



10-Common Adult Fractures

Objectives:

1. Clavicle fracture
2. Humerus (proximal & shaft)
3. Both 'bone' forearm 'fracture'
4. Distal 'radius' fracture
5. Hip fracture
6. Femur 'shaft' fracture'
7. Tibial 'shaft' fracture'
8. Ankle' fracture

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References: 435 Team, Toronto note, Slide, Note

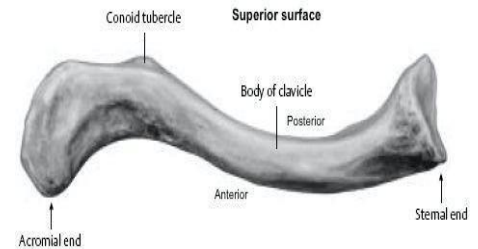
Clavicle fracture

[Toronto notes](#)

It is a common fracture in both children (unites rapidly without complications) and adults (much more troublesome in jury), you see it in young active people, who are engaged in contact sports and sometimes in RTA too.

Anatomy:

- ❑ Clavicle is S shape bone
- ❑ It is anchored to scapula via ACJ (Acromioclavicular joint)
- ❑ It is anchored to trunk via SCJ (Sternoclavicular Joint)

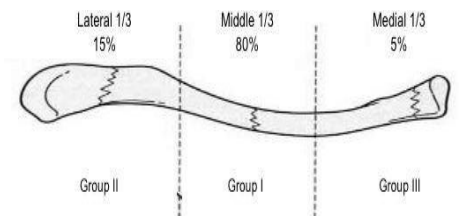


Mechanism:

- ❑ Most of fracture occurs as result from fall onto shoulder
- ❑ Direct trauma to clavicle or or FOOSH (**Fall on An Outer Stretched Hand**)

Classification:

- ❑ Fracture is classified into: proximal, middle and lateral third fractures
- ❑ Most of fractures are of **middle third**.



Why do we classify things?

To determine management, prognosis and it is helpful for **communication**, like if someone calls you at midnight and tells you that there is a clavicle fracture, I would like to hear the classification. However, for this classification it does not describe any of the prognostic indicators such as comminution, shortening or displacement.

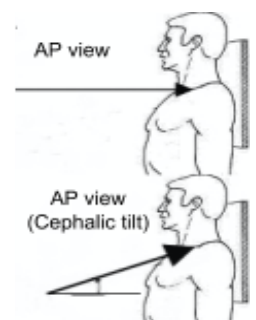
Clinical findings:

- ❑ Arm is clasped to chest to splint shoulder and prevent movement
- ❑ Check the skin: **looking for any skin tenting**, because it will affect your management. The skin is tented by the bony fragments, sometimes it is sharp like a knife which threatens the skin so you have to make sure that the skin is intact.
- ❑ Injury to brachial plexus and subclavian artery/vein may be present (uncommon) **you have to examine N.V**, so you have to keep in mind to evaluate the neurovascular status distal to the clavicle (entire upper limb)
- ❑ Rarely, Pneumothorax can occur.



Imaging: to exclude pneumothorax

- ❑ X-Ray:
AP chest and Clavicle special view (**focused on clavicle**) (30° cephalic tilt), This X-Ray shows Middle third clavicle fracture with minimal displacement.



Treatment:

Will you reduce clavicle fracture? No, we will not reduce the fracture, we use the gravity to reduce it. we use a sling as a type of immobilization

Most of clavicle fractures are treated with a **sling** (nonoperative management).

Few fractures should be treated surgically with **open reduction and internal fixation**: (if the patient have severe displacement or excessive comminution)

1- Skin is tented, why? because of concern for an **impending open fracture** (if you leave it like this eventually may break through and become an open fracture).

2- Severe displacement:

- 100% displacement.
- 2 cm overlap.

What is the difference between open and closed reduction?

→ **Closed reduction**: you can open the skin and everything but **away from the fracture**, and you do the surgery, but you do not expose the fracture site (away from it).

→ **Open reduction**: if the **fractured bone is exposed** and you can see the bone fragments by your eyes and **manipulated by your hands and you reduce the fragments**.

- The indications of surgical treatment are **based on the functional outcomes results**; clavicle fracture heals **regardless** of the position, but the problem is people with recurrent clavicle fracture can have problem with **overhead activities if it's malunited**.³

→ If the fracture malunited, people may have brachial plexus symptoms; pain in the arm during the overhead activities especially those whom their jobs require overhead activity such as engineering, cabin crew and athletes.

★ The X-Ray shows an **open reduction and internal fixation with plate and screws**

Complications:

- Cosmetic.
- Shoulder stiffness, weakness with repetitive activity
- Pneumothorax, brachial plexus injuries, and subclavian vessel (all very rare)



Humerus fracture

Anatomy:

Proximal humerus has four anatomic parts:

- Head
- Greater tuberosity
- Lesser tuberosity
- Shaft
- Anatomical neck vs. surgical neck

anatomical neck is between the tuberosities and the head while surgical neck is between the tuberosities and the shaft.

