The elbow

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OBJECTIVES:
1) ANATOMY
2) MOVEMENTS
3) CLINICAL ASSESSMENT (HISTORY & PHYSICAL EXAMINATION)
4) FRACTURES
5) DISLOCATION & PULLED ELBOW
6) DEFORMITIES
7) TENNIS ELBOW’ & GOLFER’S ELBOW
8) LOOSE BODIES
9) OSTEOARTHRITIS / OLECRANON BURSITIS / TUBERCULOSIS / RHEUMATOID ARTHRITIS
Anatomy:

- The elbow is the joint connecting the upper arm to the forearm. It is classed as a **hinge-type synovial joint**.

- It consists of two separate articulations:
  
  - Trochlear notch of the ulna and the trochlea of the humerus
  
  - Head of the radius and the capitulum of the humerus

- Note: The proximal radioulnar joint is found within same joint capsule of the elbow, but most resources consider it as a **separate articulation**.
Joint Capsule and Bursae

- Like all synovial joints, the elbow joint has a capsule enclosing the joint. This in itself is strong and fibrous, strengthening the joint. The joint capsule is thickened medially and laterally to form collateral ligaments, which stabilise the flexing and extending motion of the arm.

- A bursa is a membranous sac filled with synovial fluid. It acts as a cushion to reduce friction between the moving parts of a joint, limiting degenerative damage. There are many bursae in the elbow, but only a few have clinical importance:
- Intratendinous – located within the tendon of the triceps brachii.

- Subtendinous – between the olecranon and the tendon of the triceps brachii, reducing friction between the two structures during extension and flexion of the arm.

- Subcutaneous (olecranon) bursa – between the olecranon and the overlying connective tissue (implicated in olecranon bursitis).
Ligaments

The joint capsule of the elbow is strengthened by ligaments medially and laterally.

The radial collateral ligament is found on the lateral side of the joint, extending from the lateral epicondyle, and blending with the annular ligament of the radius (a ligament from the proximal radioulnar joint).

The ulnar collateral ligament originates from the medial epicondyle, and attaches to the coronoid process and olecranon of the ulna.
The arterial supply to the elbow joint is from the cubital anastomosis, which includes recurrent and collateral branches from the brachial and deep brachial arteries.

Its nerve supply is provided by the median, musculocutaneous and radial nerves anteriorly, and the ulnar nerve posteriorly.
Movements:

- The orientation of the bones forming the elbow joint produces a hinge type synovial joint, which allows for extension and flexion of the forearm:

- Extension – triceps brachii and anconeus
- Flexion – brachialis, biceps brachii, brachioradialis
Muscles of the Forearm
(right arm)

Anterior

- Biceps brachii:
  - Long head
  - Short head
- Brachialis
- Brachioradialis
- Pronator teres
- Flexor carpi radialis
- Pronator quadratus
- Palmaris longus
- Flexor carpi ulnaris
- Flexor retinaculum
- Palmar aponeurosis
- Tendons of Flexor digitorum superficialis
- Tendons of Flexor digitorum profundus

Posterior

- Triceps brachii
- Anconeus
- Extensor carpi radialis longus
- Extensor carpi radialis brevis
- Abductor pollicis longus
- Extensor pollicis brevis
- Extensor pollicis longus
- Extensor digitorum
Clinical Assessment

**History:**

**Pain** may be felt diffusely on:
- the medial side of the joint (ulnohumeral),
- the posterolateral side (radiohumeral)
- acutely localized to one of the humeral epicondyles (‘tennis elbow’ on the lateral side and ‘golfer’s elbow’ on the medial side).
- over the back of the elbow is often due to an olecranon bursitis.
**Stiffness**, if severe, can be very disabling:

- The patient may be unable to reach to the mouth (loss of flexion) or the perineum (loss of extension);
- **limited supination** makes it difficult to hold something in the palm or to carry large objects.
Swelling may be due to injury or inflammation;
- a soft lump on the back of the elbow suggests an olecranon bursitis

Deformity is usually the result of previous trauma:
- cubitus varus due to a malunited supracondylar fracture
- cubitus valgus due to an old displaced and malunited fracture of the lateral condyle.
Instability is not uncommon in the late stage of rheumatoid arthritis.

