
Osteoarthritis

Definition

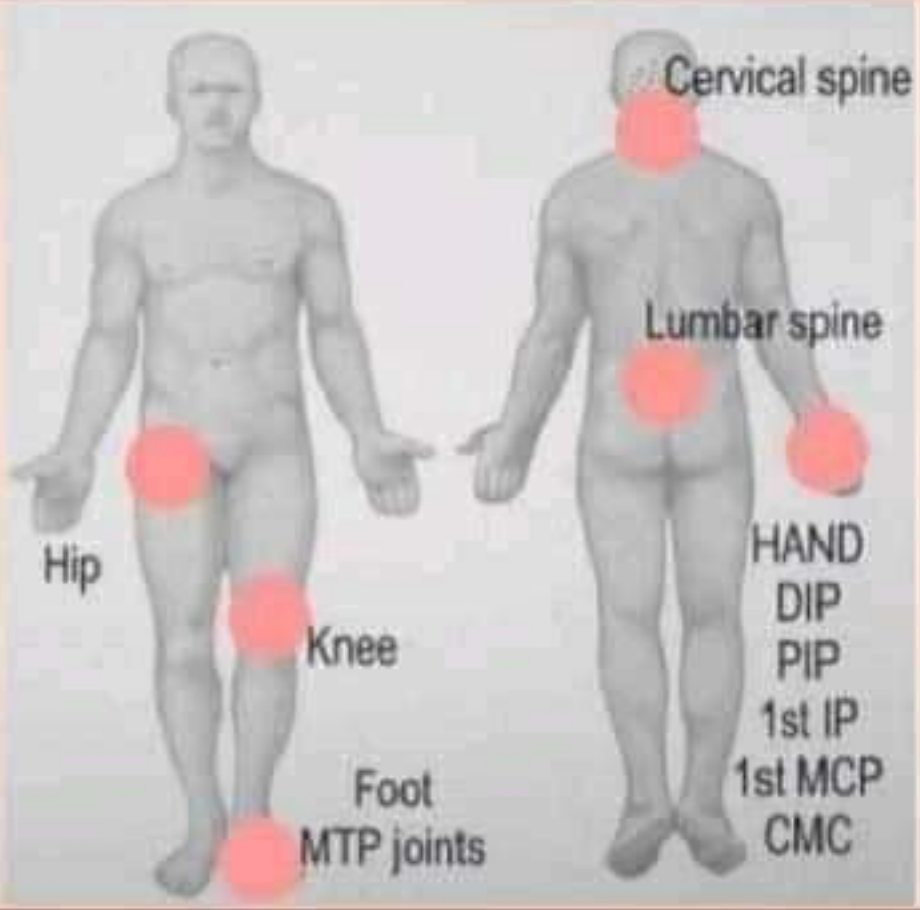
Osteoarthritis (OA), which is also known as osteoarthrosis or degenerative joint disease (DJD):

- is a progressive disorder of the joints caused by gradual loss of cartilage and resulting in the development of bony spurs and cysts at the margins of the joints.

Epidemiology

- OA is the most common form of arthritis and the most common joint disease
- Characterized by degeneration of articular cartilage
- Leads to fibrillation, fissures, gross ulceration and finally disappearance of the full thickness of articular cartilage

