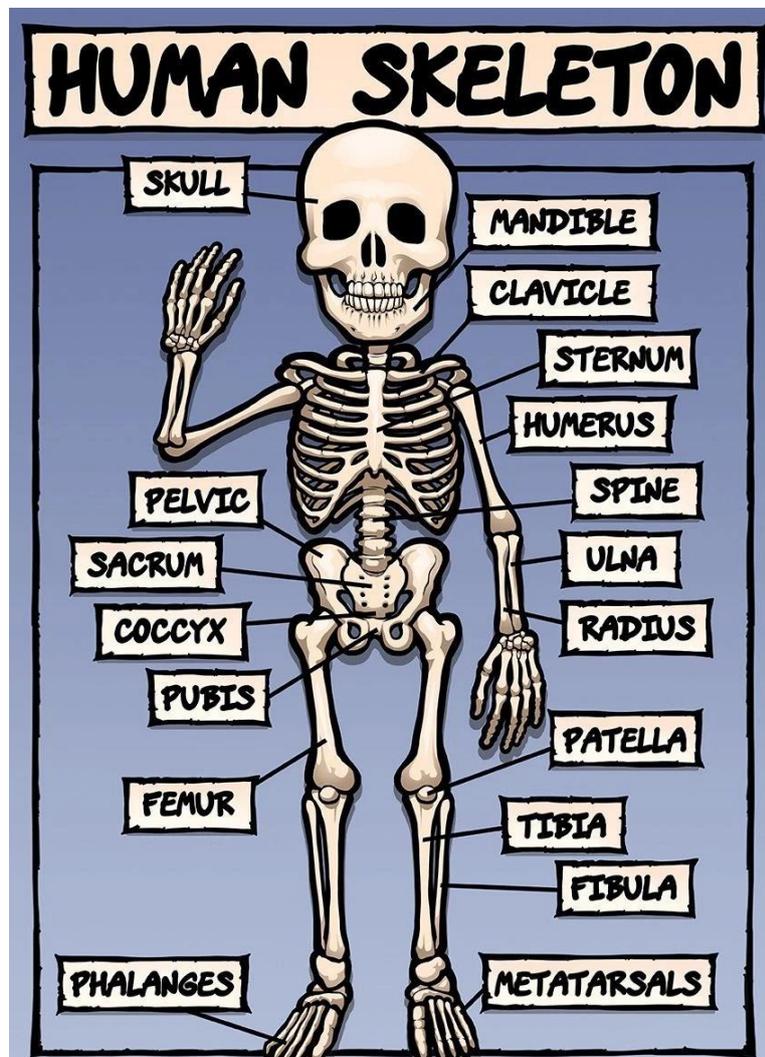


WELCOME TO FRACTURE CLINIC



Mentors

LEM: Sona Sidhu

Practise Supervisor: Maria Shattock

Practise Supervisor: Julia Wood

Practise Supervisor: Charlotte Walmsley

Practise Supervisor: Diana Harris

Clinic Contact Numbers:

Fracture Clinic: 01257 245 421

Office: 01257 247 679

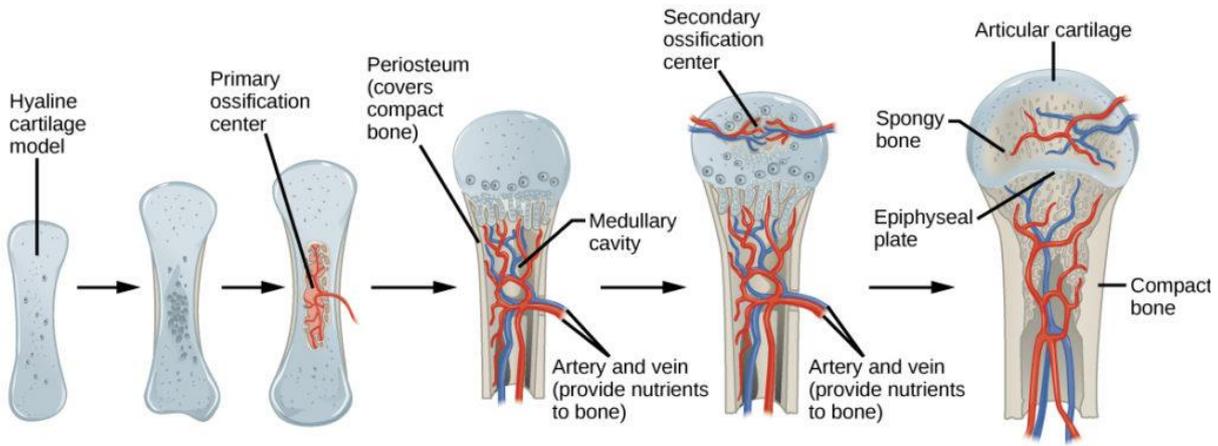
If you need to contact us regarding any issues, please contact us between
07:45am and 17:45pm.