Ulnar nerve symptoms may occur in elbow disorders because the nerve is so near the joint.
- tingling and numbness in the little and ring fingers
- weakness of the hand

Loss of function is noticed in:
- grooming activities,
- carrying and hand work.
Examination

- Both upper limbs must be completely exposed
- It is essential to look at the back as well as the front. The neck, shoulders and hands should also be examined.
Look

- Looking at the patient from the front, with his or her arms outstretched alongside the body and the palms facing forwards,
- the elbows are seen to be held in 5–15 degrees of valgus; this is the normal ‘carrying angle’. Anything more, especially if unilateral, is regarded as a valgus deformity.
- Varus deformity is less obvious, but if the patient raises the arms to shoulder height, it is easily seen.
- The most common swelling is in the olecranon bursa at the back of the elbow
Feel

Important bony landmarks are:
- the medial and lateral condyles
- the tip of the olecranon.

These are palpated to determine whether the joint is correctly positioned.

Superficial structures are examined for
- warmth
- subcutaneous nodule.
The joint line (including the radioulnar joint depression) is located and palpated for synovial thickening.

Tenderness can usually be localized to a particular structure.

The ulnar nerve is fairly superficial behind the medial condyle and here it can be rolled under the fingers to feel if it is thickened or tapped to find if it is hypersensitive.
Move

- Flexion and extension are compared on the two sides.
- with the elbows tucked into the sides and flexed to a right angle, the radioulnar joints are tested for pronation (palms downwards 0–90 degrees) and supination (palms upwards 0–90 degrees).
The movements at the elbow joint are all fairly easy to describe and assess. These are flexion, extension, pronation and supination. Once these have been assessed actively they should be checked passively feeling for crepitus. 

- Flexion joint movement
- Extension joint movement
- Pronation joint movement
- Supination joint movement
General examination

If the symptoms and signs do not point clearly to a local disorder, other parts are examined:

- the neck (for cervical disc lesions)
- the shoulder (for cuff lesions)
- the hand (for nerve lesions).
X-rays

- The position of each bone is noted, then the joint line and space
- the individual bones are inspected for evidence of old injury or bone destruction.
- loose bodies are sought.
In children, while the epiphyses are still incompletely ossified the anatomy has to be deduced from the shape and position of the emerging secondary ossific centres—the average ages at which they appear can be remembered from the mnemonic CRITOE:

- Capitulum – 2 years
- Radial head – 4 years
- Internal epicondyle – 6 years
- Trochlea – 8 years
- Olecranon – 10 years
- External epicondyle – 12 years.
NOTE: THE DOCTOR SAID HE DOESN’T WANT SPICIFIC FRACTURES SO I GUESS YOU CAN SKIP THIS PART 😊
Fractures:

Fractures of the distal humerus in adults:

There are three types of distal humeral fracture:

- extra-articular supracondylar fracture,
- intra articular  a) unicondylar fracture
  b)bicondylar fractures.
Supracondylar fractures

rare in adults

When they do occur, they are usually:

- displaced and unstable
- severely comminuted (high-energy injuries).
Treatment

- Closed reduction is unlikely to be stable and K-wire fixation is not strong enough to permit early mobilization.
- Open reduction and internal fixation is therefore the treatment of choice.
- The distal humerus is approached through a posterior exposure and reflection of the triceps tendon.
- A transverse or oblique fracture can usually be reduced and fixed with a single contoured plate and screws.
- Comminuted fractures may require double plates and transfixing screws.
Condylar fractures

- Except in osteoporotic individuals, intra-articular condylar fractures should be regarded as high energy injuries with soft-tissue damage.
- A severe blow on the point of the elbow drives the olecranon process upwards, splitting the condyles apart.
- Swelling is considerable and the bony landmarks are difficult to feel.
- The patient should be carefully examined for evidence of vascular or nerve injury;
- Vascular insufficiency must be addressed as a matter of urgency.
X-rays

- The fracture extends from the lower humerus into the elbow joint;
- it may be difficult to tell whether one or both condyles are involved, especially with an undisplaced condylar fracture.
- Sometimes the fracture extends into the metaphysis as a T-shaped or Y-shaped break, and the bone between the condyles may be comminuted.
Treatment

These are usually severe injuries associated with joint damage. Prolonged immobilization will certainly result in a stiff elbow. Early movement is therefore a prime objective. Often the elbow ends up with marked loss of movement, even though the general anatomy has been restored.

It can be:
- Undisplaced fractures
- Displaced condylar fractures
Undisplaced fractures

These can be treated by applying a posterior slab with the elbow flexed almost 90 degrees;

Gentle movements are commenced after 1 week, but only after obtaining another x-ray to exclude late displacement.
Displaced condylar fractures

Open reduction and internal fixation through a posterior approach is the treatment of choice.

