants*
5. *Destruction of cartilage*

Normal Joint



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Osteoarthritis



Rheumatoid Arthritis



Normal and Arthritic Joints

Clinical symptoms

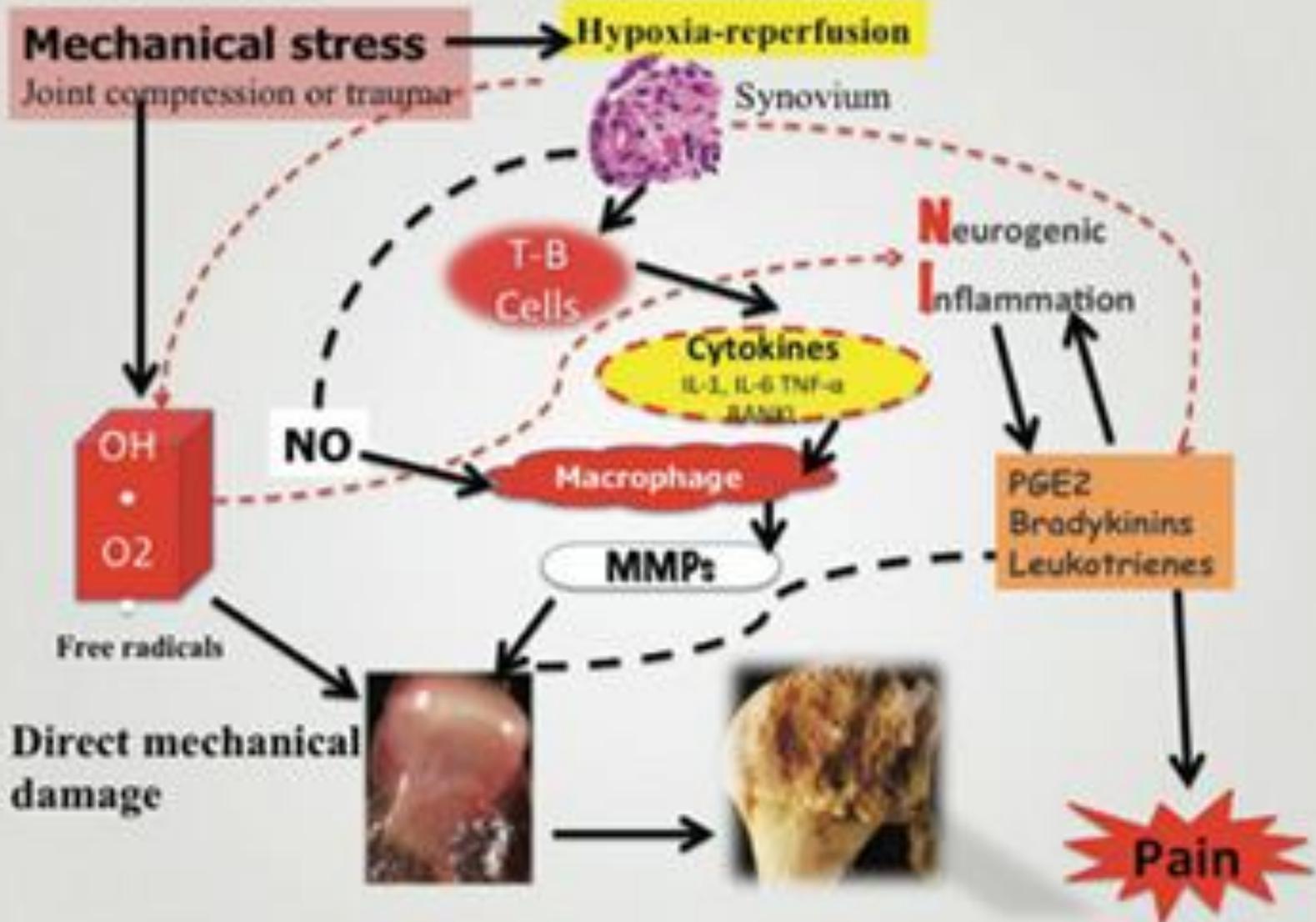
- * TMJ OA might not be clinically manifested and might be accidentally found on panoramic radiograph during the initial phase.
- * The first clinical symptoms include sound phenomena associated with jaw movements
 - crepitus
 - clicking in case of articular disc derangement or perforation.

Clinical symptoms

- * With the progression of degenerative changes, pain and restriction of mouth opening usually occur.
- * In the late stages of the disease, the height of the condylar process may be shortened.
- * This condition leads to anterior open bite and development of Angle Class II.

Pathogenesis of TMJ OA

- * Increased stress to joint structures that leads to an increase in intra-articular pressure and continuous disturbance of blood supply of the retrodiscal tissue.
- * Increased stress may be caused by **extensive load** (macrotrauma or chronic microtraumatization as bruxism or functional overload).



Classification

* **Primary TMJ OA**

- increased stress in normal joint structures

* **Secondary TMJ OA**

- Abnormal or even normal load acting against compromised joint structures
 - congenital collagen defects
 - metabolic diseases
 - rheumatoid arthritis
 - infectious diseases