Orthopaedic Team:

The Orthopaedic Team Comprised of different Specialities:

- **Hand**
- **Spine**
- **Shoulder**
- **Hip/Knee**
- **Ankle/Foot**
- **Upper Limb**
- **Lower Limb**

Diagram:



Fractures:

Fractures, broken bones, (means the same), are amongst the most common orthopaedic problems. The average person in this country can expect to sustain two fractures over the course of their lifetime.

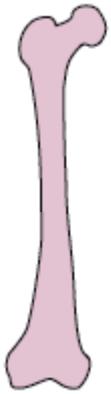
A fracture is diagnosed by the history of the event and by the physical examination of the injury site.

X-rays are used to confirm a diagnosis, but they can be misleading, sometimes a fracture may not show on an x-ray until there are signs of a union.

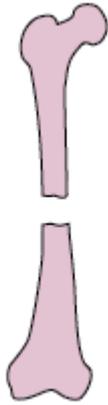
Fractures happen because an area of bone is not able to support the energy placed on it. Therefore, there are two critical factors in determining why a fracture occurs;

- The energy of the event.
- The strength of the bone.

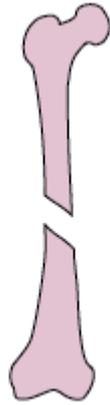
Different Types of Fractures:



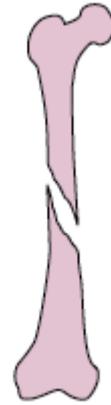
Normal



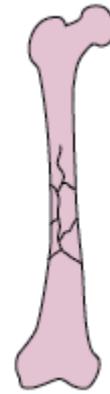
Transverse



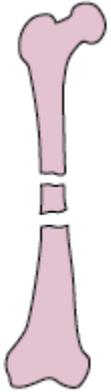
Oblique



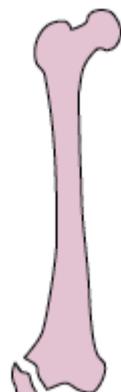
Spiral



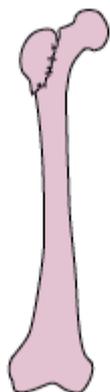
Comminuted



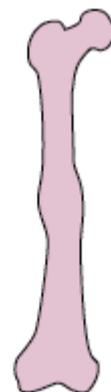
Segmental



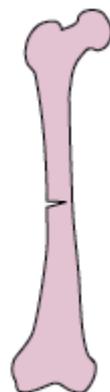
Avulsed



Impacted



Torus



Greenstick

Signs and symptoms of a fracture:

- Pain
- Swelling
- Deformity
- Loss of function
- Abnormal mobility
- Crepitus

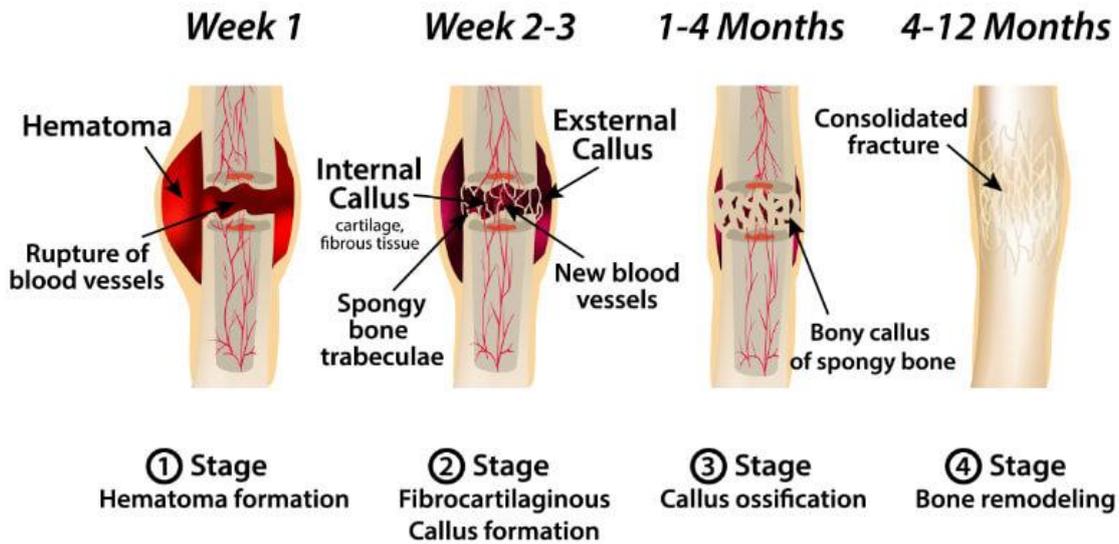
Bone Healing:

There are **five** stages a fractured bone goes through in order to repair itself:

1. Haematoma formation
2. Cell proliferation
3. Callus formation
4. Consolidation
5. Remodelling

Stages of Bone Repair:

Stages Of Healing Bone Fracture



Complications of Fractures:

There are many complications associated with fractures; some of the main complications are discussed below:

- Pain
- Shock
- Mal-union
- Delayed union
- Non-union
- Fat embolism
- Nerve injury
- Vascular injury
- Compartment syndrome

Pain:

Pain is a major symptom of a fracture and as such, it demands special consideration. The patient requires adequate levels of pain relief, usually by oral, injection or inhalation method. If the patient is in pain, it will make them less able to co-operate and comprehend the information given and therefore treatment can be made more difficult.