The best exposure is obtained by performing an intraarticular olecranon osteotomy. The ulnar nerve should be identified and protected throughout.

The fragments are reduced and held temporarily with K-wires.

A unicondylar fracture without comminution can then be fixed with screws; if the fragment is large, a contoured plate is added to prevent re-displacement.
Bicondylar and comminuted fractures will require double plate and screw fixation, and sometimes also bone grafts in the gaps. Postoperatively, movement is encouraged but should never be forced.

The fracture heals in about 8 weeks.

The elbow often does not regain full movement; in severe injuries, movement may be markedly restricted, however beautiful the postoperative x-ray.

In elderly osteoporotic patients, elbow replacement is often a more reliable option.
Complications

- Vascular injury

Always check the circulation (repeatedly!). Vigilance is required to make the diagnosis and institute treatment as early as possible.
Nerve injury

There may be damage to either the median or the ulnar nerve.

It is important to examine the hand and record the findings before treatment is commenced and again after treatment.

The ulnar nerve may shut down following surgery but it usually recovers in time.
Stiffness
Comminuted fractures of the elbow always result in some degree of stiffness. Disability may be reduced by encouraging an energetic exercise programme. Late operations to improve elbow movement are difficult but can be rewarding.

- Heterotopic ossification
Severe soft-tissue damage may lead to heterotopic ossification. Forced movement should be avoided.
Fractured capitulum

- occurs only in adults.
- The patient falls on the hand, usually with the elbow straight. The anterior part of the capitulum is sheared off and displaced.
- Fullness in front of the elbow is the most notable feature. The lateral side of the elbow is tender and flexion is grossly restricted.
In the lateral x-ray view the capitulum (or part of it) is seen in front of the lower humerus and the radial head is not opposed to it.

The images can be difficult to interpret and a CT scan is invaluable in planning treatment.
Treatment

- Undisplaced fractures can be treated by resting the arm in a sling for 4–5 days and then starting movement.
- Displaced fractures should be treated by operative reduction and fixation with small buried screws.
- If this proves too difficult, the fragment is best excised. Movements are commenced as soon as discomfort permits.
Fractures of the proximal end of the radius

Fractures of the proximal end of the radius are fairly common in young adults and children.

A fall on the outstretched hand with the elbow extended and the forearm pronated causes impaction of the radial head against the capitulum.

In adults this may fracture the head of the radius;

in children, it is more likely to fracture the neck of the radius (possibly because the head is largely cartilaginous).

In addition, the articular cartilage of the capitulum may be bruised or chipped; this cannot be seen on x-ray but is an important complication.
Special features

- Following a fall on the outstretched arm, the patient complains of pain and local tenderness posterolaterally over the proximal end of the radius.
- A further clue is a marked increase in pain on pronation and supination of the forearm.
X-rays

- adult fracture is a vertical split or marginal fracture through the radial head; less often there is a transverse neck fracture.
- Sometimes the head is crushed or comminuted.
- Impacted fractures are easily missed unless several views are obtained.
- The wrist also should be very carefully examined to exclude a concomitant injury of the distal radioulnar joint – the Essex Lopresti lesion – which if not recognized early can be almost impossible to treat.
Treatment

- Undisplaced fractures of the radial head treated by supporting the elbow in a collar and cuff for 2 weeks; active flexion, extension and rotation are encouraged.

- Displaced fractures treated by open reduction and fixation with small screws.
Comminuted fractures in the past have been treated by excising the radial head.

If there are associated forearm injuries or disruption of the distal radioulnar joint, the risk of proximal migration of the radius is considerable and the patient may develop intractable symptoms of pain and instability in the forearm. In such cases, every effort should be made to reconstruct the radial head if it has to be excised, it should be replaced by a metal prosthesis.
Complications

- Stiffness
  common and may involve both the elbow and the radioulnar joints.

- Recurrent instability of the elbow
  if the medial collateral ligament was injured and the radial head then excised.