-Why is it called surgical neck? because this is the location of many fractures that require surgery

-Surgical neck fractures are more common and carry good outcomes.

-Anatomical neck fractures: rare and carry bad outcomes because of the blood supply, the healing will be affected, and the patient may have AVN (avascular necrosis)

Fracture:

These fractures happen in a bimodal fashion so you can see it in:

- Younger patients: violent trauma such as RTA.
- Older patients: minor trauma

Most fractures are minimally displaced, and treated conservatively like what is seen on the X-Ray.



Physical exam:

Start with ATLS history (You need to know what was happened and the mechanism of the injury) then proceed to the physical examination:

- Expose the shoulder very well.
- **Look for fracture signs** (swelling, tenderness, inability to move, ecchymosis)
- Check the skin, **you have to examine the axilla**. to know if it is an open or closed fracture (**unlikely to have an open fracture of proximal humerus** bc it's a deep joint).
- Peripheral N/V exam
- **Axillary nerve**: lateral skin patch

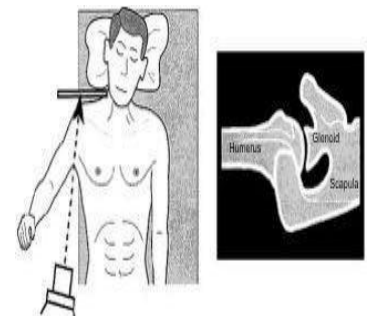


Check if the patient has sensation (**fine touch**) over the lateral side of the shoulder which is supplied by terminal branches.

- Examine cervical spine, you have to **examine joint above** (cervical spine) **and joint below** (the elbow)

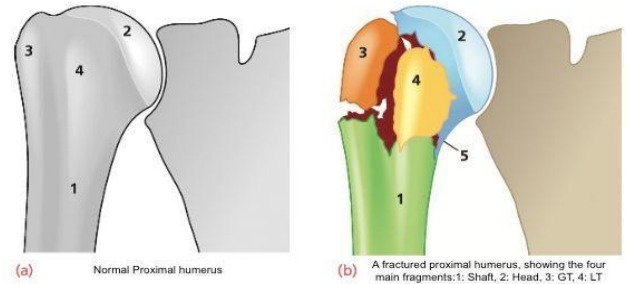
X-Ray:

- **AP and lateral views**: you need 2 perpendicular (Orthogonal) views, why? to have 3D image of the fracture
- **Axillary view (special X-ray)**: the patient is laying down, and the beam will go through the axilla to allow you see this view (the whole joint), it can show you if there is a **fracture dislocation** (it has different management)



Classification:

- Imagine that you cracked the anatomical neck, the surgical neck and you have a crack between the GT and LT → **you will end by having 4 pieces**. If you have 1
- fracture line → you will get 2 pieces. 2 fracture lines → 3 pieces. 3 fracture lines → 4 pieces
- If we have all the fractures but not displaced, we call this nondisplaced humerus fracture (**one-part fracture**)
- If not displaced, we don't count the fragments**
- If there is a fracture with displacement **more than 1 cm** between the fragments, then we count the fragments. If there is 2 fragments, we call it 2 fragments fracture
- "two-part fracture", if there is 3 fragments, we call it 3 fragments fracture "three-part fracture" and so on
- if all the major parts are displaced** (the head of the humerus, the lesser tuberosity, the greater tuberosity and the shaft), **it is a four-part fracture**.
- Fracture is defined by the fragments displaced: Neer's classification
- Displacement: **more than 1 cm and/or angulation >45°**



Normal AP Shoulder

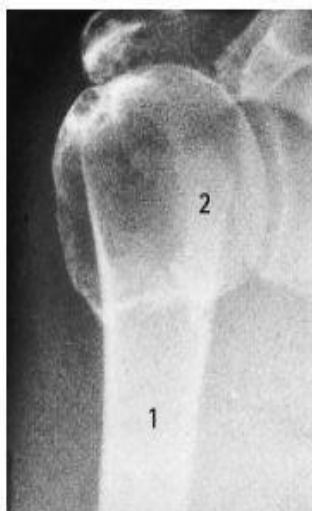


Undisplaced fracture of the greater tuberosity



1: Shaft, 2: Head, 3: GT,
At least three-fragments fracture
- If you would say that 2 and 3 are near from each other, notice that 2 is displaced (the arrow) from its original location and thus 3 is also displaced