Shock:

All fractures bleed. You should anticipate greater blood loss from the major bones especially if the fracture is compound. Femoral and pelvic fractures in particular haemorrhage severely, thus making it more likely that the patient will be in shock. It is important that all vital signs are checked and recorded regularly and intravenous fluids are prescribed and given. Adequate reduction and splintage of the fracture will reduce blood loss.

Mal-union:

This is when a fracture unites in an unacceptable position. Correct reduction and positioning of the fracture within the splint/cast will significantly reduce the risk of mal-union.

Delayed-union:

Delayed union occurs when a fracture takes longer than expected to heal. Adequate splintage can reduce the risk of delayed union.

Non-Union:

Fractures that show no sign of uniting after twice the expected healing time are generally classed as non-union fractures. As a result surgical intervention is usually required.

Fat embolism:

A possible complication during the first 72 hours post fracture is the formation of a fat embolism. It is caused when a fractured bone leaks microglobules of fat into the blood stream. Usually this does not cause the patient any problems however; if an embolism forms it can obstruct the blood flow to the brain, liver, kidneys or lungs (P.E).

Nerve Injury:

Nerves are often located in close proximity to bones it is possible for the nerve to be damaged when a fracture occurs. Therefore, it is important for the nerve supply to be checked on initial examination of the fracture and at regular intervals thereafter. Loss of movement, numbness, pins and needles are all signs of nerve damage and should be investigated immediately.

Vascular Injury:

Veins and arteries are located in close proximity to bones and can be damaged by a fractured bone. The vascular supply should be checked on initial examination of the fracture and at regular intervals thereafter. Any vascular compromise is an emergency and therefore the patient's doctor needs to be informed immediately.

Infection:

Closed fractures are not likely to become infected. Compound fractures are highly likely to become infected and as such, they need to be cleaned thoroughly and covered with antiseptic dressing. As well, I'V antibiotics are often needed to counteract infection. If infection spreads to the fractured bone, it will be extremely difficult to eradicate and may lead to non-union.

Compartment Syndrome:

Types of compartment syndrome

There are 2 main types of compartment syndrome: acute compartment syndrome and chronic (also called exertional) compartment syndrome.

Acute compartment syndrome:

- Happens suddenly, usually after a fracture or severe injury
- is a medical emergency and requires urgent treatment
- can lead to permanent muscle damage if not treated quickly

Chronic compartment syndrome:

- happens gradually, usually during and immediately after repetitive exercise (such as running or cycling)
- usually passes within minutes of stopping the activity
- is not a medical emergency and does not cause permanent damage
- Symptoms of compartment syndrome
- Acute compartment syndrome
- Symptoms of acute compartment syndrome usually develop after an injury and get quickly worse.

Symptoms can include:

- intense pain, especially when the muscle is stretched, which seems much worse than would normally be expected for the injury
- tenderness in the affected area
- tightness in the muscle
- a tingling or burning sensation
- in severe cases, numbness or weakness (these are signs of permanent damage)

Chronic compartment syndrome

- Symptoms of chronic compartment syndrome tend to develop gradually during exercise and improve with rest.

Symptoms can include:

- cramping pain during exercise, most often in the legs
- swelling or a visibly bulging muscle
- a tingling sensation
- the affected area turning pale and cold
- in severe cases, difficulty moving the affected body part

Principles of Treatment of Fractures:

Reduction:

- Reduction is the process of restoring the bone ends (and any fractured fragments) into their normal anatomical positions. This is accomplished by open or closed manipulation of the affected area, referred to as open reduction and closed reduction.
- Closed reduction is accomplished by bringing the bone ends into alignment by manipulation and manual traction. X-rays are taken to determine the position of the bones. A cast is normally applied to immobilize the extremity and maintain the reduction.
- In open reduction, a surgical opening is made, allowing the bones to be reduced manually under direct visualization. Frequently, internal fixation devices will be used to maintain the bone fragments in reduction.

Immobilization

- Immobilization is necessary to maintain fracture reduction until healing occurs. Immobilization may be accomplished by external or internal fixation.
- Methods of external fixation include casts, splints, and continuous traction.
- Internal fixation devices include pins, wires, screws, rods, nails, and plates. These devices, attached to the sides of the bone or inserted through the bone, provide internal immobilization of the bone.

Rehabilitation:

- Rehabilitation is the regaining of strength and normal function in the affected area. Specific rehabilitation for each patient will be based upon the type of fracture and the methods of reduction and immobilization used. The physician will generally consult with the physical therapist to develop an individualized rehabilitation plan for each patient. This plan is normally implemented and controlled by the physical therapy department.