- Osteoarthritis of the radiocapitellar joint
  a late complication of adult injuries. This may call for excision of the radial head.
the olecranon process Fractures

- Two types of injury are seen:
  - (1) a comminuted fracture, which is due to a direct blow or a fall on the elbow
  - (2) a clean transverse fracture, due to traction when the patient falls onto the hand while the triceps muscle is contracted.
CLASSIFICATION OF OLECRANON FRACTURES (Morrey)

Type I
Undisplaced

Type II
Displaced-stable
A-Noncomminuted
B-Comminuted

Type III
Unstable
A-Noncomminuted
B-Comminuted
Special features

- A graze or bruise over the elbow suggests a comminuted fracture: the triceps is intact and the elbow can be extended against gravity.
- With a transverse fracture there may be a palpable gap and the patient is unable to extend the elbow against resistance.
X-rays

- A properly orientated lateral view is essential to show details of the fracture, as well as the associated joint damage.
- The position of the radial head should be checked: it may be dislocated.
Treatment

- An undisplaced comminuted fracture with the triceps Intact treated conservatively

- if the patient is old and osteoporotic;

  internal fixation is challenging and immobilizing the elbow will lead to stiffness. The arm is rested in a sling until the pain subsides

  a further x-ray is obtained to ensure that there is no displacement, the patient is then encouraged to start active movements.
Comminuted fractures treated by operation, using meticulous technique to preserve the soft-tissue attachments. Modern metal plates are specially contoured for these fractures and can ‘bridge’ across the fragments.

An undisplaced transverse fracture that does not separate when the elbow is flexed Treated by immobilizing the elbow in a cast in about 60 degrees of flexion for 1 week; then exercises are begun. The fracture must be examined carefully with repeat x-rays to make sure it does not distract.
Displaced transverse fractures can, theoretically, be held by splinting the arm absolutely straight—but stiffness in that position would be disastrous.

Operative treatment is therefore preferred. The fracture is reduced under vision and held by one of three methods:

- (a) fixation with a long cancellous screw inserted from the tip of the olecranon;
- (b) tension-band wiring—two stiff wires driven across the fracture, leaving their ends protruding proximally and distally to anchor a tight loop of wire which will pull the fragments together;
- c) a contoured low-profile plate and screws. Early mobilization should be encouraged.
Complications

- Stiffness
  used to be common, but with secure internal fixation and early mobilization the residual loss of movement should be minimal.

- Non-union
  sometimes occurs after inadequate reduction and fixation of a transverse fracture.
  If elbow function is good, it can be ignored; if not, rigid internal fixation and bone grafting will be needed
- Osteoarthritis

Late complication, especially if the articular surface in the trochlear notch is poorly reduced.

This can usually be treated with modification of activities and occasional cortisone injections.

Joint replacement is considered for severe symptoms but heavy work and sport would not be permissible afterwards.
Dislocation:

- Dislocation can be:
  a) Dislocation of the elbow
  b) Isolated dislocation of the radial head

Dislocation of the elbow:

- A fall on the outstretched hand may dislocate the elbow.
- In 90% of cases the forearm bones are pushed backwards and dislocate posteriorly or posterolaterally.
- Provided there is no associated fracture, reduction will usually be stable and recurrent dislocation unlikely.
Complete Elbow Dislocation
Special features

- Deformity is usually obvious and the bony landmarks are displaced.
- In very severe injuries, pain and swelling are so marked that examination of the elbow is impossible; however, the hand should be examined for signs of vascular or nerve damage.

X-ray

- is essential:
  (a) to confirm the presence of a dislocation and
  (b) to identify any associated fractures
Treatment

- Uncomplicated dislocation

The patient should be fully relaxed under anaesthesia.

The surgeon pulls on the forearm while the elbow is slightly flexed. With one hand, sideways displacement is corrected.

The elbow is further flexed while the olecranon process is pushed forward. Unless almost full flexion can be obtained, the olecranon is not in the trochlear groove.

After reduction, the elbow should be put through a full range of movement to see whether it is stable.

Nerve function and circulation are checked again

The x-ray is repeated to confirm that the joint is reduced and that there are no associated fractures.
The arm is held in a light cast with the elbow flexed to just above 90 degrees and the wrist supported in a collar and cuff.

After 1 week the cast can be removed and gentle exercises begun; at 3 weeks the collar and cuff are discarded. Elbow movements are allowed to return spontaneously and should never be forced.
Fracture-dislocation

The combination of radial head fracture, coronoid fracture and medial collateral ligament injury is known as the ‘terrible triad’ – a fitting acknowledgement of the severe instability and poor outcome in these cases. Associated fractures of the radial head, coronoid process or the olecranon process, will need internal fixation.

