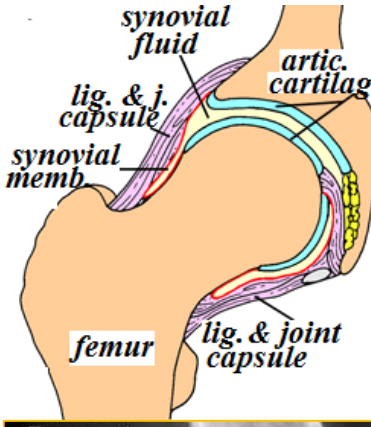
د.عادل الهنداوي

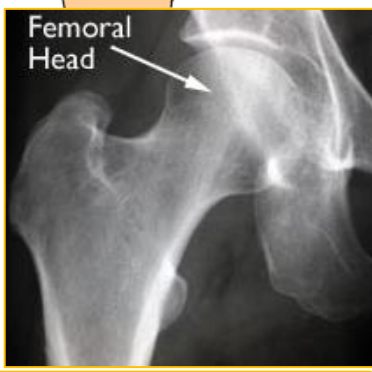
Orthopaedics



The Hip

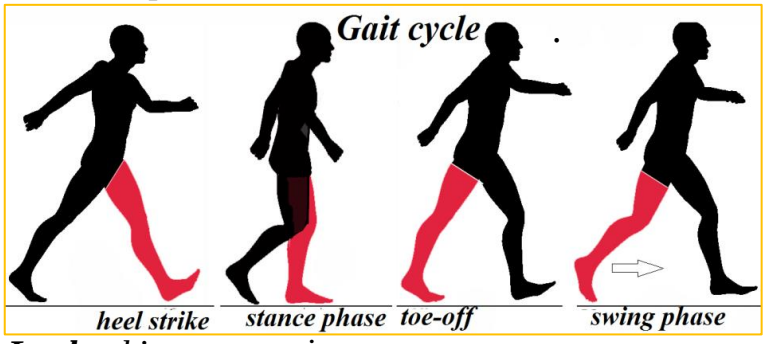
Clinical assessment:

Symptoms: ***Pain***→ hip pain is felt in the groin, front of the thigh &even the knee, while pain at back of hip is from lumbar spine.
Stiffness, Deformity & ***Snapping***.



Signs:

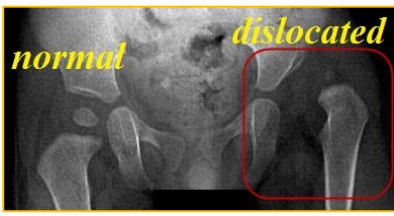
Gait→ normal gait has 4 phases: *heel strike*, *stance phase*, *toe-off* & *swing phase*. Any abnormality in gait is called ***limp***.
Causes of limping are: ***1- pain*** anywhere(antalgic gait),
2- short leg.
3- hip problems→ abductor weakness, dislocation, sub-luxation, pain, short neck. These cause Trendelenburg's gait.



Look: *skin*→ scar, sinus, crease.
Shape: wasting, swelling, position of the limb &***limb length***: in supine position with both ASIS at the same level, measure the distance between medial malleolus & ASIS.
Feel: skin temperature, tenderness, soft tissue &bony points.
Move: flexion, extension, abduction, adduction &rotation(in flexion &in extension).
Investigations: x-ray, U/S, CT, MRI, arthrogram, arthroscopy, biopsy.

Developmental dysplasia of the hip(DDH)

Is a state of hip instability in the newborn. Normally, the hips are ***stable*** at birth, but if ***dislocated***, ***subluxated*** or ***dislocatable*** with or without ***acetabular dysplasia***, this means hip instability.

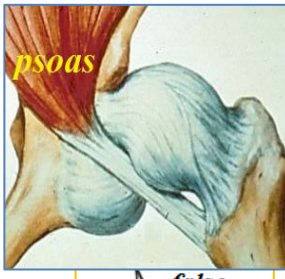


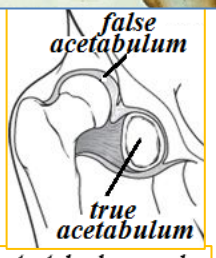
Incidence:
At birth →***10/1000***; after ***3*** wks(hip become > stable): ***1/1000***.
It is > common in female with a ratio of ♀***7:1***♂; more on left

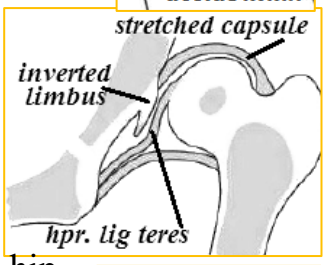
side with ratio of Lt. ***3:1*** Rt.& bilateral ***1*** in every ***5*** cases.