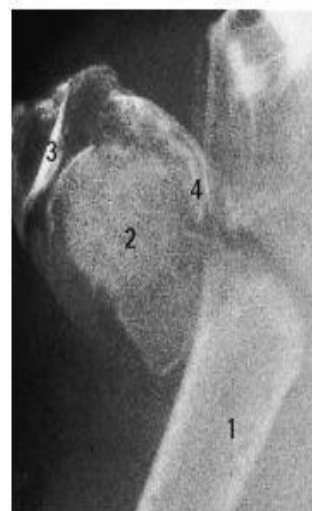
Extra Figures



(a) two- Part fracture



(b) Three- part fracture



(c) Four-Part fracture
1: shaft, 2: Head, 3: GT, 4: LT



(d) Fracture dislocation of the shoulder

Treatment:

- ❖ If fracture is not displaced:
 - **Treatment with sling** immobilization and **NWB of upper extremity for 6-8 weeks**, why 6-8 weeks? based on the healing process of the fracture
Early ROM exercises after 2-4 weeks.
 - **Normal function can be resumed after 3-4 months.**

What type of healing for this fracture? Primary (**direct**) or secondary (**indirect**)? **secondary healing**

- ❖ **If the fracture is displaced:**
 - Surgery is indicated.
 - **ORIF** is indicated (plate and screws).
 - Shoulder hemi-arthroplasty is indicated in some cases **such as fracture displaced out of the joint in the axillary view** **Hemi-arthroplasty: when we change the joint and it's indicated in old patient with comminuted fracture**



A patient with proximal humerus fracture, AP and lateral X-Ray were done, what is the management?

- A) CT
- B) MRI

Humerus shaft fracture: [Toronto notes](#)

Classification:

It can be classified based on location of fracture. (proximal, middle and distal)

Symptoms:

pain, swelling, weakness ± shortening, motion/crepitus at fracture site

Physical exam:

- Skin
- Compartment
- N/V (neurovascular): watch for **radial nerve palsy**.
How to examine the radial nerve?
Motor: extension of the wrist. **Sensory** over the dorsum of the first webspace.

X-Ray:

2 orthogonal views. It shows spiral fracture in the middle third of the humerus.

Treatment:

Almost all humerus shaft fracture can be treated **non-surgically**.

- Close reduction
- Functional brace x 4-6 weeks + NWB
- Early ROM of elbow and shoulder **to avoid stiffness**

What is the difference between brace and cast? the brace is removable, plastic with velcro tape, clamshell. There is no significant difference compared to the cast but it's easier to the patient.

Surgery is indicated **for specific conditions like:**

- Segmental fracture, big fragment in the middle.
- Open fracture
- Obese patient, **why?** because of body built which will push the humerus and displace it, and also, they have a lot of fat which push the arm into varus
- Bilateral fracture, **why?** patient can't function with 2 casts (inhumane).
- Floating elbow (**Fracture of forearm and humerus**); difficult to control.

Surgery: ORIF with plate and screws



Both bones forearm fracture: (Means radius and ulna are broken)

Anatomy:

Forearm is complex with two mobile parallel bones, we consider the forearm as a one joint (quadrilateral joint).

Radius and ulna articulate proximally and distally, by the proximal and distal radioulnar joint (DRUJ) to allow forearm rotation.

Fracture:

fractures are often from fall or direct blow.

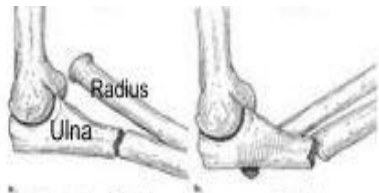
It very unlikely to fracture only one bone without disruption of their articulation:

A-Both bone fracture

Monteggia fracture:

Toronto notes

Means **proximal** or middle third ulna shaft fracture with **dislocation of radius proximally** (at elbow)



Ulna is the fractured big bone, radius is the dislocated one.

-Mechanism: direct blow on the posterior aspect of the forearm, hyper-pronation or fall on the hyperextended elbow.

-Clinical Features: decreased rotation of forearm ± palpable lump at the radial head.

Galeazzi fracture:

Toronto notes

Means **distal** or middle third shaft radius fracture with **disruption of DRUJ**.



radius is fractured, ulna is dislocated from DRUJ (Distal radioulnar joint)

-Mechanism: hand FOOSH (Fall on An Outer Stretched Hand) with axial loading of pronated forearm or direct wrist trauma

Clinical:

Symptoms and signs of fracture:

deformity, pain, swelling loss of function in hand and forearm

- Check the skin
- **Check the compartments of forearm**, you have to check because forearm and leg fractures have a higher risk for compartment syndrome especially leg fractures.
- **Check Ulnar, median and radial nerve (PIN, AIN)**

How to examine AIN and PIN?

AIN: ask the patient to do opposition, it gives branches to the flexor pollicis longus (FPL) and flexor digitorum profundus (FDP) muscles. If it get injured the patient will be unable distal interphalangeal joint (DIP), Cannot make a perfect "O" sign.