Anatomy of the Hip Joint:

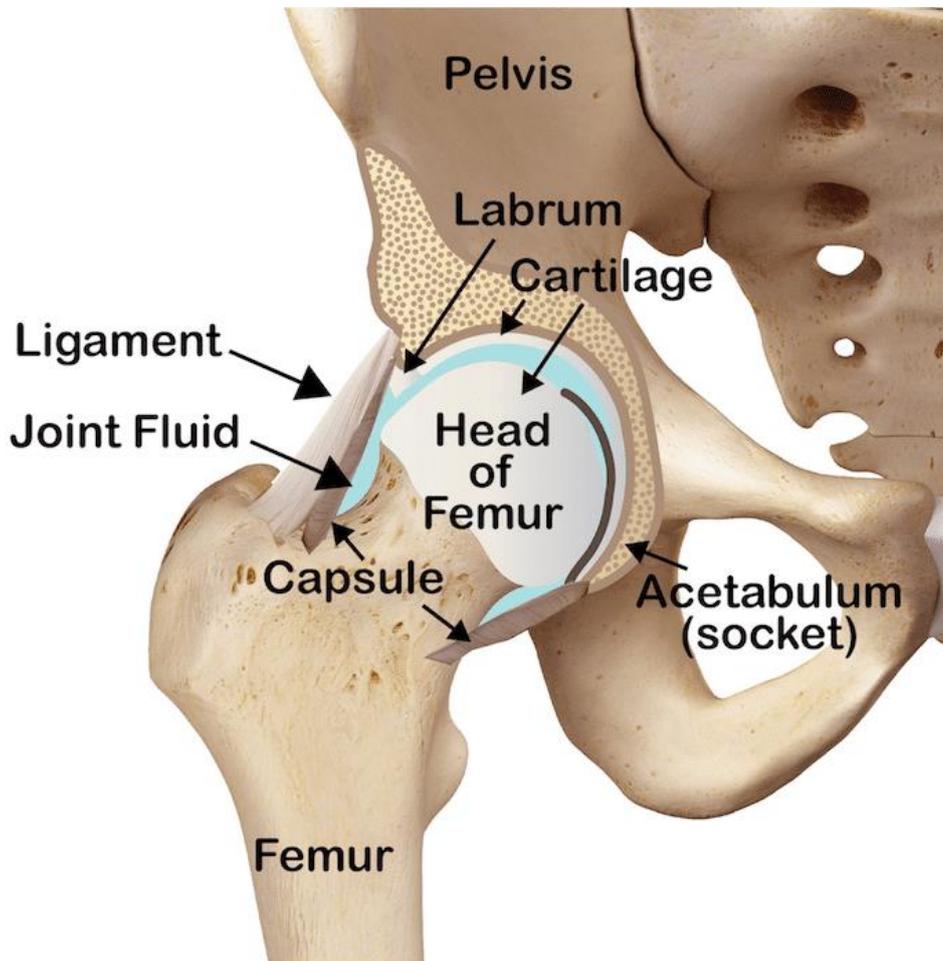
The hip joint is a ball and socket joint that is the point of articulation between the head of the femur and the acetabulum of the pelvis.

Hip Joint

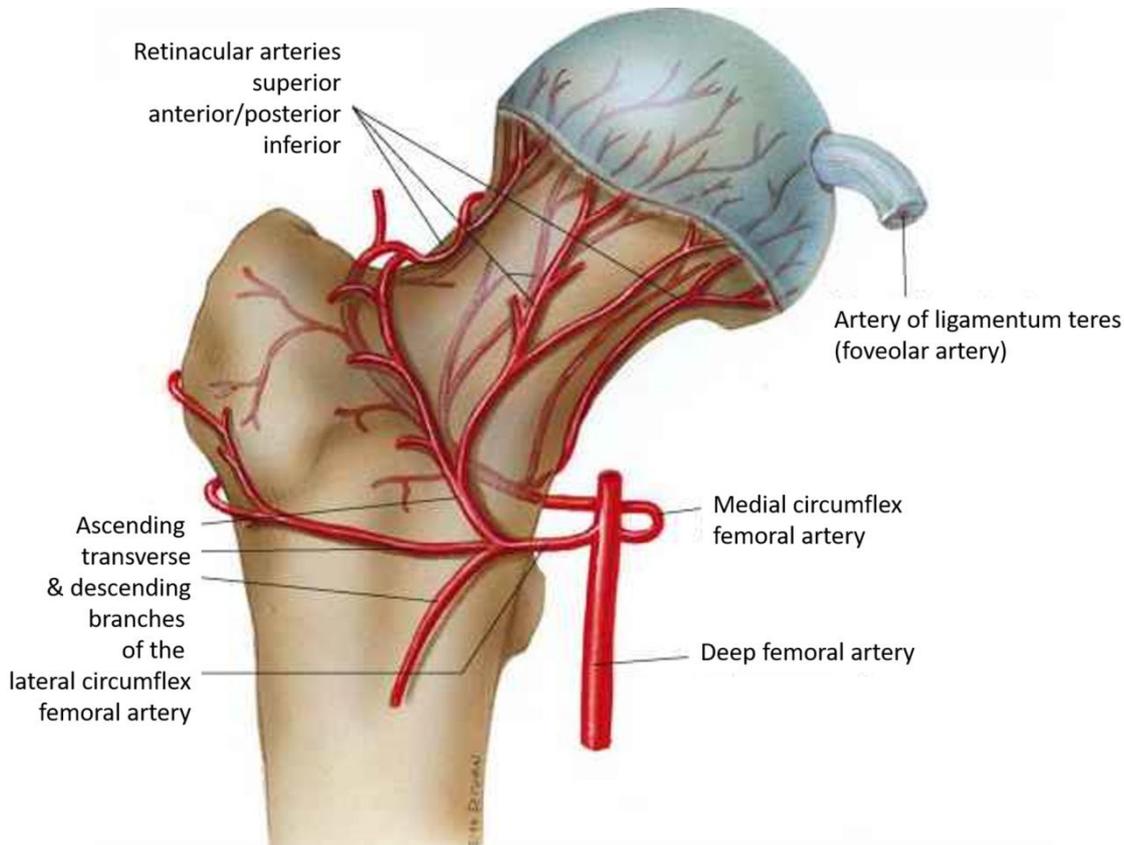
Diarthrodial joint with its inherent stability dictated primarily by its osseous components/articulations.