Commonly Affected Joints

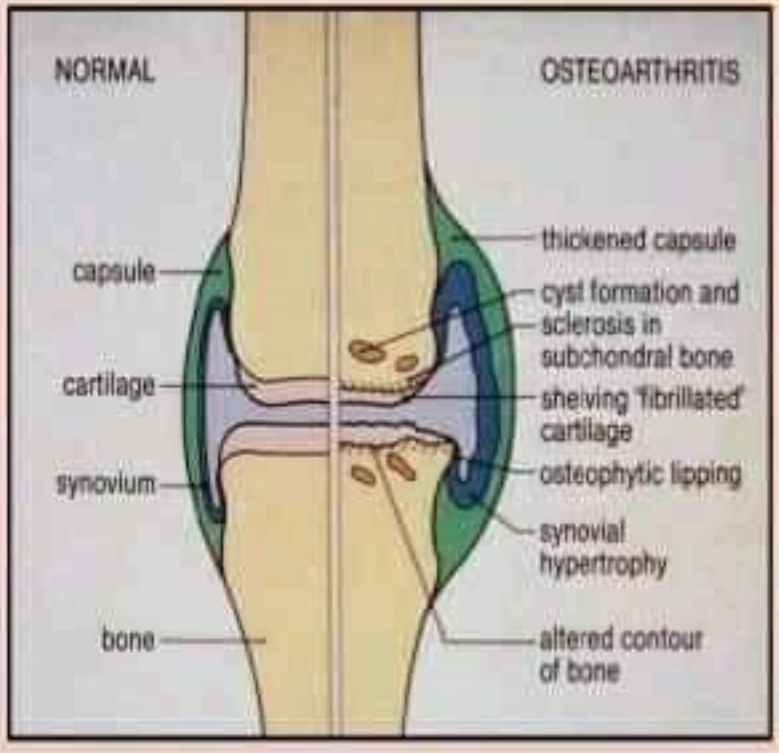


Joint Protective Mechanisms

- ✓ Joint Capsule
- ✓ Ligaments
- ✓ Muscle
- ✓ Sensory afferents
- ✓ Underlying bone

OA is primarily disease of cartilage.
Il-1 is a potent pro-inflammatory cytokine, which capable of inducing chondrocytes and synovial cells to synthesize MMPs. MMPs is responsible of degradation of articular cartilage.

In addition, IL-1 inhibits synthesis of collagen II, proteoglycans and growth factor B stimulated chondrocyte proliferation



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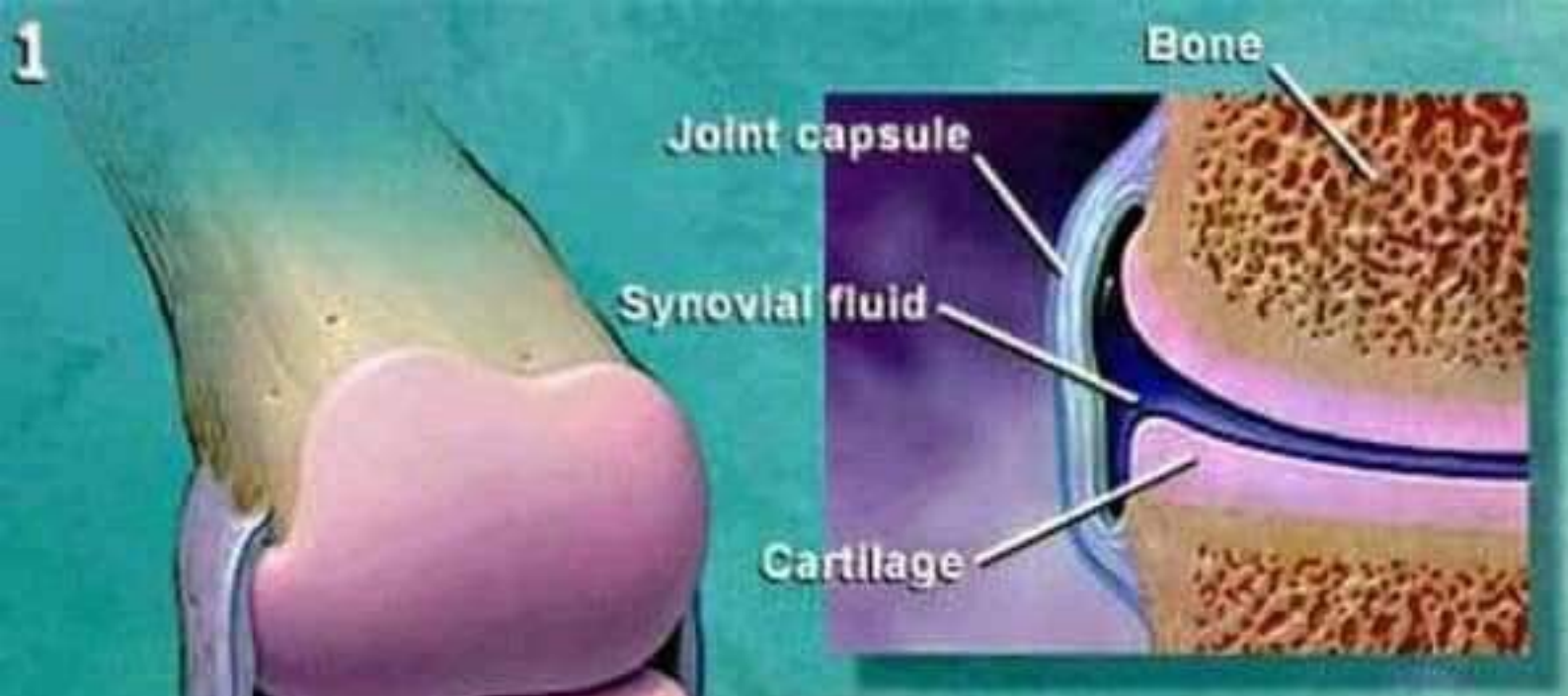