PIN: ask the patient to put his thumb up, it gives branche to Extensor pollicis longus (EPL).

- Check vascularity: color, temperature, capillary refill and pulse.



PIN: Posterior interosseous nerve
Radial nerve

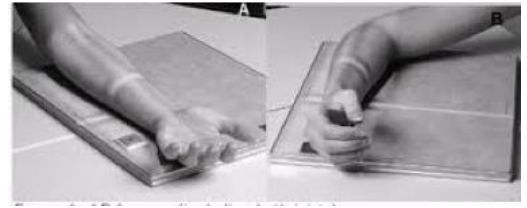


AIN: Anterior interosseous nerve
(Median nerve)

Images:

2 orthogonal views **perpendicular on each other with joint above and below**

CT scan if fracture extends into joint.



Treatment:

Both bone fracture:

- Reduce and splint at ER/clinic (temporary)
- Are treated **almost always with ORIF**: (plate and screws)

Monteggia fracture:

- ORIF ulna and close reduction of radial head



Galeazzi fracture:

- ORIF radius and close reduction of DRUJ.

If the close reduction fails, then we do an open reduction of the joint

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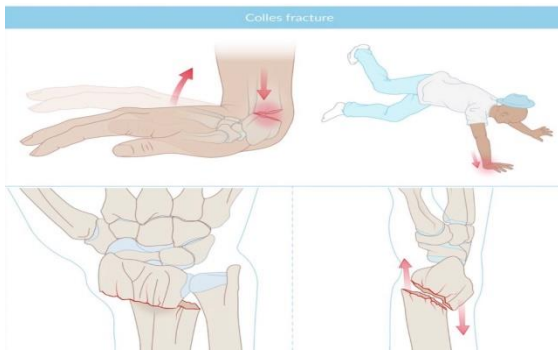
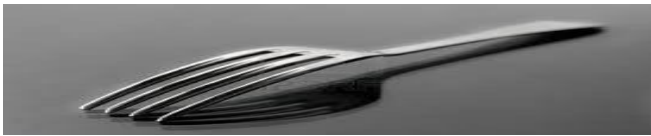
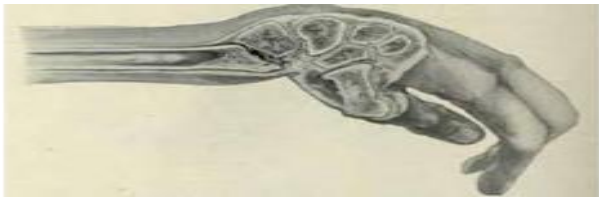
Distal radius fracture

- Most common fracture of upper extremity.
- Most frequently are seen in older women.
- Young adults fractures are most commonly secondary to high energy trauma

Extra-articular

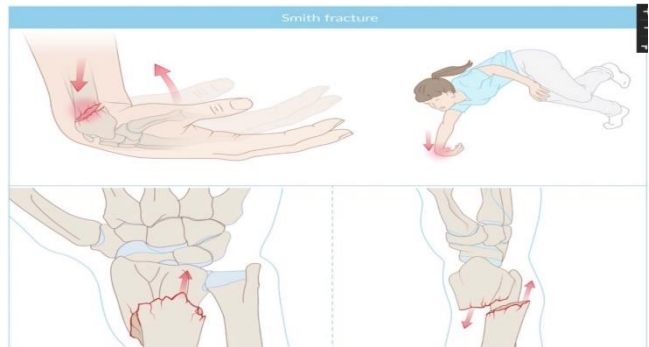
Colles' Fracture: [Toronto notes](#)

Dorsal angulation displacement is more accurate, shortening and radial deviation



Smith's fracture: [Toronto notes](#)

Volar angulation (displacement) and shortening. (reverse Colles')

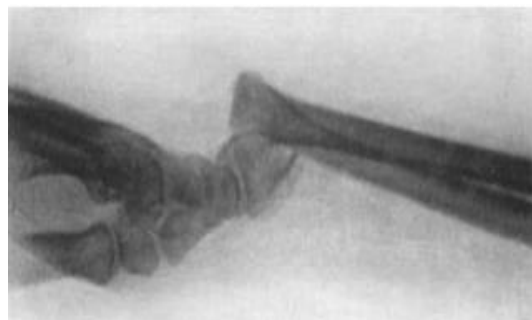


A dinner fork deformity, also known as a bayonet deformity



Dorsal angulation with apex directed volarly

Volar displacement, we always describe distal to proximal



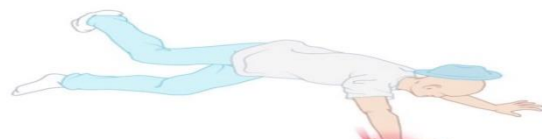
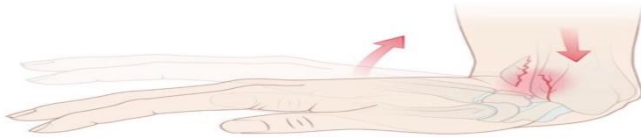
Volar angulation with apex directed dorsally, always look at the thumb to know if it is volar = palmar side of the hand

