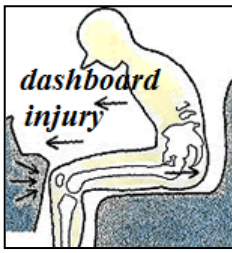


Injuries of hip & femur



Dislocation of the hip: according to the position of head of femur relative to the acetabulum, it can be: **posterior**, **anterior** or **central** (with acet. #).

Posterior dislocation: is the commonest.

MOI: usually dashboard injury to the knee with hip flexed & adducted; if abducted, there is in also a # of the posterior acet. wall (hip #- #).



CF: the leg is short, adducted, internally rotated & flexed (unless the femur is #). The sciatic nerve may be injured.

X-ray: AP view: the FH is out & above the acet. If any # is suspected, CT scan is needed.

Classification: type I: ≠ without # or minor chip #.

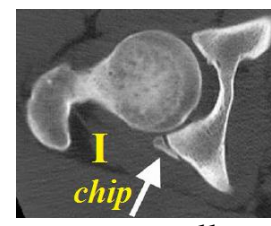


II: ≠ with single large fragment of post. acet. wall.

III: comminuted posterior wall.

IV: ≠ with acet. floor #.

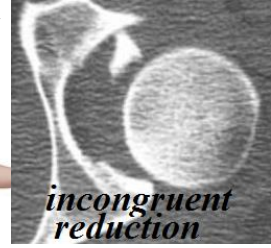
V: ≠ with femoral head #.



R: urgent closed reduction UGA: apply leg traction while flexing hip & knee 90° then ↑ upward traction with hip internal & external rotation; if reduction is successful, you will feel a 'clunk'. Checking x-ray to confirm reduction & CT to exclude a #.

If **type I (stable):** 3wks traction → 3wks partial weight bearing (PWB).

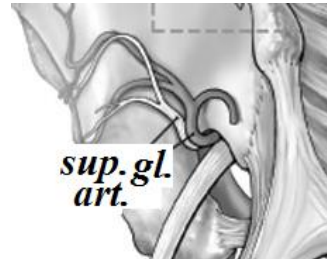
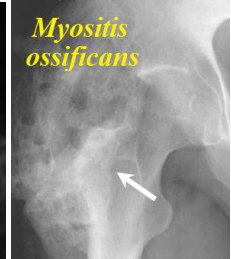
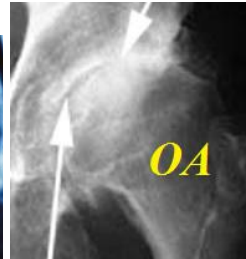
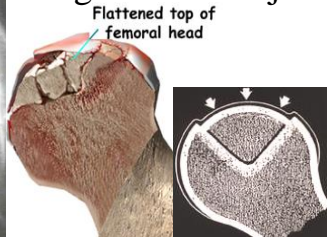
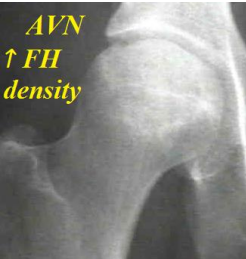
The other **less stable types II, III, IV & V:** 6wks skeletal traction → 6wks PWB. In any type, if post reduction CT shows a trapped bone fragment inside hip joint or a still displaced large bone segment (which may ↓ hip stability), then surgery is indicated: ORIF of large segment & removal of small segment → 6 wks traction → 6 wks PWB.



Comp.: Early: 1-Sciatic nerve injury (>10%); 2-Vascular injury (rare); 3-Associated femoral shaft # (the ≠ may be missed).

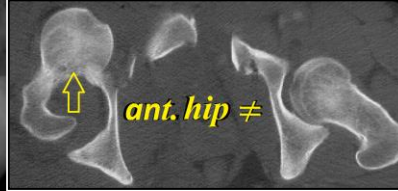
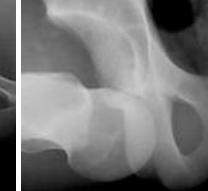
Late: 1-Avascular necrosis (AVN): the incidence is 10%; if reduction is delayed >12 hours, it ↑ to 40%. MRI will detect early changes while x-ray changes (↑ FH density) need > 6 wk to be seen.