In a normal joint, healthy cartilage, lubricated by synovial fluid, cushions the bones and allows them to move easily.

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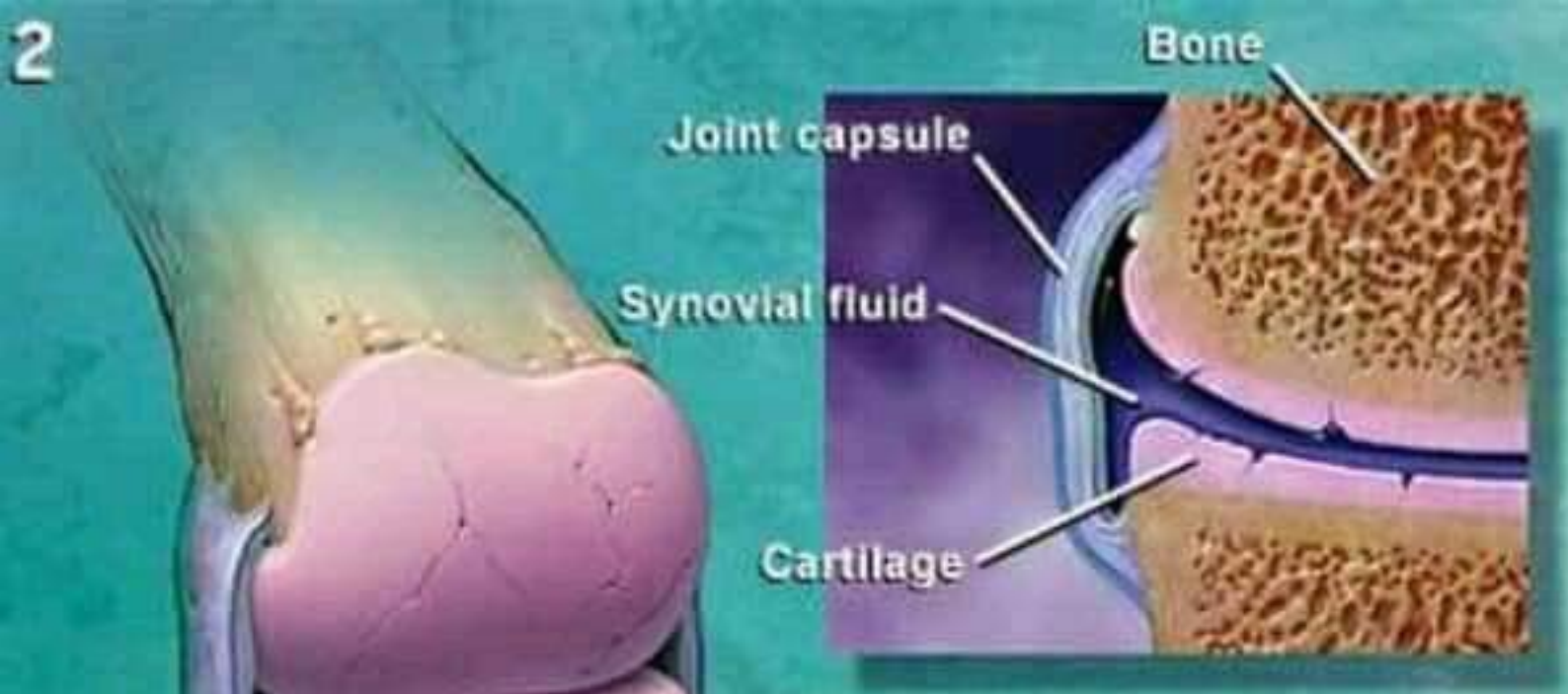