Intra-articular

Barton's fracture: volar or dorsal



Barton fracture



Treatment:

❖ Extra-articular fractures:

- Closed reduction and cast application.
- After fracture reduction we do **X-Ray** to decide the definitive treatment, if the fracture is in accepted position then continue in the cast, if the fracture is not in accepted position > do surgery for the patient. I will not tell you about the accepted position (too much information for you).
- Immobilization for 6-8 weeks.
- ROM exercises after cast removal. (usually we in adult we put the cast below elbow to prevent elbow stiffness)
- Surgery: if reduction is not accepted

❖ Intra-articular fracture:

- A step **more than 2 mm displacement** is an indication for surgery.
- ORIF with plate and screws.



ORIF with the plate and screws

Hip fracture (Old patients)

[Toronto notes](#)

The usual story of this fracture: a geriatric patient falls down in the bathroom and it is usually managed by surgery.

- It is the most common fracture of LL.
- It is associated with osteoporosis.
- Most common mechanism is **a fall from standing height**.
- Other causes of fall (stroke, MI) should be rolled out during clinical evaluation, you should ask the patient about the cause of falling down, because this can be the only manifestation of MI or stroke.
- It is a life changing event it's not about the fracture itself, but bc it represents a **systemic failure of the patient** "the patient starts to be senile". most people will walk but they will not be the same. Mortality: 20% of these people will die 1 year after the fracture. Not bc of the fracture, it just tells you how it's linked to systemic failure.

Fractures can be classified into:

Joint capsule attaches proximally to the acetabulum and distally to the neck of the femur anteriorly at the greater trochanter.

-Intra-capsular:

- Subcapital (below the head) (Femoral head and neck junction)
- Trans-cervical (mid portion of femoral neck)

-Extra-capsular:

- Basicervical (base of femoral neck)
- Intertrochanteric
- subtrochanteric

AVN risk is higher with **intra-capsular fracture**.

Why to bother about the capsule? because the blood supply is related to the capsule itself, and we know patient who has fracture in this area has a higher chance of avascular necrosis, while if the fracture is outside the capsule, he has a lesser chance of AVN.

Displaced vs nondisplaced

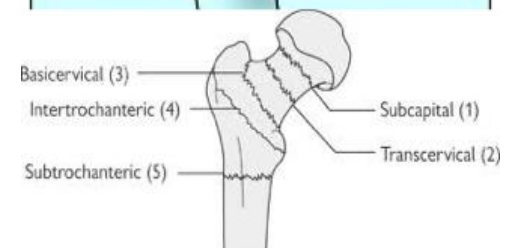
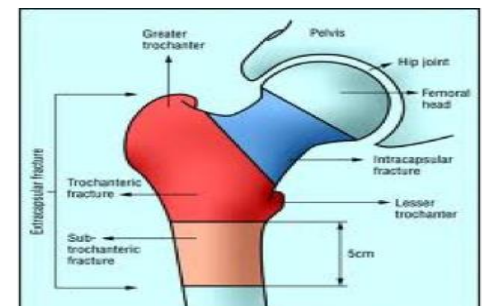
Clinical:

Keep in mind it is not an adult hip it is a geriatric hip, so the patients age usually ranges between 60-80s, they may have osteoporosis, and you will see it more in the future because the number of old people is increasing in SA.

- Full detailed history of mechanism of injury.
- Rule out syncope, chest pain, weakness etc.
- A detailed systematic review.
- **Deformity (old MCQs): Abduction, External rotation and shortening.**
- Assess distal N/V status
- Avoid ROM if fracture is expected

X-Ray:

- 3 views are needed
- AP pelvis
- AP hip
- Lateral hip, **how can we get lateral hip X-Ray?** cross table lateral, the patient rises the normal leg, and the image is taken from down



Examples

What is the type of this fracture?

- A) Subcapital
- B) Trans-cervical
- C) Basicervical
- D) Intertrochanteric



this is high intertrochanteric and yes this is maybe basicervical (doctor said it is more likely to be basicervical than intertrochanteric (extracapsular))

What is the type of this fracture?

- A) Subcapital
 - B) Trans-cervical
 - C) Basicervical
 - D) Intertrochanteric
- It's subcapital transcervical
you won't get like this in the exam, it will be clear



Treatment:

- No close reduction is needed, why? a study showed that there is **no difference** if you put a traction or not, not cost effective, and no benefit for the patient.
- No traction is needed.
- Patient needs **surgery** ideally within **48 hrs**, why? a study showed that **mortality** is higher after 48 H.
- The goal is to ambulate patient as soon as possible.
- Be sure that DVT prophylaxis is started.
- Be sure that patient will be evaluated for osteoporosis after discharge.