2-Myositis ossificans. 3-Unreduced ≠: > few weeks needs open reduction. 4-OA: due to: a- cartilage damage; b- retained bone fragment in the joint; c- AVN.





inferior type



Anterior dislocation: is rare.

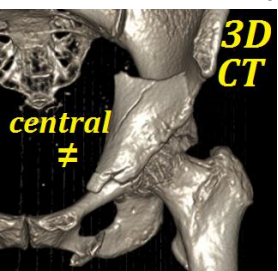
MOI: RTA or FFH.

CF: leg is abducted, externally rotated & flexed.

X-ray: FH lies in front of acet. & either **superior** (over pubis or ilium) or **inferior** (over obturator foramen).

R: the same as posterior ≠.

Comp.: 1-in superior type, FH may press on the femoral NV bundle; 2- AVN: less common (<10%).



Central dislocation (Acetabular floor fracture)

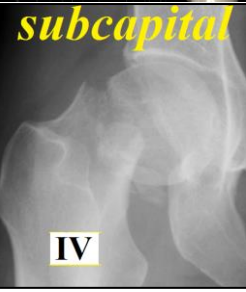
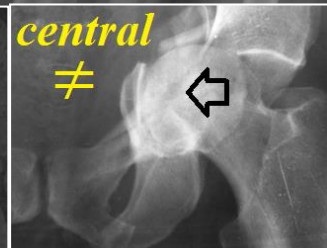
MOI: fall on the side or blow on gr. trochanter.

CF: the leg is in normal position.

X-ray: FH is pushed medially with acet. floor #.

R: 12 wks skeletal traction, with or without lateral traction in the gr. trochanter.

Comp.: OA.



Fractures of the femoral neck: common in old osteoporotic.

Risk factors: 1-Weak bone like osteoporosis, osteomalacia, DM, stroke (disuse), alcoholism & chronic diseases; 2- Old people have weak muscles & poor balance with ↑ tendency to fall.

MOI: In *elderly*: simple fall or even catching toe in a carpet.

In *young*: RTA or FFH (20% have also femoral shaft #).

Garden's classification: 4 stages of progressive displacement:

Stage I: incomplete impacted #.

Stage II: complete undisplaced #.

Stage III: moderately displaced #.

Stage IV: severely displaced #.

Healing problems: 1-**Bone ischemia:** FH gets its blood from:

a- lig. teres vessels (poor in elderly & in 20% not present);

b- intramedullary vessels (always interrupted by the #);

c- capsular vessels (usually kinked or torn in displaced #).

Hence the high incidence of AVN in displaced #.

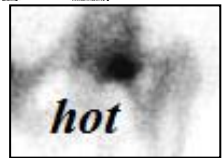
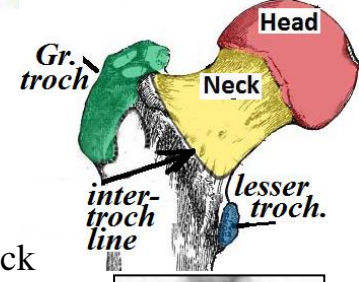
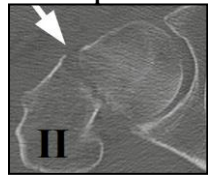
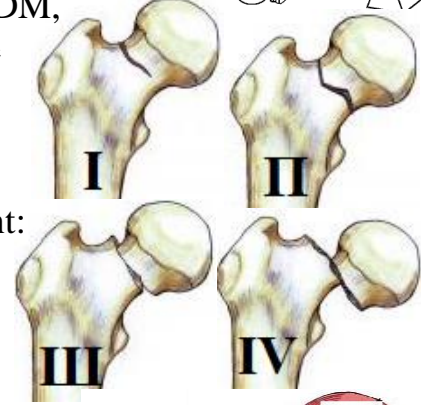
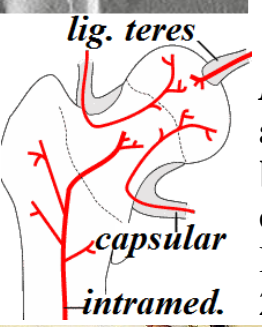
2-Poor healing: due to: **a-** FH has poor bl. supply; **b-** femoral neck has no soft tissue attachment which could promote callus formation.