Etiology**:** 1- ***Genetic* factors**: DDH tends to run in families &populations (northern Italians).
2- *Hormonal* factors: before birth, there is ↑in the level of estrogen, progesterone &relaxin hormones in maternal blood→↑ ligament laxity in infant. So DDH is rare in premature baby.
3- ***Intrauterine malposition***: ↑ incidence in breech position.
4- ***Postnatal*** factors: may play role in the persistence of instability e.g. societies that ***swaddle*** their babies → ↑ incidence while in those who carry them astride the back with legs ***abducted*** will have ↓ incidence.

Pathology: according to the ***age***
At birth→ the hip is normal but the capsule is ***stretched***.
During infancy: many changes will occur secondary to abnormal position: the ***femoral head*** dislocate posteriorly &with hip extension it becomes superolateral to acetabulum. The femoral neck become more anteverted. The ***acetabulum*** become shallow &anteverted. The ***capsule*** become more stretched. The ***lig. teres*** become elongated &hypertrophied. The ***labrum*** is pushed into acet. by the FH(***limbus***).
After weight bearing: all these changes will ↑. The FH will form a ***false socket*** above the true acet.; the capsule will be squeezed between psoas muscle &the acet. taking the shape of ***hour glass***. The surrounding muscles with time will become ***shorter***.

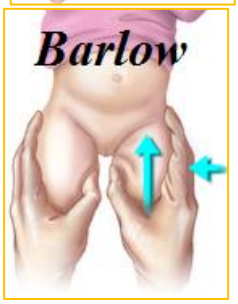




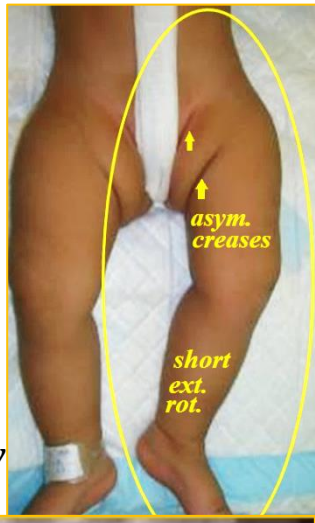


CF: every newborn should be examined for hip instability especially if there is family history or breech position.
In neonate: ***Ortolani's*** test(for dislocated hip)→ hold the thigh with your thumb medially &other fingers on greater trochanter→ flex the hip 90°→ abduct the hip, normally abduction will reach ***90 °***. If ***stop*** anywhere this means dislocation. Press on by your fingers on grater trochanter to reduce the hip to complete the abduction (***reducible dislocation***) otherwise it is irreducible dislocation.

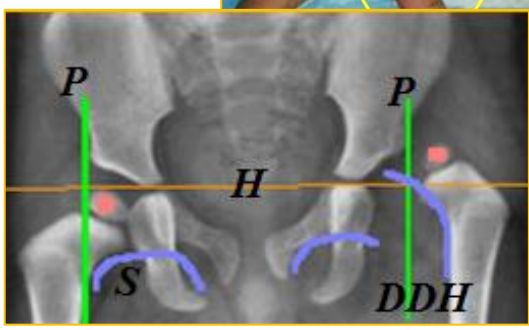
Barlow's test:(for dislocatable hip) the same but push by your thumb the FH out of the socket during adduction & return back during abduction(***dislocatable hip***).
Late features: limited hip abduction, asymmetrical skin



crease, ***short*** &externally rotated leg &limping. In bilateral dislocation: wide perineal gap &waddling gait.