Osteoarthritis causes the cartilage to begin breaking down, first making it thinner and then creating cracks in its surface.

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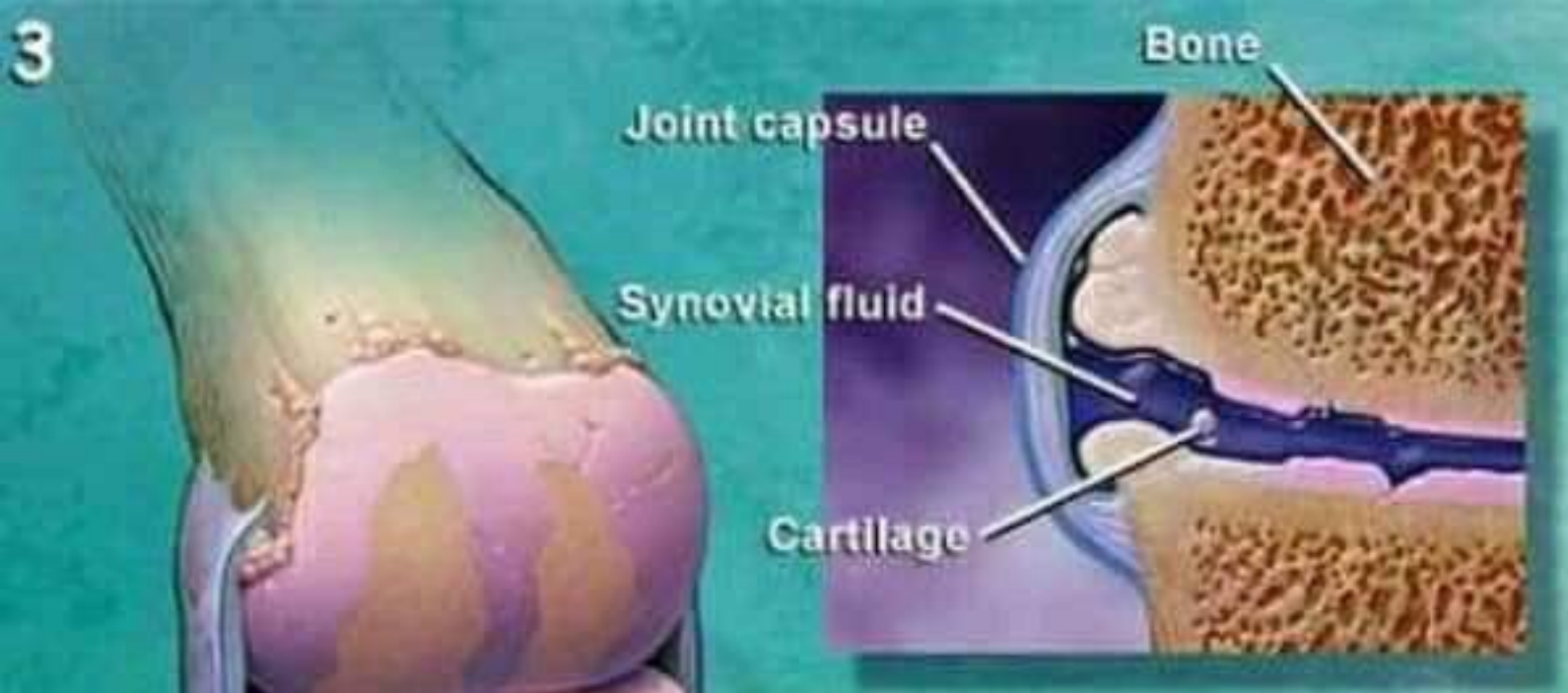

Gaps in the cartilage can expand until they reach the bone itself.