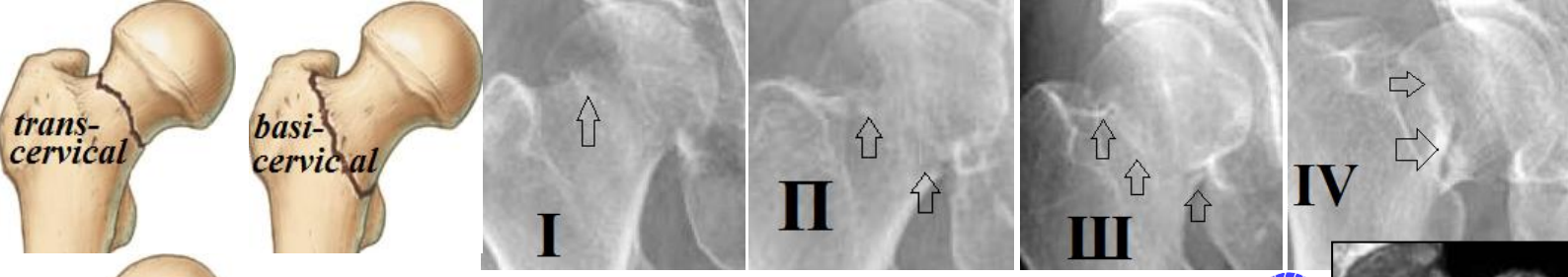
c- the femoral neck # is **intra-capsular** # & the synovial fluid prevents clotting of # hematoma; Hence the high incidence of **nonunion**.

CF: short & externally rotated leg.

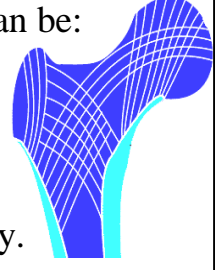
Don't miss: 1-**impacted** #: patient is still able to walk with 'normal' x-ray; 2-**stress** #: hip pain, no trauma, normal x-ray but MRI or bone scan: 'hot' lesion. 3-**painless** # in bed-ridden patients.

4-**multiple** #: every patient with femoral shaft # should x-ray his pelvis to exclude hip #.





X-ray: according to **site** of # (anatomical classification), it can be: subcapital, mid-cervical or basal. Assess the degree of # displacement by matching of bone trabeculae-**Garden's** stages.



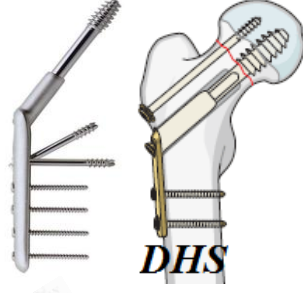
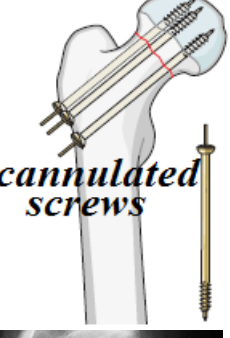
R: is operative. The **aim** is:

- 1-To keep the patient active to prevent comp. of recumbency.
- 2-To 'ensure' # union by perfect reduction & secure fixation.

If the patient is left without operation:

- 1-stage I& II will progress to III & IV.
- 2-displaced # never unite without fixation.
- 3-lying in bed → DVT, pulmonary embolism, pneumonia & bed sore.
- 4- too painful.