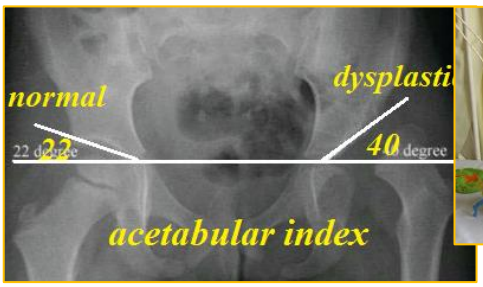


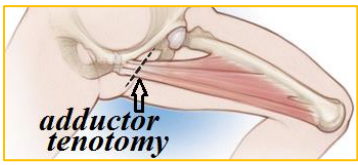
Imaging: during first 6 mths, x-ray is not useful because both FH &acet. are cartilaginous, so U/S is the best.
After 6mths, X-ray become more useful:
Shenton's line: normally, a line with inferior border of ***femoral neck*** is continuous with inferior border of upper ***pubic ramus***, if ***broken***→ dislocation or subluxation.
Perkin's line: horizontal with ***triradiate*** cartilage &vertical with acetabular ***edge***. Normal position of FH is ***medial*** to vertical & ***below*** horizontal; if not → dislocation or subluxation.



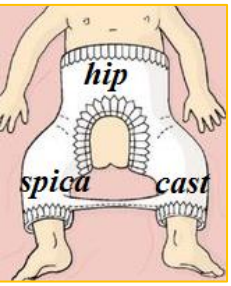
Management: according to the age

0-6 months → ***90%*** of unstable hips will be stabilized spontaneously at ***3*** wks; So at ***3*** wks, if reduced & stable→ observe till ***6*** mths.
If reduced &unstable(dislocatable)→ abduction splint.
If dislocated→ reduce & put in abduction splint.
Splint: either ***Pavlik harness***, ***Von Rosen splint*** or other ***hip abduction splint***. The splint should be used until x-ray shows good acetabular ***roof***.

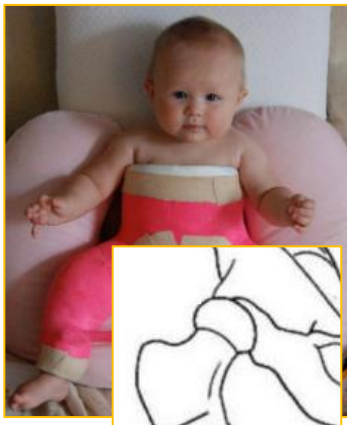




6-18 months→ hip dislocation must be reduced either by closed or open method:



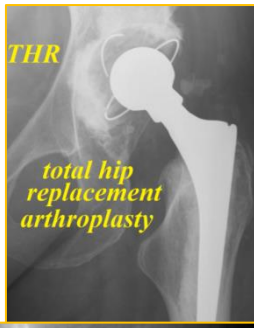
Closed reduction: this should be gradual. Apply traction to both legs using vertical frame (***Gallows traction***) with ↑ ***abduction*** gradually for ***3*** weeks (***adductor tenotomy*** may be done if abduction is limited). Reduction is performed ***UGA*** &***spica cast*** is applied for ***2-3*** months → abduction ***splint*** for ***3-6*** months.



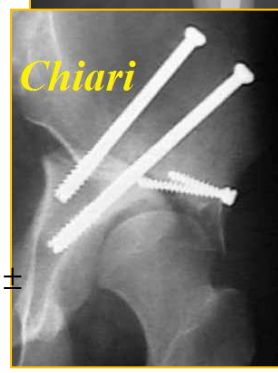
Open reduction: if closed reduction failed, do open reduction→ hip spica→ splint. Sometimes, for reduction to be stable, the leg should be internally rotated, if so, ***femoral derotation osteotomy***

in subtrochanteric region is done at the same time or later.
18mth- age limit→ is surgical by:
open reduction ± ***femoral derotation(± varus) osteotomy***±pelvic osteotomy. Then hip spica for 3 mths → abduction splint for 3 mths.
Above age limit→ for unilateral dislocation, the age limit is ***10*** yrs. while for bilateral dislocation is ***6*** yrs. because with bilateral, the deformity is symmetrical &failure on one side will make it asymmetrical &noticeable.
Persistent dislocation in adult→ ***THR***.