In cases where the elbow remains unstable after the bone and joint anatomy has been restored, the ligaments may need repair and a hinged external fixator can be applied in order to maintain mobility while the tissues heal.
Complications

Vascular injury

The brachial artery may be damaged. Absence of the radial pulse is a warning.

If there are other signs of ischaemia, this should be treated as an emergency. Splints must be removed and the elbow should be straightened somewhat.

If there is no improvement, an arteriogram is performed; the brachial artery may have to be explored.
Nerve injury

The median or ulnar nerve is sometimes injured. Spontaneous recovery usually occurs after 6–8 weeks.

Stiffness

Loss of 20–30 degrees of extension is not uncommon after elbow dislocation. Physiotherapy may help, but forceful manipulation must be avoided.
Heterotopic ossification may occur in the damaged soft tissues in front of the joint.

In former years 'myositis officans' was a fairly common complication, usually associated with forceful reduction and over-enthusiastic passive movement of the elbow.

Nowadays it is rarely seen, but one should be alert for signs such as excessive pain, tenderness, and slow recovery of active movements.

X-rays may show soft-tissue ossification as early as 4–6 weeks after injury.

If the condition is suspected, exercises are stopped and the elbow is splinted in comfortable flexion until pain subsides; gentle active movements and continuous passive motion are then resumed.

Antiinflammatory drugs may help to reduce stiffness; they are also used prophylactically to reduce the risk of heterotopic bone formation.
A bone mass which markedly restricts movement and elbow function should be **excised once the bone is ‘mature’, i.e. has well-defined cortical margins and trabeculae**

This is followed by **anti-inflammatory medication, bisphosphonates or radiotherapy to prevent recurrence.**

- **Osteoarthritis**

  Secondary osteoarthritis is a **late complication.**

  Symptoms can usually be treated **conservatively**, but if pain and stiffness are intolerable, **total elbow replacement** can be considered
Isolated dislocation of the radial head

- very rare; if it is seen, search carefully for an associated fracture of the ulna (the Monteggia injury), which may be difficult to detect in a child because the fracture is often incomplete.
- Even a minor deformity of the ulna may prevent full reduction of the radial head dislocation.
Radial head dislocation
in the skeletally immature patient

Abnormal radiocapitellar line
that does not intersect the capitellum
In young children the elbow is sometimes injured by a sharp tug on the wrist.

The child is in pain; the elbow is held in extension and he or she will not allow it to be moved.

There are no x-ray changes.

What has happened is that the radius has been pulled distally and the annular ligament has slipped up over the head of the radius.

A dramatic cure is achieved by forcefully supinating and then flexing the elbow; the ligament slips back with a snap.
Deformities:

- **Cubitus varus**
  - Varus (or ‘gun-stock’) deformity is most obvious when the elbows are extended and the arms are elevated.
  - The most common cause is malunion of a supracondylar fracture.
  - The deformity can be corrected by a wedge osteotomy of the lower humerus.
Cubitus valgus

- The most common cause is non-union of a fractured lateral condyle; this may give gross deformity and a bony knob on the inner side of the joint.
- The importance of valgus deformity is the liability for delayed ulnar palsy to develop years after the causal injury, the patient notices weakness of the hand with numbness and tingling of the ulnar fingers.
- The deformity itself needs no treatment, but for delayed ulnar palsy the nerve should be transposed to the front of the elbow
Stiff elbow

- A stiff elbow can be a severe impediment.
- Patients may be unable to reach out to, or bring back from, their environment; others, again, cannot turn the hand palm downwards to pick up something, or palm upwards to lift something.
- Causes include congenital disorders, trauma and arthritis.
- If physiotherapy does not help, surgery is needed
‘Tennis elbow’ and ‘golfer’s elbow

▶ The cause of these common disorders is unknown, but they are seldom due to either tennis or golf.

▶ Most cases occur spontaneously as part of a natural degenerative process in the tendon aponeuroses attached to either the lateral or medial humeral Epicondyle.

▶ Pain is probably due to a vascular repair process similar to that of rotator cuff tendinitis around the shoulder.

▶ Often there is a history of occupational stress or unaccustomed activity, such as house painting, carpentry or other activities that involve strenuous wrist movements and forearm muscle contraction.
Clinical features

- ‘tennis elbow’

Pain is felt over the outer side of the elbow, but in severe cases it may radiate widely. It is initiated or aggravated by movements such as pouring out tea, turning a stiff door-handle, shaking hands or lifting with the forearm pronated.