Initial R: skin traction to relief pain; preoperative preparation.



Surgery: depends on patient age & activity & on # site & stage:

1-Internal fixation (IF) (cannulated screws or DHS):

Stage I&II (all ages) → closed reduction (CR) + (IF);
 Stage III&IV (<65) → CR + IF & if CR fails → open reduction + IF only when healing is predictable in younger age group; if healing is unlikely as in older age, then should go to hip replacement →

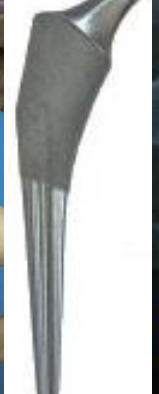
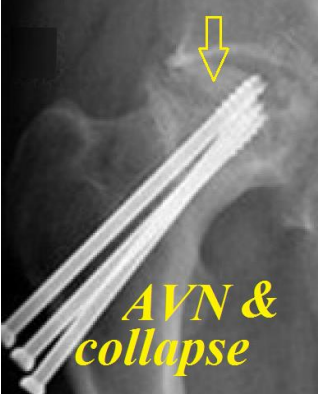
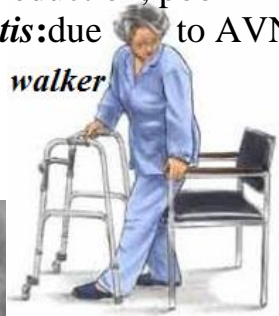
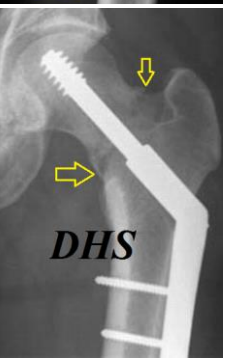
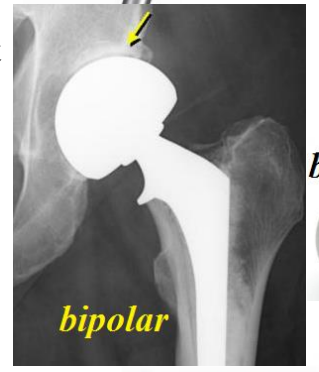
2-Prosthetic replacement: For older less active, use:

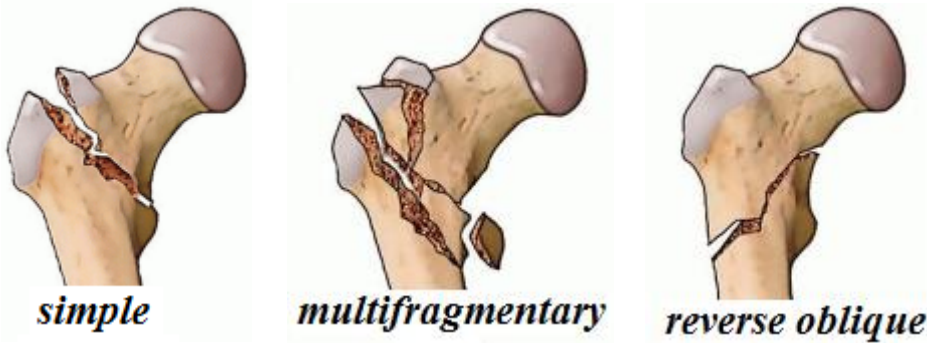
Partial hip replacement (PHR): replacing femoral part only using unipolar or bipolar prosthesis ± cement.

Total hip replacement (THR): for more active pt. or those with acet. damage as in old # or metastasis

Post-operative: sit up in bed or chair & start activity from the 1st day.

Comp.: **1-General:** DVT, pul. embolism, pneumonia & bed sore. **2-AVN** in 30% of displaced # & 10% of undisplaced #. **3-Non-union** in 30% of displaced # bec. of poor bl. supply, poor reduction, poor fixation & poor healing. **4-Osteoarthritis:** due to AVN & FH collapse.