60 years old lady, seen in the ER, she has an external rotation and abduction deformity of the leg, X-Ray shown below, which of the following is the appropriate management?

- a. Reduce the fracture and place skin traction
- b. Reduce the fracture and place skeletal fracture
- c. Do not reduce the fracture**
- d. Reduce the fracture and place above the knee cast

If fracture is intra-capsular:

Hemiarthroplasty: percutaneous in situ Screws fixation.

- **Displaced:** Hemiarthroplasty, I do not want to do ORIF because although theoretically it works in 65%, 35% will have AVN and they will need another surgery
- **Nondisplaced:** (if not displaced the **treatment is percutaneous in-situ screw fixation**)



Hemiarthroplasty



Percutaneous in-situ screw fixation

If fracture is Extra-capsular: the chance of AVN is minimum less than 5%

- **Stable:** Close reduction and DHS
- **Unstable:** Intra-medullary device

Fracture instabilities signs:

1. Large LT (lesser trochanter) fragment
2. Extension to subtrochanteric region
3. 4 parts fracture



DHS (Dynamic hip screw)
The plate is out and the screw is inside
Used for simple fractures



IM nail (intramedullary nail)
the screw passes through the nail and goes inside the bone
Used if the fracture was comminuted or 4 parts fracture

Remember that they are old patients and if you have one shot in your gun, you want it be accurate (you do want to take the patient multiple times to the OR)

if young patient always fix even if displaced (if you done hemiarthroplasty he will live for long time and will need to repeat for multiple time and eventually total hip replacement)

Complications:

Nonunion

- 2% (IT fractures)
- 5% (non displaced neck fracture)
- 30% (displaced neck fracture)

AVN (femoral neck fracture):

- 10% (non displaced)
- 30% (displaced)

Death:

- early 4%.
- At 1 year: 20-40%

VTE (Venous thromboembolism)

Hip fracture (young patients)

Femoral neck fracture:

- It is a completely different entity from similar fractures in elderly (>60 years).
- High energy mechanism, we do not expect to see hip fracture in young patients.
- Patient should be taken to operative room for ORIF within **6 hours**.
- **MCQ:** A 30 years old male, presented to the ER, he missed a step on the stairs, the X-Ray will show you a hip fracture, **what do you think?** It is a pathological fracture (most likely a tumor)
- ATLS protocol.
- 2.5% associated femoral shaft fracture. (long femur X-ray)
- Nonunion: 30% (most common complication)
- AVN: 25-30%

They have the same chances for AVN, but I can take them to the OR again

Management		
Intracapsular fractures		Extracapsular fractures
Displaced	Nondisplaced	Close reduction and DHS or IM nail fixation
closed reduction open reduction and fixation with cannulated screws. the same as nondisplaced No hemiarthroplasty for young patients	closed reduction and Screw fixation (cannulated screws).	

Femoral shaft fracture

[Toronto notes](#)

Most common:

- high energy mechanisms (MVC, fall from a height, gunshot wound)
- Young patients (male, < 30 years).
- ATLS protocol,

Less common:

- low energy mechanism (torsional forces)
- Old patients.
- Spiral type fracture

Associate musculoskeletal injuries:

- Ipsilateral femoral neck fracture (10%. Missed in 30-50%)
- Knee ligaments injuries: 50%
- Meniscal tear 30%
- Floating knee injury: less common
- Vascular/nerve injuries: rare
- Contralateral femur shaft fracture (worse prognosis among above)

Associated non-MS injuries:

- Fat embolism
- ARDS
- Head injuries.
- Abdominal injuries
- **Clinical:**
- ATLS
- Fracture symptoms and signs
- Skin integrity
- N/V exam.
- Compartment assessment
- Knee swelling or ecchymosis.

- **Investigation:**

- AP and lateral views femur
- 15° Internal rotation AP view ipsilateral hip.
- Lateral view ipsilateral view
- If femoral neck fracture is suspected: CT scan hip.
- Knee AP and lateral views

- **Management:**

- ATLS: ABC resuscitation.
- Skeletal traction (proximal tibial pin)
- Early surgical fixation:
 - Proven to reduce Pulmonary complications. (PE or fat embolism).
 - Must be within 24 hrs (ideally < 6 hrs).
 - If patient is unstable: External fixation.
 - If patient is stable IM nailing

- **Complication:**

- Malunion:
 - Most common.
 - More common with proximal fracture (subtrochanteric fracture)
 - Rotational, angulation and shortening
- Nonunion: rare
- Infection.
- VTE.