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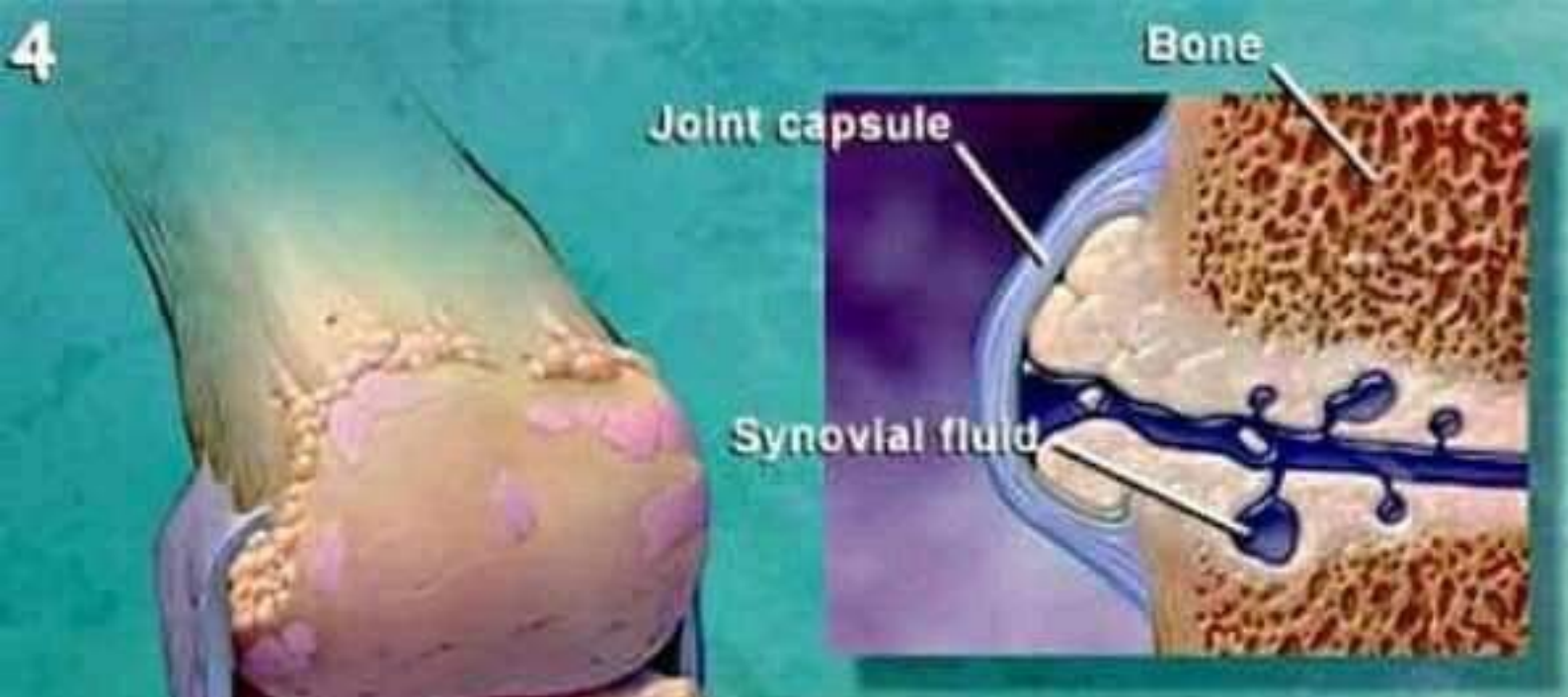

Synovial fluid leaks into cracks which can form in the bone's surface when this replacement cartilage wears away. This causes further damage and in some cases can lead to cysts in the bone or other deformities.