Intertrochanteric fractures: like neck #, are common in elderly but are **extracapsular**, so unite quickly without AVN.

MOI: either direct fall on gr. trochanter or indirect twisting injury.

CF: tender swelling & bruise of the upper thigh with short & externally rotated leg.

X-ray: the # line pass from lesser to gr. trochanter.

AO classification: arranged in ↑ degree of instability → **simple, multifragmentary & reverse oblique.**

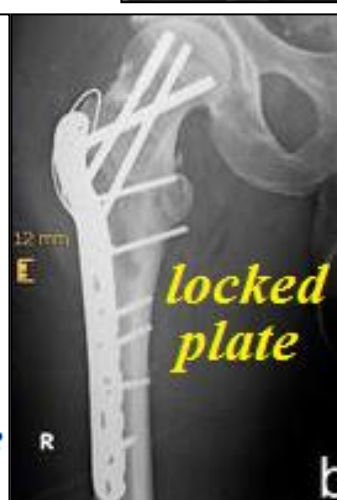
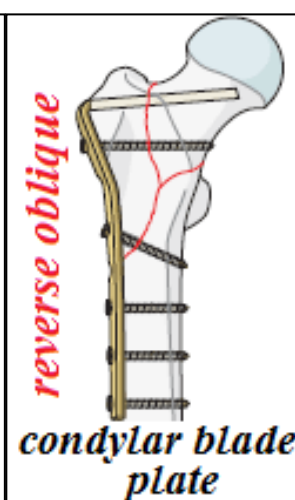
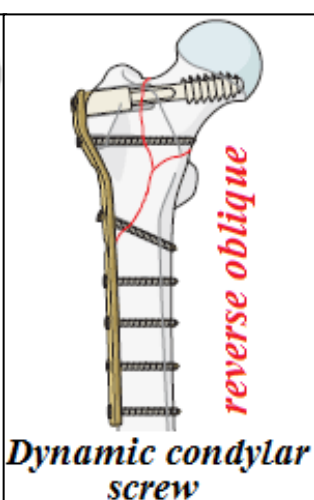
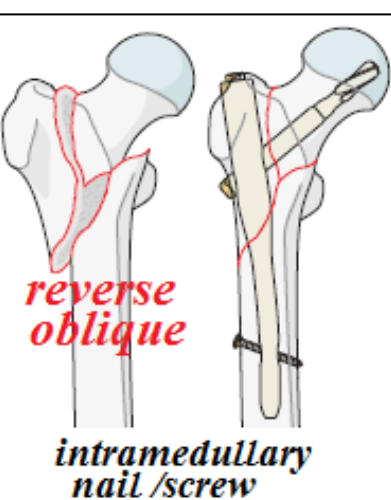
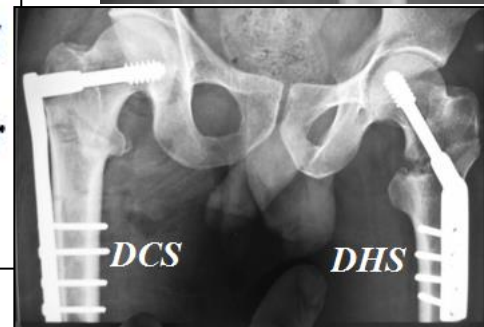
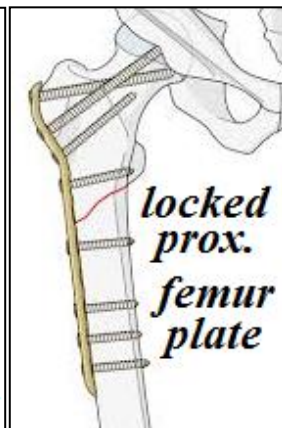
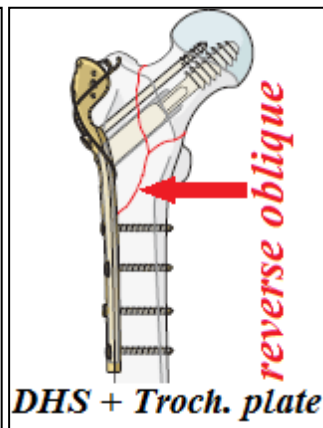
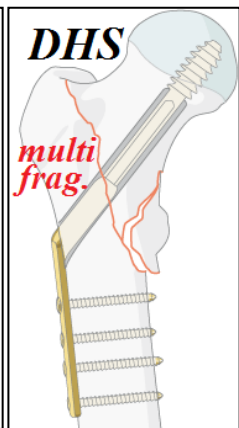
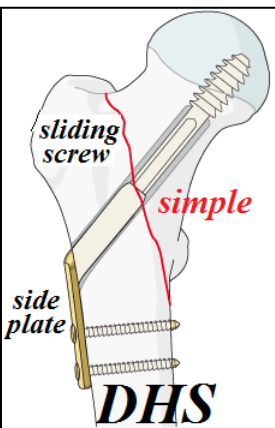
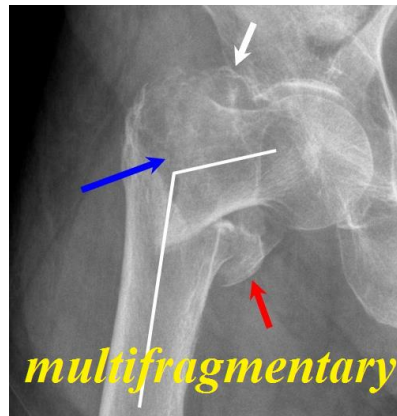
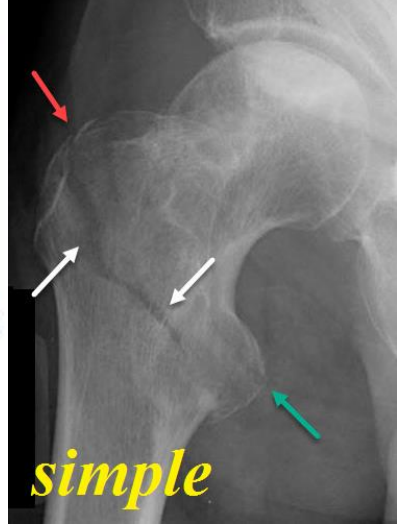
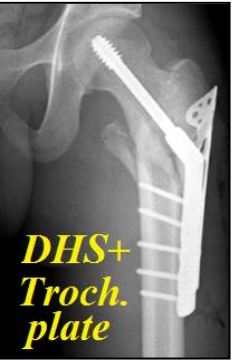
A fracture is considered **unstable** if:

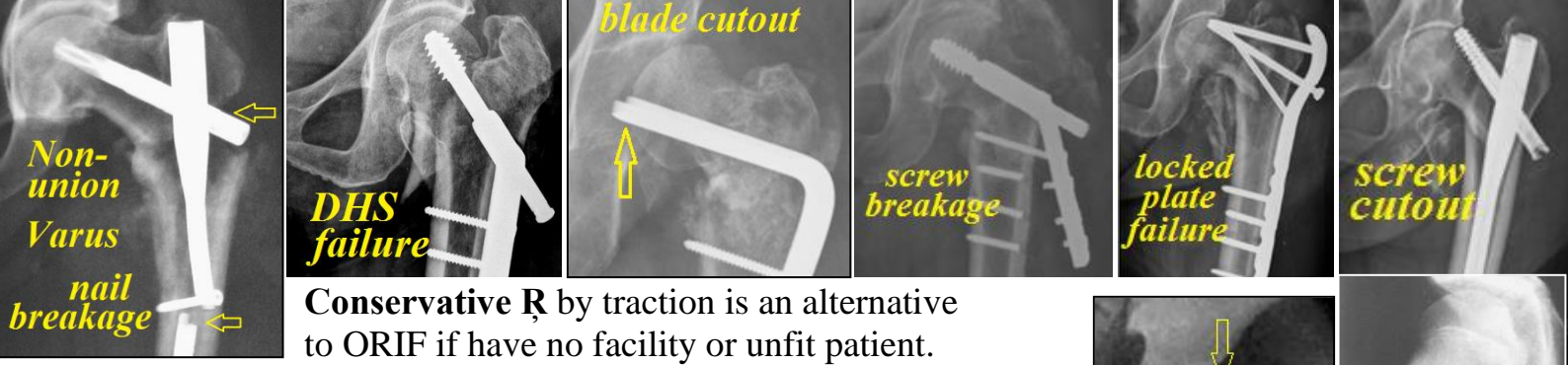
- 1-widely separated 4 parts # or comminuted posteromedial cortex;
- 2- reverse oblique or subtrochanteric extension;
- 3-severe osteoporosis.