Primary function of the hip joint is to provide dynamic support the weight of the body/trunk while facilitating force and load transmission from the axial skeleton to the lower extremities, allowing mobility.

Typically works in a closed kinematic chain.



The main bloody supply to the head of the femur penetrates the femoral head close to the cartilage margin and arises from the arterial ring fed from the lateral and medial femoral circumflex arteries with a small portion of the head being supplied via the ligamentum teres. See the diagram below:



Hip Fractures:

Hip fractures are cracks or breaks in the top of the thigh bone (femur) close to the hip joint. They're usually caused by a fall or an injury to the side of the hip, but may occasionally be caused by a health condition, such as cancer that weakens the hip bone.

Falls are very common among older people, especially in people aged 80 and over, who may have reduced vision or mobility and balance problems.

Hip fractures are also more common in women, who are more likely to get osteoporosis, a condition which makes bones weak and fragile.

Classification of Hip Fractures:

Hip fractures: Classified into intracapsular and extracapsular fractures

Intracapsular fractures:

Occurs within the hip capsule; accounts for 45% of all acute hip fractures in the elderly; susceptible to mal-union/avascular necrosis of the HOF because of the limited blood supply to the area.

Intracapsular fractures are further classified as nondisplaced or displaced based on radiographic findings.

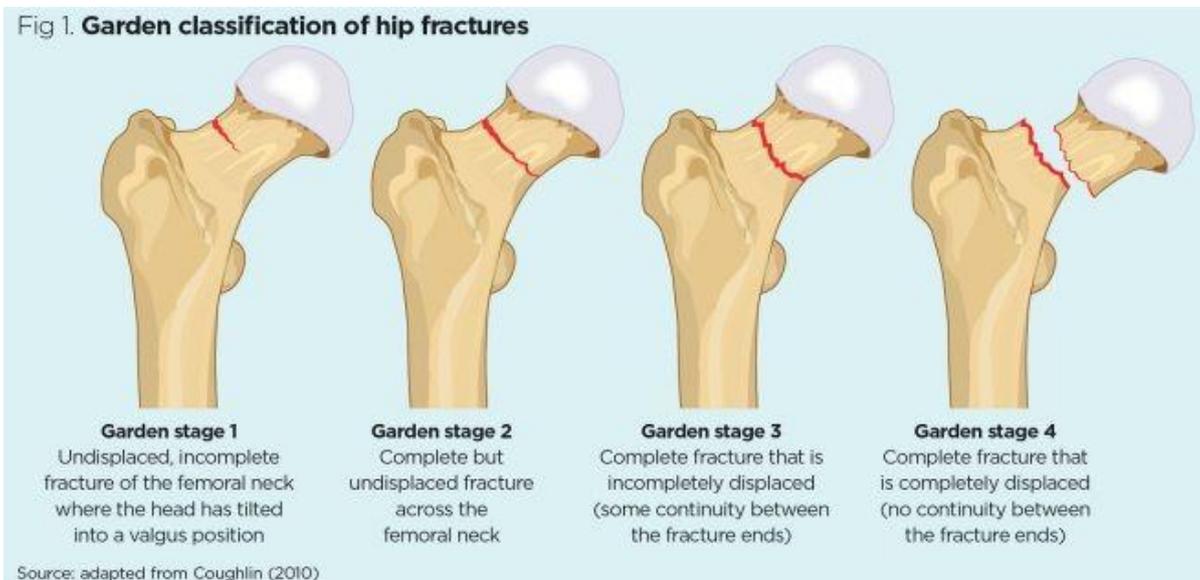
- Type 1: un-displaced and incomplete fracture
- Type 2: un-displaced complete fracture
- Type 3: complete fracture but incompletely displaced
- Type 4: complete fracture and completely displaced

Extracapsular fractures:

Intertrochanteric fracture or subtrochanteric fracture.

Intertrochanteric fracture: occurs between the greater and the lesser trochanter; intertrochanteric region has a good blood supply; avascular necrosis or non-union is rare.

Subtrochanteric fracture: occurs below the lesser trochanter, approximately 2.5 inches below.