Acetabular dysplasia &hip subluxation:



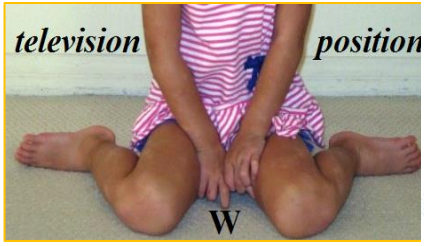
the acet. is shallow & the femoral head is only partly covered.
Causes: ***1***- genetic factors; ***2***- incomplete reduction of DDH;
3-damage to the lateral acetabular epiphysis.
CF: infant→ limited abduction; child→ symptomless but painful hip &limp following exercise. adult→ OA of the hip.
X-ray→ the roof of acet. is ***sloping*** &the head is ***un***covered.
If there is subluxation, the Shenton's line is broken.

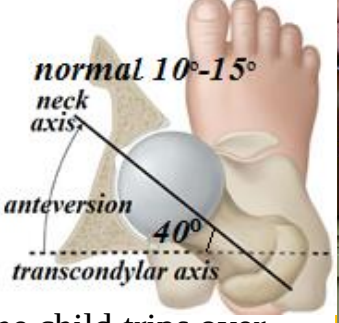


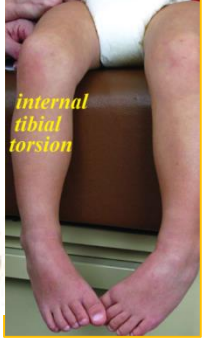
Ḍ: ***Infant***→ similar to DDH.
Children→ similar to DDH &may require ***acetabuloplasty*** ± ***varus femoral osteotomy***.
Adolescent & young adult→ acetabuloplasty, ***Chiari***or ***shelf*** operation ± varus femoral osteotomy.
Old adult→ ***THR*** for OA of the hip.

Acquired hip dislocation: occurring ***after first year*** of life

is usually due to: 1- ***trauma;*** 2- ***muscle imbalance***;
3- ***pyogenic arthritis***.



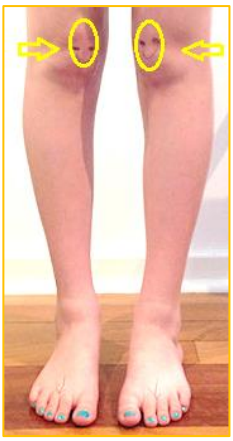




Femoral anteversion(in-toe gait)

The toes are directed ***inward*** during walking making the child trips over his feet during running.

Causes: below ***3*** yrs.→ ***forefoot adduction*** or ***tibial torsion***.



Above ***3*** yrs.: excessive femoral neck ***anteversion*** (hip internal rotation).

CF: clumsy gait. The child sits in(Wposition) ***television position*** &when standing both patellae directed inward (***squinting patellae***).

Diagnosis is clinical; to assess the degree of anteversion→CT to measure the angle between the femoral neck & the transverse axis of femoral condyles.

Ṛ→ it usually will correct ***Spontaneously*** with time.

If it persists above the age of ***8*** yrs: femoral corrective osteotomy may needed.

Irritable hip syndrome(transient synovitis) :

transient synovitis characterized by transient hip pain &limping in an otherwise healthy child. It is the commonest cause of hip pain in children.

CF: usual age ***6-12*** yrs. Boys affected ***3x*** than girls. The child presents with groin, thigh or even knee pain with limping.

O/E: only the extreme of hip movements are painful.

The symptoms last ***1-2*** weeks, then subsides spontaneously investigations are normal except ***U/S*** showing small joint effusion.

ĐḌ:1-***Pyogenic arthritis***: ill, toxic child with high fever &all hip ROM are more severely restricted & painful, ***ESR*** ↑, ***WBC*** ↑, blood culture ***50% +ve***, ***ASO*** titer ↑.

2-***Tuberculous arthritis***: can be similar to transient synovitis because the C.F. are subacute. ***ESR*** ↑. ***X-ray***→ osteoporosis, lytic lesion &later joint destruction. In difficult cases, bone &synovial biopsy are needed.

3-***Perthes' disease***: last >***2*** wks &x-ray: ↑ joint space.

4- ***Juvenile chronic arthritis***: ESR ↑ with systemic features.

5- ***Slipped epiphysis***: may presents as irritable hip, later x-ray is characteristic.

Ṛ→ bed rest at home; in severe cases, admission for continuous traction. Weight bearing is allowed only when symptoms &joint effusion resolve.