R: is almost always by internal fixation in order to:

- 1-obtain the best possible reduction & 2-mobilize patient early thus reducing the complications of prolonged recumbency.

Types of internal fixation: closed or open reduction & fixation by a device that can maintain neck / shaft angle. According to the degree of # stability, use one of these:





Conservative R by traction is an alternative to ORIF if have no facility or unfit patient.

Comp.: **Early:** DVT & pulmonary complications.
Late: 1-failed fixation; 2-malunion(varus & ext. rotation); 3-nonunion(rare).



Proximal femoral fractures in children:

are uncommon.

MOI: severe trauma like RTA or FFH.

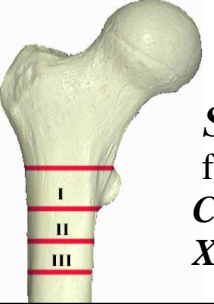
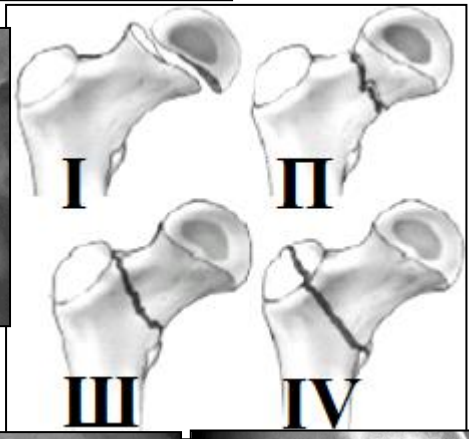
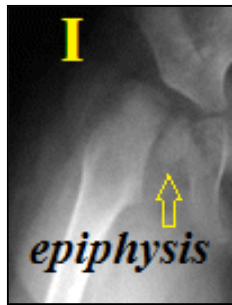
Delbet classification: I: transepiphyseal, II : transcervical, III : cervicotrochanteric, IV: intertrochanteric.

R: undisplaced # → 6-8 weeks hip spica.

Displaced # → CRPP or ORIF.

Comp.: 1-AVN(40% in displaced type I&II).

2- Coxa vara(malunion or physeal arrest), 3- shortening.



Subtrochanteric fractures: occur at any age following severe trauma.

CF: swollen tender thigh with short & externally rotated leg.

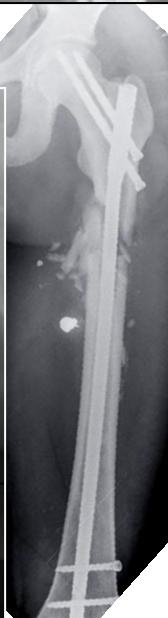
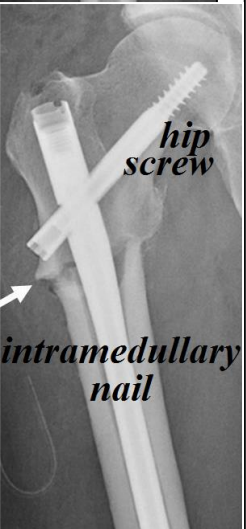
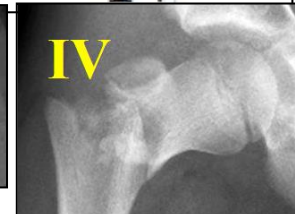
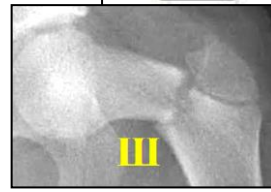
X-ray: # line is through or below lesser troch.(transverse, oblique or spiral).