Clinical Picture of Hip Fracture:

Symptoms of a hip fracture

Symptoms of a hip fracture after a fall may include:

- pain
- not being able to lift, move or rotate (turn) your leg
- not being able to stand or put weight on your leg
- bruising and swelling around your hip
- your injured leg appearing shorter than your other leg
- your injured leg turning outwards

A hip fracture will not necessarily cause bruising or prevent you from standing or walking.

Complications:

- DVT
- Fat Embolus Syndrome (rare)
- Wound Infection
- Chest Infection
- Urinary/bowel complications

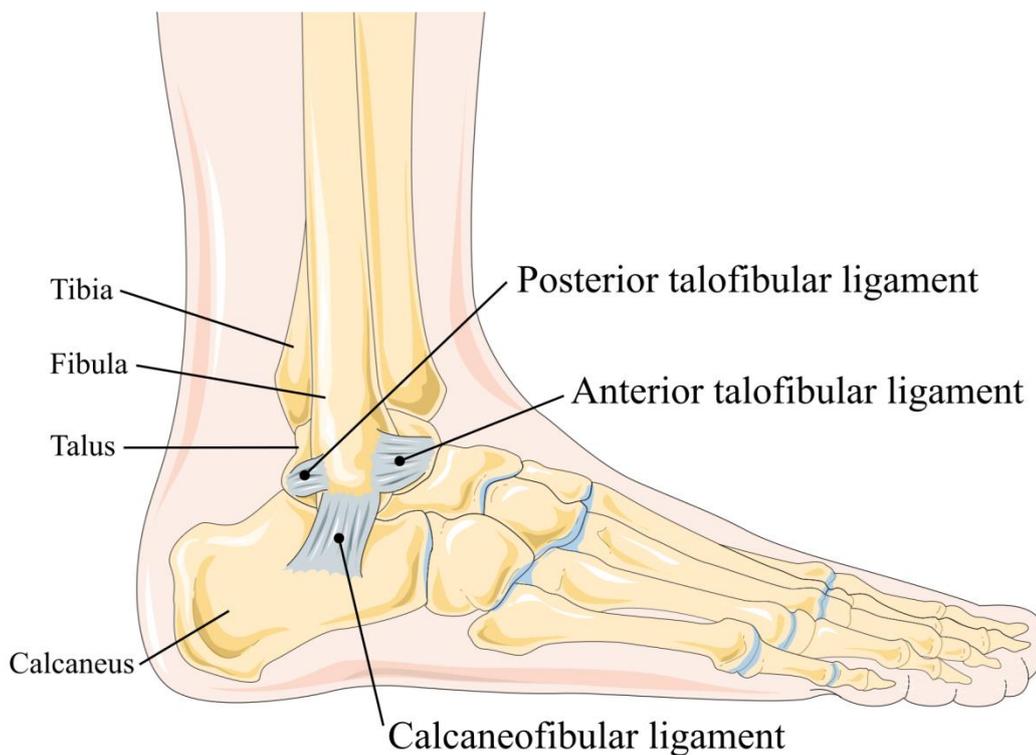
Fractured Ankle:

An ankle fracture is a condition where one or more of the ankle bones are damaged or broken. It is also called a broken ankle. The ankle joint is where the bones of the lower legs and foot meet. It is made up of the tibia, fibula and talus bone. The tibia and the fibula are the two bones in the lower leg. The talus bone is the flat square bone at the top of the foot.

Anatomy:

There are three bones that make up the ankle joint

- Tibia
- Fibula
- Talus



The tibia and fibula have specific parts that make up the ankle:

- Medial malleolus: Inside part of the tibia
- Posterior malleolus: Back part of the tibia
- Lateral malleolus: End of the fibula

There are two joints involved in ankle fractures:

- Ankle joint – Syndesmosis: The joint between the tibia and fibula, which is held together by ligaments.
- Multiple ligaments help make the ankle joint stable.

Type of Ankle Fractures:

Bimalleolar Equivalent Fracture (fibula and ligaments):

This injury is only a fracture of the fibula, but there is also a tear of the ligaments on the inner side of the ankle.³ This leads to instability of the ankle joint, just as if the inner side were fractured, and therefore can require surgery.

Trimalleolar Fracture (both tibia and fibula):

A trimalleolar ankle fracture is similar to a bimalleolar ankle fracture, but the bone in the back of the tibia is also fractured. The bone in the back of the tibia is called the posterior malleolus.



What are Common Causes of Ankle Fractures?

“Ankle fractures can happen regardless of age, most often because of athletic activity or impact from a fall or accident,” says Dr. Rust. “However, they are more common among older adults, particularly those who are very active.”

Some common causes of ankle fractures include:

- Twisting, rotating or rolling ankle
- Impact or stress from tripping or falling
- Rolling ankle, affecting ligaments that keep the ankle stable
- Impact to ankle in a car accident

What Symptoms Point to an Ankle Fracture?

“Typically, the first symptom of a broken ankle is immediate, severe pain,” says Dr. Rust. “Other symptoms may appear later on, or not at all.”

