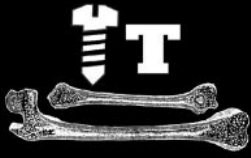


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Femoral Neck Fx w/ Dr harrison

Dr. Harrison - Follow on twitter at @RKH_MD

PE:

- ATLS
- R/o Open fx
- Assess limb

Assoc injuries

- Fem neck fx assoc w/ 2-6% of femoral shaft fx

Imaging

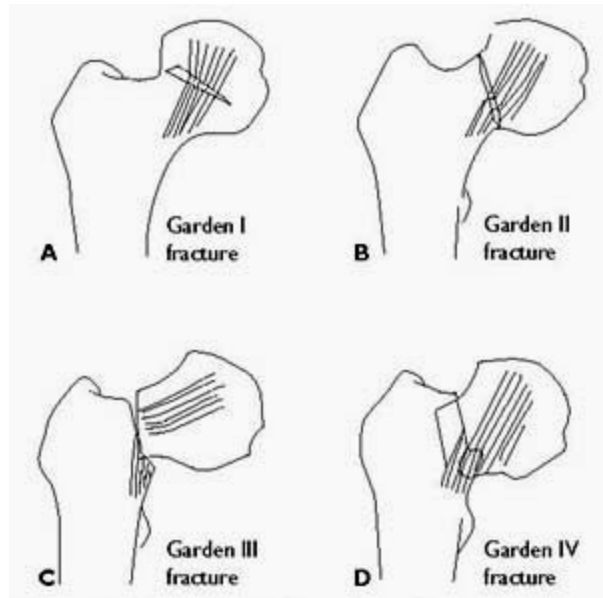
- Xray
- MRI if there is a question- more accurate than bone scan.



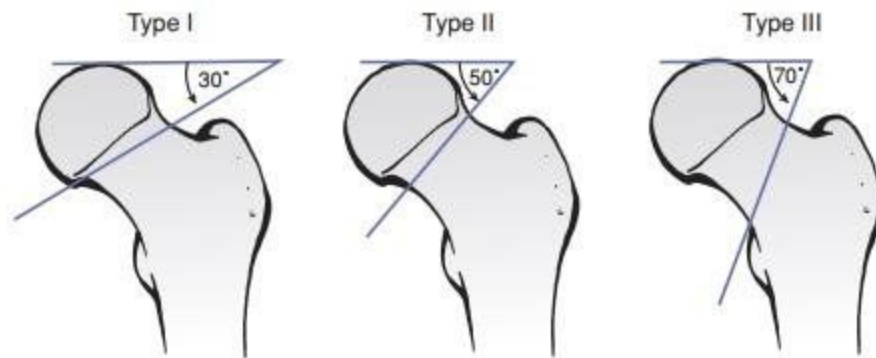
-
- CT- Bone morphology

Classification

- Anatomic -
 - bone in transcervical region is much stronger than sub capital
- Garden- described in 1961
 - Judged by degree of displacement. Relationship of trabecular lines in femoral head to those in acetabulum
 - 1- Valgus impacted- lateral fx line doesn't breach medial cortex
 - 2- Complete but undisplaced- trabecular lines in head are co-linear w/ acetabulum and femoral neck distal to fx
 - 3- incomplete displacement
 - 4- complete displacement. Fem neck ER



-
- Beimers- stable v unstable-
 - Stable- some continuity across the fx (impaction)
 - Unstable- no continuity across fx site, so the two fragments would move independently w/ minimal force
- Pauwels
 - Type 1- transverse- 30 degrees or less
 - Type 2- oblique- 30-50
 - Type 3- vertical- greater than 50



○

Pathoanatomy

- Femoral neck angle- 130-135 degrees
- Femoral anteversion- 15-25 degrees-
- Hip axis length and femoral neck width- has an influence on risk of femoral neck fx
 - Hip axis length- distance from lateral aspect of trochanteric region along axis of femoral neck to inner table of pelvis
 - (Inc in this length and fem neck Edith, association w/ inc of femoral neck fx)- longer in white women
- Trabecular lines- forms Singh classification of osteoporosis
- Blood supply
 - 3 sources-
 - capsular vessels, intramedullary vessels, contribution from ligamentum teres
 - In adults
 - arise from medial/lateral circumflex arteries
 - Medial + lateral circumflex a form a circular anastomosis at base of fem neck
 - They then penetrate anterior capsule at base of the neck at level of intertroch line
 - Posteriorly- they pass beneath orbicular fibers of capsule- run up neck under synovial reflection to articular surface.
 - In capsule- referred to as reticular vessels 4 groups- anterior, medial, lateral, and posterior)
 - LATERAL group is largest contributor to femoral head blood supply.. which arise from deep branch of medial circumflex artery
 - Portion of femoral neck w/ hip joint capsule- no cambial layer in fibrous covering- doesn't make callus- depends on endosteal healing along- prolonged union common w/ these fx

Non-op tx (Garden 1?)

- TTWB w/ crutches- heal 4-6wks- risk of displacement tho
 - Displacement risk 19-46%

Operative Tx of undisplaced femoral neck fx

- Cannulated screw system vs sliding hip screw device /w short plate
- Wbat post-op . Can still get AVN'

Tx displaced fx

- Reduction and fixation- high rate AVN and nonunion- used for younger patients
- Reduction technique? Position?
- Junction of convex femoral head and neck should produce an S-shaped curve in all planes
 - Perfect reduction may not be possible w/ comminution- vagus malreduction a lil better if anything
- 3 screws v sliding hip screw + short side plate
 - Inverted triangle
- Varus reduction increases failure rate x4
- Conflicting studies about time to surgery
- Cement- improves early stability maybe but inc requirement for later re-operation due to nonunion and avn
- Conversion to hemi is assoc w/ higher complications than a THA as primary*

Unipolar Hemiarthroplasty

- Unipolar hemi
- Uncemented implants- assoc w/ inc risk of proximal femur fx at insertion time
- Cemented stems assoc w/ better functional outcomes n less thigh pain

THA

- Used for displaced neck fx in elderly
- Higher functioning

Bipolar hemiarthroplasty

- Advantage- articulation between inner head and the shell, and shell and the acetabulum
- Dual articulation- proposed to reduce risk of wear and acetabulum protrusion
- Prosthesis w/ smaller head diameter- exhibits mostly intraprosthetic motion compared w/ large diameter head- where motion is mainly extra prosthetic.
- Modular design- variety of inner head neck lengths
- Cemented bipolar below
- Dislocation + infection rates 3% or lower
- Comparing bipolar w/ unipolar- if they dislocate, may have to take bipolar to the OR
- Studies w/ more recent implants- cement v non cemented are about the same w/ unipolar and bipolar implants

Sources:

Rockwood and Green





THA

- Recommended for independently mobile patients w/ no cognitive impairments. (Renal failure and rheumatoid arthritis)- assoc w/ high rate of failure following reduction/fixation
- Careful with reaming- bone isn't sclerotic, dont excise hip capsule, leave for later repair.

- Some ppl use a larger head diameter for hip fx patients

Young ppl

- Attempt fixation by closed or open means
- Open reduction nonunion is 11% v 5% closed reduction
- With Pauwels type 3 fracture- a fixed angle device may be better.
- Licorice reported greater nonunion of 19% using DHS compared w/ 8% with fixed angle device

Neck Shaft

- Tx both
- Stress fx
 - Fx on superior neck are tension fx- more liable to become complete and displaced

Sources: rockwood and green