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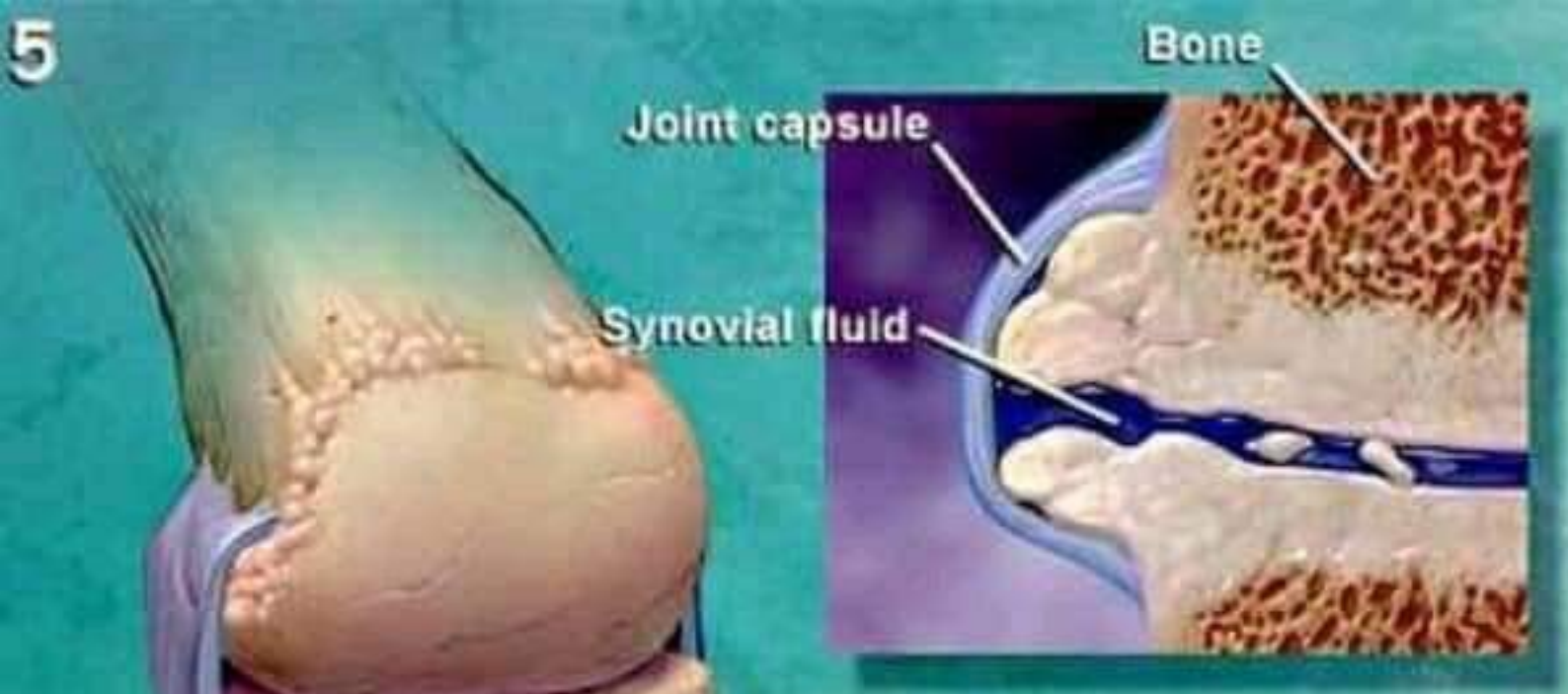

If not treated, damage can progress to the point where the bones in the joint become seriously and permanently deformed.

Risk Factors

Age

- Age is the most potent risk factor for OA
- OA is rare in under age 40
- OA occurs in more than 50% of persons over age 70

Risk Factors

Female gender

In general, arthritis occurs more frequently in women than in men. Before age 45, OA occurs more frequently in men; after age 45, OA is more common in women. OA of the hand is particularly common among women.

Risk Factors

Joint's Abnormalities

- People with joints that move or fit together incorrectly, such as bow legs, a dislocated hip, or double-jointedness, are more likely to develop OA in those joints.