Common symptoms of ankle fracture:

- Immediate, severe pain at the fracture site
- Radiating pain
- Swelling at the ankle or along the leg
- Bruising at fracture site or along the leg
- Tenderness
- Difficulty walking or putting weight on the ankle/foot
- Blisters at fracture site
- In severe cases, bones that protrude through the skin

How are Ankle Fractures Treated?

“If you’re experiencing symptoms of a broken ankle, you should immediately see a physician,” says Dr. Rust. “Especially if there is severe pain. Sometimes severe pain can be a sign of an ankle sprain, and it’s important to distinguish the two.”

Elevating the ankle and applying ice are initial steps that can be taken to minimize pain, decrease swelling and help prevent additional damage. Common treatments for ankle fractures include:

- Splinting/bracing
- Casting or booting
- Surgery

Fractured Wrist:

A broken wrist is a break or crack in one or more of the bones of your wrist. The most common of these injuries occurs in the wrist when people try to catch themselves during a fall and land hard on an outstretched hand.

You may be at higher risk of a broken wrist if you participate in sports like in-line skating or snowboarding, or if you have a condition in which bones become thinner and more fragile (osteoporosis).

It's important to treat a broken wrist as soon as possible. Otherwise, the bones might not heal in proper alignment, which might affect your ability to do everyday activities, early treatment will also help minimize pain and stiffness.

Symptoms

A broken wrist might cause these signs and symptoms:

- Severe pain that might worsen when gripping or squeezing or moving your hand or wrist
- Swelling
- Tenderness
- Bruising
- Obvious deformity, such as a bent wrist

Causes

A broken wrist can be caused by:

- Falls. Falling onto an outstretched hand is one of the most common causes of a broken wrist.
- Sports injuries. Many wrist fractures occur during contact sports or sports in which you might fall onto an outstretched hand — such as in-line skating or snowboarding.
- Motor vehicle crashes. Motor vehicle crashes can cause wrist bones to break, sometimes into many pieces, and often require surgical repair.
- Risk factors
- Participating in certain sports activities and having the bone-thinning disease osteoporosis can increase your chances of breaking a wrist.

Complications

Ongoing stiffness, aching or disability. Stiffness, pain or aching in the affected area generally goes away eventually after your cast is removed or after surgery. However, some people have permanent stiffness or pain. Be patient with your recovery, and talk to your doctor about exercises that might help or for a referral to physical or occupational therapy.

Osteoarthritis. Fractures that extend into a joint can cause arthritis years later. If your wrist starts to hurt or swell long after a break, see your doctor for an evaluation.

Nerve or blood vessel damage. Trauma to the wrist can injure adjacent nerves and blood vessels. Seek immediate attention if you have numbness or circulation problems.

Prevention

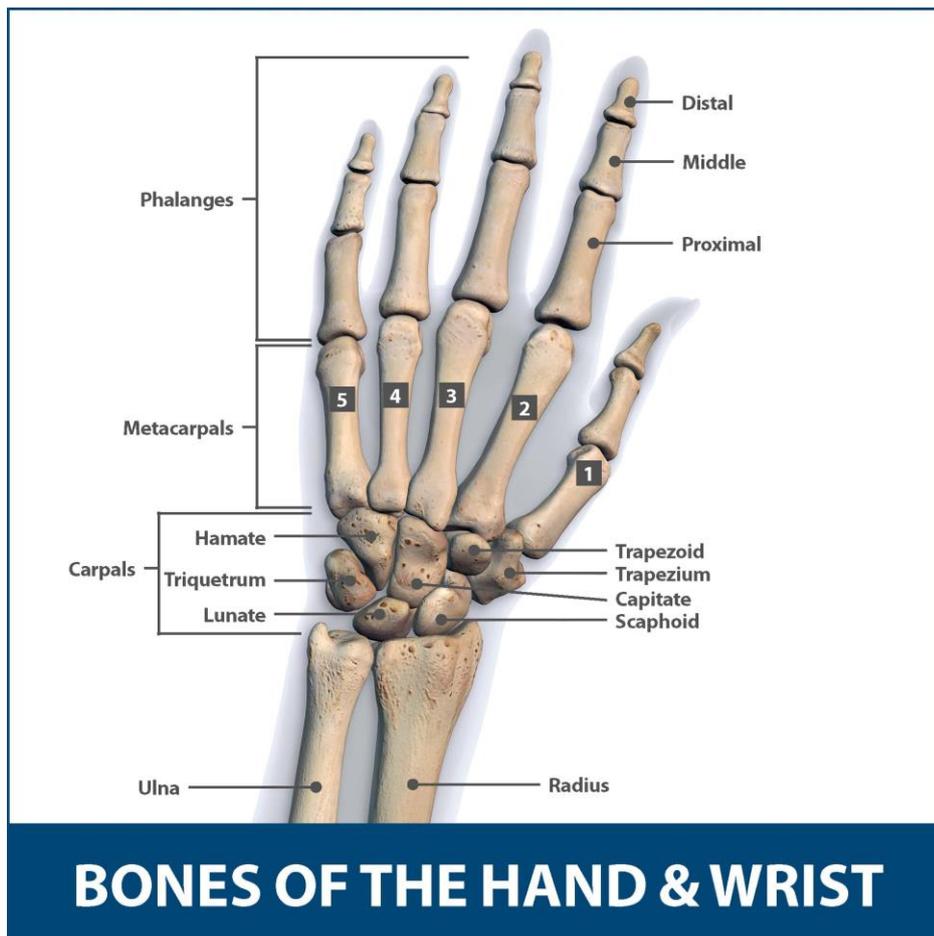
It's impossible to prevent the unforeseen events that often cause a broken wrist. But these tips might offer some protection.