The elbow looks normal and flexion and extension are full and painless.

Tenderness is localized to a spot just in front of the lateral epicondyle, and pain is reproduced by getting the patient to:

a) extend the wrist against resistance,

b) passively flexing the wrist so as to stretch the common extensors
- ‘golfer’s elbow
- similar symptoms occur around the medial epicondyle
- involvement of the common tendon of origin of the wrist flexors,
- pain is reproduced by passive extension of the wrist in supination.
Treatment

- Rest, or avoiding the precipitating activity, may allow the lesion to heal.
- A splint and physiotherapy may help.
- If pain is severe, the area of maximum tenderness is injected with a mixture of corticosteroid and local anaesthetic.
- Persistent pain which fails to respond to conservative measures may call for operative treatment. The affected common tendon on the lateral or medial side of the elbow is detached from its origin at the humeral epicondyle.
Loose bodies

- The commonest cause of a single loose body in the elbow is osteochondritis dissecans of the capitulum. Osteochondritis dissecans (OCD) is a condition that develops in joints, most often in children and adolescents. It occurs when a small segment of bone begins to separate from its surrounding region due to a lack of blood supply. As a result, the small piece of bone and the cartilage covering it begin to crack and loosen.

- Multiple loose bodies may occur with osteoarthritis or synovial chondromatosis. is a type of non-cancerous tumor that arises in the lining of a joint. The knee is most commonly affected, however it can affect any joint. The tumors begin as small nodules of cartilage. These nodules can separate and become loose within the joint.
Cardinal clinical feature

- is sudden locking of the elbow. If this is troublesome, the loose bodies can be removed arthroscopically
The elbow is an uncommon site for osteoarthritis. It can be primary or secondary. When it does occur, it may be secondary to trauma. ‘Primary’ osteoarthritis of the elbow should suggest an underlying disorder such as:

1. pyrophosphate arthropathy: known as is a rheumatologic disease which is thought to be secondary to abnormal accumulation of calcium pyrophosphate dihydrate crystals within joint soft tissues.

2. congenital dysplasia: abnormal development of the joint

but usually occurs spontaneously.
Symptoms

- The usual symptoms are pain and stiffness, but in late cases the joint may become unstable.
- Occasionally ulnar palsy is the presenting feature.
- The elbow may look and feel enlarged and movements are somewhat limited.
- X-rays show diminution of the joint space with subchondral sclerosis and marginal osteophytes; one or more loose bodies may be seen.
Treatment

- loose bodies, however, should be removed arthroscopically if they cause locking.
- If stiffness is sufficiently disabling, removal of osteophytes (by either open or arthroscopic surgery)
- If there are signs of ulnar neuritis, the nerve may have to be transposed to the front of the elbow.
The olecranon bursa sometimes becomes enlarged as a result of pressure or friction. When it is also painful, the cause is more likely to be

A) gout
B) rheumatoid arthritis
C) infection.

A) Gout is suspected if there is
1- a history of previous attacks,
2- the condition is bilateral,
3- there are tophi,
4- x-ray shows calcification in the bursa.

Even then it is not easy to distinguish from acute infection, unless pus is aspirated.
B) Rheumatoid arthritis is suspected if there is 1-swelling and nodularity over the olecranon. 2- In almost all cases this will be associated with a typical symmetrical polyarthritis.

In the late stages, erosion of the elbow joint may cause marked instability.
Treatment

- The underlying disorder must be treated.
- Septic bursitis may need local drainage.
- Occasionally a chronically enlarged bursa has to be excised.
Tuberculosis

- The onset is insidious, with a long history of aching and stiffness.
- Although the disease begins as synovitis or osteomyelitis, tuberculosis of the elbow is rarely seen until arthritis supervenes.
- The most striking physical sign is the marked wasting.
- While the disease is active, the joint is held flexed, looks swollen, feels warm and is diffusely tender.
- X-ray examination typically shows generalized rarefaction (decrease in density) and an apparent increase of joint space because of bone erosion.
The elbow is involved in more than 50% of patients with rheumatoid arthritis.

Rheumatoid nodules can often be detected over the olecranon.

There is pain and tenderness, especially around the head of the radius.

Eventually the whole elbow may become swollen and unstable. Often both elbows are affected.
Bone erosion, with gradual destruction of the radial head and widening of the trochlear notch of the ulna, is typical of chronic inflammatory arthritis.
THANK YOU