Risk Factors

Obesity

- Being overweight during midlife or the later years is among the strongest risk factors for OA of the knee

Risk Factors

Joint overuse or injury

- Traumatic injury (ex. Ligament or meniscal tears) to the knee or hip increases your risk for developing OA in these joints. Joints that are used repeatedly in certain jobs may be more likely to develop OA because of injury or overuse

Sources of pain

- Increase hemostatic pressure within bone rise in OA
- Bone marrow edema
- Synovial inflammation
- Joint effusions
- Osteophytes

Symptoms & Signs

- ✓ Pain increases with activity and worse at night.
- ✓ Morning Stiffness less than 30 mins
- ✓ Swelling
- ✓ Deformities
- ✓ Joint instability
- ✓ Loss of function
- ✓ Neurological signs if spine Involved.
- ✓ Crepitus
- ✓ Muscle wasting

Diagnosis – Blood Tests

- No Blood tests are routinely indicated for workup of patients with OA unless symptoms & signs suggest inflammatory arthritis.

Diagnosis – Synovial Fluid

- Examination of the synovial fluid is more helpful diagnostically than an X-Ray.

- Synovial Fluid in OA:
  - **WBC<1000/mm^3**
  - **Clear color**
  - **High Viscosity**

Diagnosis – Radiography

- X-Rays are indicated to evaluate chronic hand pain and hip pain thought to be due to OA
- For knee pain, X-Ray should be obtained if symptoms or signs are not typical of OA or Pain persists after inauguration of effective treatment

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Radiographic Features

- Erosion
- Bone Cyst
- Subchondral Sclerosis
- Osteophytes
- Narrow Joint Space

Management of OA

Treatment of OA:

- Pharmacotherapy
- Non Pharmacotherapy
  - Patients with mild and intermittent symptoms may need only Non Pharmacotherapy
  - Patients with ongoing, disabling pain are likely to need both Non Pharmacotherapy and Pharmacotherapy

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Pharmacotherapy

TABLE 394-1 PHARMACOLOGIC TREATMENT FOR OSTEOARTHRITIS

Treatment	Dosage	Comments
Acetaminophen	Up to 1 g tid	Prolongs half-life of warfarin. Make sure patient is not taking other treatments containing acetaminophen to avoid hepatic toxicity.
Oral NSAIDs and COX-2 inhibitors	375–500 mg bid 1500 mg bid 600–800 mg 3–4 times a day	Take with food. Increased risk of myocardial infarction and stroke for some NSAIDs and especially COX-2 inhibitors. High rates of gastrointestinal side effects, including ulcers and bleeding, occur. Patients at high risk for gastrointestinal side effects should also take either a proton pump inhibitor or misoprostol.* There is an increase in gastrointestinal side effects or bleeding when taken with acetylsalicylic acid. Can also cause edema and renal insufficiency.
Naproxen		
Salsalate		
Ibuprofen		
Topical NSAIDs		Rub onto joint. Few systemic side effects. Skin irritation common.
Diclofenac Na 1% gel	4 g qid (for knees, hands)	
Opiates	Various	Common side effects include dizziness, sedation, nausea or vomiting, dry mouth, constipation, urinary retention, and pruritus. Respiratory and central nervous system depression can occur.
Capsaicin	0.025–0.075% cream 3–4 times a day	Can irritate mucous membranes.
Intraarticular injections		
Steroids		
Hyaluronans	Varies from 3–5 weekly injections depending on preparation	Mild to moderate pain at injection site. Controversy exists regarding efficacy.

*Patients at high risk include those with previous gastrointestinal events, persons ≥60 years, and persons taking glucocorticoids. Trials have shown the efficacy of proton pump inhibitors and misoprostol in the prevention of ulcers and bleeding. Misoprostol is associated with a high rate of diarrhea and cramping; therefore, proton pump inhibitors are more widely used to reduce NSAID-related gastrointestinal symptoms.

Non Pharmacotherapy

- Non Pharmacotherapy
  - Reduce Load on the joint
    - Avoid unnecessary stress
    - Increase muscle strength
    - Use of walking stick
    - Weight loss
  - Exercise
  - Correction of Malalignment

Lifestyle Modifications

Acetaminophen PRN

NSAIDs PRN

Celecoxib

Steroid Injections

Opioids PRN

Hyaluronan Injections

Surgical Referral

Thank you