- Build bone strength
- To build strong bones:
 - Eat a nutritious diet with adequate calcium and vitamin D
 - Get plenty of weight-bearing exercise, such as brisk walking
 - Quit smoking if you're a smoker

Prevent falls

Most broken wrists occur when people fall forward onto an outstretched hand. To prevent this common injury:

- Wear sensible shoes
- Remove things you can trip over in your home, such as throw rugs
- Light up your living space
- Have your vision checked and, if needed, corrected
- Install grab bars in your bathroom
- Install handrails on your stairways
- Avoid slippery surfaces, if possible, such as snow- or ice-covered walkways



Nursing Assessment and Interventions:

- Obtain a history of the injury from the patient and assess for the presence of factors that may Cause pathologic fractures (osteoporosis, osteomyelitis, neoplastic diseases).
- Assess presence of signs of fracture, soft tissues involvement, open fracture and severe external haemorrhage.
- Obtain routine preoperative history, and prepare for theatre if necessary.

A Brief Guide to orthopaedic Abbreviations:

These are abbreviations that can be used in handovers and should be used with caution in your legal documentation.

#	Fracture
# L/R NOF	Fracture left/right neck of femur
# L/R SOF	Fracture left/right shaft of femur
Hemi	Hemiarthroplasty

DSS	Dynamic hip screw
IM nail	Intramedullary nail
ORIF	Open reduction and internal fixation
Ex-Fix	External Fixation
MUA	Manipulation under anaesthetic
EUA	Examination under anaesthetic
POP	Plaster of Paris
AKPOP	Above knee Plaster of Paris
BKPOP	Below knee Plaster of Paris
THR	Total Hip replacement
TKR	Total Knee replacement
Tb and Fib	Tibia and Fibula
I and D	Incision and drainage
BE	Below elbow
BK	Below knee

Theatre Notes:

GA	General Anaesthetic
LA	Local Anaesthetic
FWB	Full weight bearing
PWB	Partial weight bearing
TWB	Touch weight bearing
NWB	Non weight bearing
ROM	Range of movement
OPA	Out patients appointment
FU	Follow up
ROC	Removal of clips
ROS	Removal of sutures
CSM	Colour sensation and movement
RICE	Rest, Ice, Compression and Elevation
S/B	Seen by
CPM	Continuous Passive Movement
C+C	Collar and Cuff
BAS	Broad arm sling
HAS	High arm sling
DIPJ	Distal Interphalangeal Joint
MC	Metacarpal
MCPJ	Metacarpophalangeal joint
MT	Metatarsal
MTPJ	Metatarsophalangeal joint
PIPJ	Proximal Interphalangeal joint

Assessment and Treatment Centre:

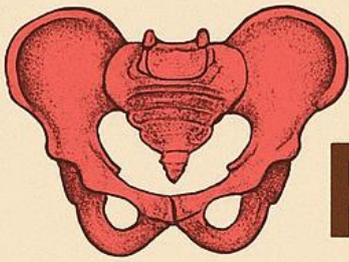
<u>SPOKE Placement</u>	<u>Date</u>
Physiotherapist	
Occupational Therapy	
Pre Op Assessment	
Joint Nurses	
Elective Orthopaedic	
Trauma Wards	
Theatre	
Plaster Room	
Fracture Clinic	

Department: Fracture clinic, Orthopaedic

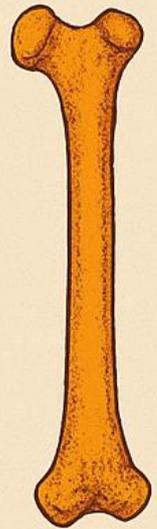
Division: Orthopaedic

Date: 30/12/25

Review Date: 30/12/28



PROFICIENCY BINGO



**INITIAL
MEETING**

**INTERMEDIATE
MEETING**

**FINAL
MEETING**

**PLASTER
ROOM**

NLDC

SMRC

VFC

**NOTES
OUT**

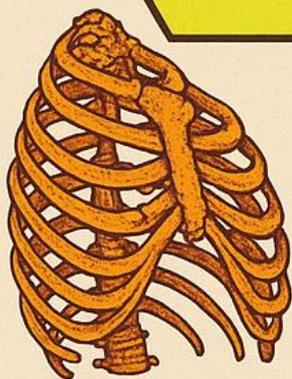
**SPINE
CLINIC**

**LOWER
LIMB
CLINIC**

**UPPER
LIMB
CLINIC**

**SHOULDER
CLINIC**

**AMPUTATION
CLINIC**



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