Tibial shaft fracture

[Toronto note](#)

- It is a subcutaneous bone (high suspicion for skin injury).
- Most common large long bone fracture.
- It can be secondary to low or high energy mechanism.
- It carries the highest risk of compartment syndrome. (cause it is small space and less distal muscles)
- 20% of tibial fracture can be associated with ankle intra-articular fracture

Classification:

classified based on location and morphology:

- Proximal third
- Middle third
- Distal third

Displaced vs. Non-displaced:

Clinical:

- Skin integrity.
- Assess compartments of leg: needs serial exam.
- Serial N/V exam.

Investigation:

X-rays:

- AP and lateral tib/fib.
- AP/lateral knee
- AP/Lateral ankle

CT SCAN IF FRACTURE EXTENDS INTO JOINTS ABOVE OR BELOW.



Management:

Indications for non-surgical treatment:

- NO displacement: $< 10^\circ$ angulation on AP/lateral x rays.
- < 1 cm shortening.
- Not comminuted.

C/I:

- Displacement.
- Open fracture.
- Compartment syndrome.
- Floating knee.

Close reduction and cast immobilization:

- Above knee back slab and U slab if surgical treatment is chosen.
- Above knee full cast if non-surgical treatment is chosen: it must be bivalved to minimized compartment syndrome.
- Always provide patient with Compartment Syndrome checklist if patient is discharged home with cast.
- NWB for 8 weeks with cast immobilization.

Surgical treatment:

- Most common modality of treatment
- Most commonly IM nail fixation.

Complications:

- **Non-union: most common complication**
- Delayed union
- Infection: open fracture
- DVT/PE

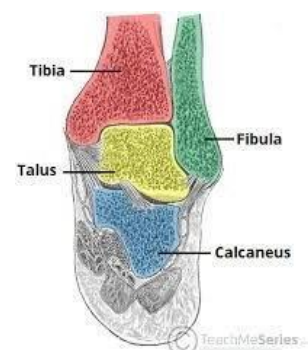
Ankle fracture

[Toronto note](#)

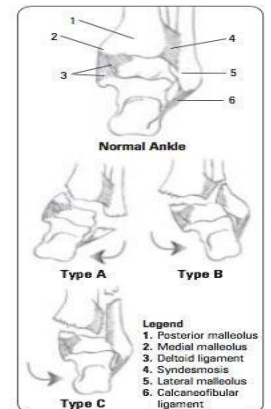
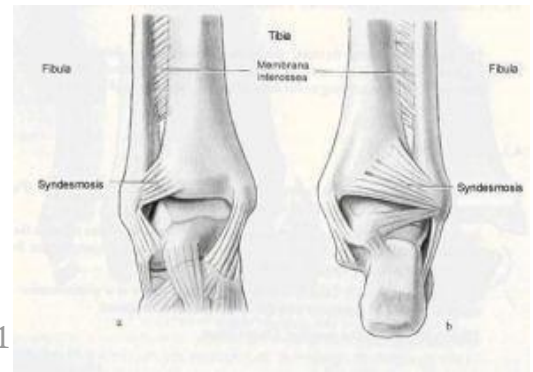
Low energy (torsional): malleoli fracture.

Anatomy:

- Medial and lateral malleoli, distal tibia and talus.
- Highly congruent joint
- Fibula is held to distal tibia by syndesmosis ligament.
- Medial malleolus is held to talus by deltoid ligament.
- Lateral malleolus is held to talus by LCLI(lateral collateral ligament)
- The ankle Joint: consists of a deep socket formed by the lower ends of the tibia and fibula, into which is fitted the upper part of the body of the talus. The shape of the bones and the strength of the ligaments (deltoid ligament attach the medial malleolus to the talus, If I remove the fibula completely the talus will stay in position because of the deltoid ligament attachment and syndesmosis.) and tendons make this joint strong and stable.
- The syndesmosis is the ligament that connects two bones of the leg (tibia and fibula), you do not need to know about its tears.

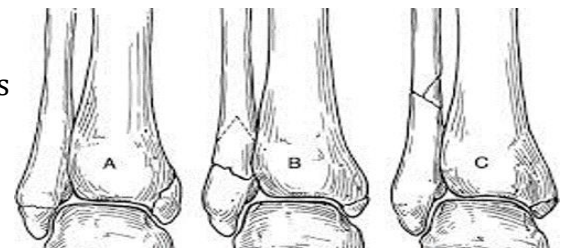


- In order to move the talus out, I have to crack the fibula and **cut the deltoid and syndesmosis**, the talus will go with the fibula toward the fracture. If the syndesmosis and deltoid ligaments are intact the talus will not move.
- **Equivalent of deltoid rupture:** fracture of the medial malleolus but the ligament is still intact so both will move together.
- Make sure that there is no lateral translation (**1 mm**) of the talus, because **100%** the patient will get osteoarthritis after 1 year.
- Usually it is a **twisting injury** either RTA or falling down.