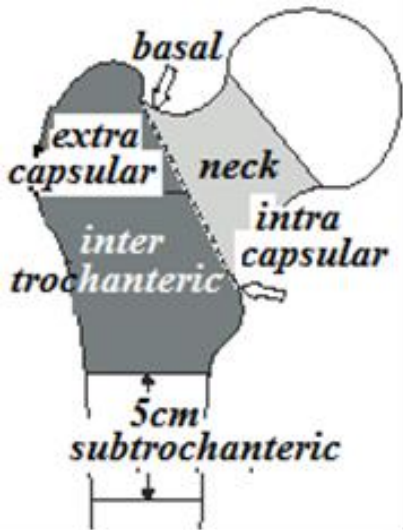
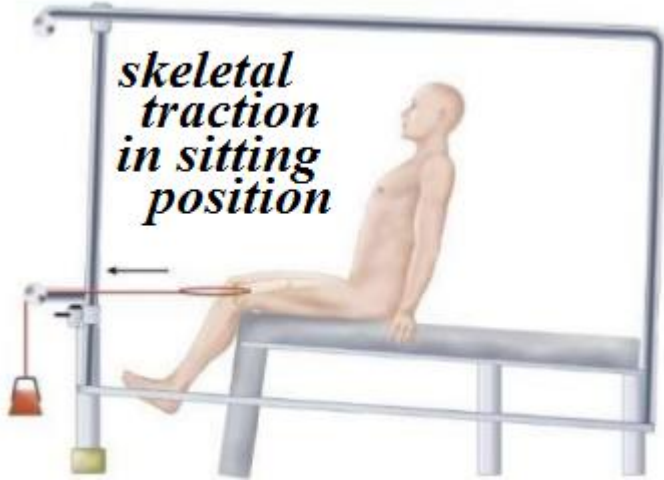
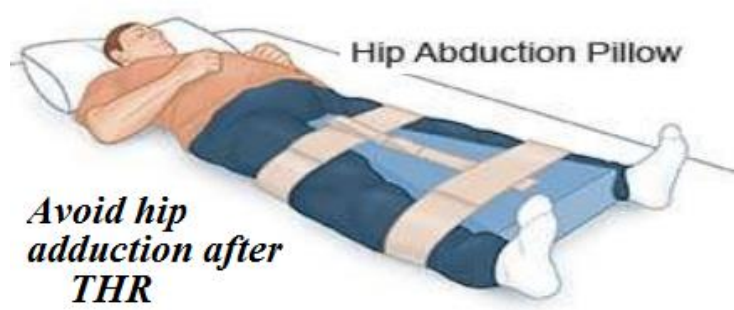
The upper fragment is flexed & abducted while the distal is pulled up & adducted.

R: **ORIF:** DHS, DCS, locked plate, blade plate, IM nail with locking screw .

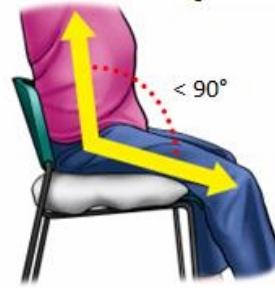
Conservative R by traction is possible but difficult: 3 mths skeletal traction in the sitting position.

Comp.: 1- malunion; 2- nonunion(5%).





DO AND DON'TS
After hip replacement



In sitting **Do Not** bend hip above 90 degree



Do Not cross legs when sitting



Do Not bend body forward to pick objects



Do Not rotate leg when standing. Keep leg straight