Classification:

- Stable v.s. Unstable fracture: Lateral displacement of talus
- Medial, lateral or bimalleolar fracture
- Lateral malleolus: Weber A, B, C



The **Danis–Weber** classification is based on the level of the fibular fracture:

- **Type A:** a fibular fracture below the syndesmosis, and an oblique fracture of the medial malleolus.
- **Type B:** a fracture at the syndesmosis often associated with disruption of the anterior fibers of the tibiofibular ligament and fracture of the posterior and/ or medial malleolus, or disruption of the medial ligament
- **Type C:** a fibular fracture above the syndesmosis; the tibiofibular ligament must be torn, or else
- Bimalleolar fracture: when both medial and lateral malleolus are broken.

Clinical:

- Look for Fracture symptoms and signs.
- Assess medial joint ecchymosis or tenderness to assess medial malleolus and deltoid ligament integrity.
- Assess N/V status (before and after reduction).



How it looks in real life



Always do temporary reduction before casting

Imaging:

X-Ray:

- AP
- Lateral
- Mortise view
- Long leg x-rays: if only medial malleolus is broken.



CT SCAN IF FRACTURE EXTENDS TO ARTICULAR DISTAL TIBIA SURFACE.

Unstable: > 4mm lateral translation



Stable



Management:

Intact medial malleolus:

- Weber A: No surgery
 - Splint + NWB X 6 weeks.
 - Early ROM.
- Weber B/C: Plate +/- syndesmotic screw



- If medial joint line widen (unstable): ORIF, if the tibia and fibula are displaced I will put the syndesmotic screw between them, it is called **syndesmotic screw** because it acts as a syndesmotic ligament (hold the bones together until syndesmosis heal).

- If not: Call Orthopedic for stress film x-rays.

- If both malleoli are broken: ORIF (ORIF both bones +/- syndesmotic screw)

when do we have to put the syndesmotic screw? if there is lateral translation of the talus intraoperative → if the talus is still moving with stress after fixation → syndesmosis is open, and we put screws. so, after fixation in weber B or C/ bimalleolar fracture, we do stress test and accordingly we put syndesmotic screws or not

MCQs

1- 6-year-old came through the ER after he sustained a 3-meter fall from a building, he was cleared except for a solitary left femur injury (X-ray shows mid femoral shaft fracture) how would you manage this injury?

- A-External fixation.
- B-Screws and plate.
- C-Rigid IM
- D-Flexible IM

Ans: D

2- A picture of a fracture of the radius, what is the Diagnosis:

- A-Gelazzi.
- B-Distal radial

Ans: A



3- What is the type of the fracture shown in the picture below?

- A-Intertrochanteric Fracture.
- B-Subcapital neck fracture
- C-Transcervical Fracture.
- D-Fracture of the greater trochanter.

Ans: A



4- 20-year-old male, who fell down from 2 steps stairs and fractured his ankle. The parents report that their son' personality has been changed since the past weeks,which one of the following describe the patient situation?

- A-Pathological fracture.
- B-Psychological factors

Ans: A

5- Which one of the following is considered as unstable fracture?

- A-Lateral displacement of the talus.

6- Patient has a fracture in the humerus as shown below in the picture, how would you manage him?

- A-Screw and plates. B-ORIF.
- C-Brace

Ans: A

7- Patient has an isolated fracture of the femur, what is the management?

A-IMN

8- A distal humeral fracture will result in?

A-Wrist drop.

9- Which fracture is described as dislocation of the distal head of the radius and a fracture of the ulnar?

A-Monteggia

10- What is the diagnosis (Can't remember the case but they gave us a pic and asked)?

A-Barton's fracture

B-Smith's Fracture

C-Colle's Fracture

D-Galeazzi



Ans: A

11- Case about an old patient with intracapsular fracture what is the treatment?

A-IM nail

B-hemiarthroplasty

C-DHS

D-percutaneous in situ fixation

Ans: B

12- Isolated R clavicle fracture with skin tinting, N/V is normal. what is the management?

A. Immobilization and arm sling

B. Immobilization and figure of 8

C. Closed reduction and k-wires fix

D. ORIF and plate and screws

Ans: D

13- A 66 years old male fell from standing height, he's unable to bare weight on his right leg, upon examination the right leg is shortened and rotated. Patient is stable. What's the management of choice for this patient?

A. Closed reduction and in situ pinning

B. Hemiarthroplasty

C. Open reduction + DHS

Ans: B

14- a 17-year football player and had an injury to the shoulder. X ray shows dislocation of the humerus.

What concomitant sign can you see clinically?

- A. Deltoid atrophy
- B. Wrist drop.
- C. claw hand

Ans: A

15- A scenario of a 17/o male w/ Hx of "Fall on Outstretched Hand" x-ray showing:

- A. Monteggia.
- B. Colles.
- C. Distal radius fracture.
- D. Galeazzi.



Ans: A