



13-Common Pediatric Lower Limb Disorders

Objectives:

1. Leg aches.
2. Limping.
3. Leg length inequality.
4. In-toeing & out-toeing.
5. Genu varus & valgus.
6. Proximal tibia vara.
7. Club foot
8. Deformities seen in cerebral palsy patients.

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References: 435 , slides , notes

Leg aches

It is a growing pain (cramping, achy muscle pains at age 2-12 yr), increase with walking.

- ⇒ Cramping in both legs in 15% to 30% of normal children
- ⇒ Benign
- ⇒ In 15 – 30 % of normal children
- ⇒ No functional disability
- ⇒ Female > Male
- ⇒ Resolves spontaneously, over several years
- ⇒ Unknown cause

Clinical features:

- Diagnosis by exclusion of other Causes of the pain (Tumor – Trauma – Infection)

History: Pain	Examination:
<ul style="list-style-type: none"> ➤ Site: long bones of Lower limb (calf, shin, or thigh) usually bilateral ➤ Onset: Of long duration (months) & there is no hx of trauma ➤ Characteristics: Dull aching pain, poorly or not localized(suggestive of tumor) ➤ Relieving factors: Responds to analgesia (NSAID) ➤ Aggravating factors: Activity (but it can be without any activity) ➤ Time: At night (sometimes after intense childhood activities) ➤ Constitutional symptoms: to exclude malignancy 	<ul style="list-style-type: none"> ➤ Long bone tenderness (nonspecific) for a large area, or none ➤ Normal joints motion Normal + painless

Differential diagnosis:

- Osteoid osteoma (presented with dull aching pain at night and responds toanalgesia)
- Osteosarcoma (constitutional symptoms)
- Ewing sarcoma
- Leukemia
- Sickle cell anemia (ask about family history)
- Subacute Osteomyelitis

Management:

- Reassurance.
- Symptomatic
 - ⇒ Analgesia
 - ⇒ rest
 - ⇒ massage

Limping

Abnormal gait due to pain, weakness or deformity

- Normal gait: gait cycle has two phases: Stance Phase, the phase during which the foot remains in contact with the ground, and the. Swing Phase, the phase during which the foot is not in contact with the ground
- Most common cause is due to hips then legs problems

Types of Limp (In one or both limbs):

- Painful gait: Antalgic gait (usually unilateral): Trauma–Tumor–Infection.
- Painless gait (usually bilateral): Syndromic – Congenital
- Weakness (general or nerve or muscle).
- Deformity (bone or joint).

Types of Limp (In one or both limbs):
<ul style="list-style-type: none"> ➤ Painful gait: Antalgic gait (usually unilateral): <ul style="list-style-type: none"> ⇒ Trauma ⇒ Tumor ⇒ Infection. ➤ Painless gait (usually bilateral): <ul style="list-style-type: none"> ⇒ Syndromic ⇒ Congenital ➤ Weakness <ul style="list-style-type: none"> ⇒ general ⇒ nerve ⇒ muscle). ➤ Deformity <ul style="list-style-type: none"> ⇒ bone ⇒ joint

History	Examination
<ul style="list-style-type: none"> ➤ Mainly age of onset. 	<ul style="list-style-type: none"> ➤ Gait good analysis ➤ Evaluate the limp by studying the child’s gait while the child walks in the clinic hallway <ul style="list-style-type: none"> ○ Above pelvis: back (scoliosis). ○ Below pelvis: Hips, knees, ankles, & feet. ➤ Normal gait: gait cycle has two phases: <ul style="list-style-type: none"> ⇒ Stance Phase: the phase during which the foot remains in contact with the ground. ⇒ Swing Phase, the phase during which the foot is not in contact with the ground ➤ In normal gait there are stance phase and swing phase without any limping or shorting in stance

	<p>phase</p> <ul style="list-style-type: none"> ➤ Trendelenburg gait: When the hip abductor muscles (gluteus medius and minimus) are weak, the stabilizing effect of these muscles during gait is lost. (bilateral = waddling gait). ➤ antalgic gait: pain with shorting of stance phase . ➤ Trendelenburg test: ask the patient to stand using his 2 legs, notice the level of the shoulders. Then ask him to stand on one leg, if the patient bend his body/waist to the other side that's mean a positive test. ➤ If the patient complain from the knee pain ,examine the hip also (referred pain)
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Management

Generalization regarding management cannot be made
 Treat the underlying cause

In-toeing and Out-toeing

❖ “Main Complain is frequent fall”

Terminology:

- Version: normal variations of limb rotation (It may be exaggerated).
- Torsion: abnormal limb rotation (Internal or external)
- It may be complex if there is compensatory torsion

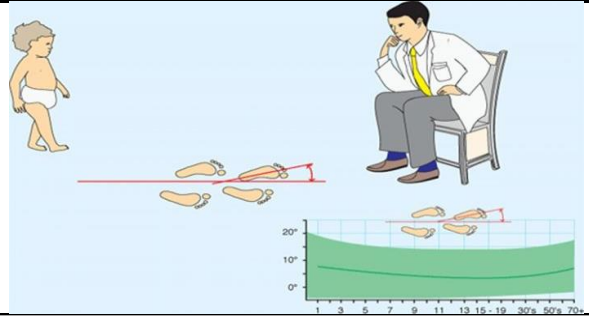
Out toeing

- Big toe directed outward
- It is rare we will not focus on

In toeing

- Big toe directed inward
- It's very common, more than you can believe and this is what we will focus on. It runs in families

History	Examination
<ul style="list-style-type: none"> ➤ Onset usually after walking age (Age: year to year and half) ➤ Who noticed it? ➤ Progression? usually tend to improve from a year to the other ➤ Fall a lot? They fall a lot, even when they walk, but more if they run bc they lose control of their lower limbs → more internal rotation → fall. They even come with bruises. ➤ How he/she sits on the ground? “W” shape sitting 	<ul style="list-style-type: none"> ➤ So, it is a clinical diagnosis not radiological ➤ Foot Propagation Angle “this an examination not a special test” ⇒ The doctor set in front of the child and ask him to walk in a straight line drawn in the land “they may use powder or water to see the steps” ⇒ We don't walk with our feet straight forward, that's not our normal. ⇒ The normal is slight ex-toeing which is upto +15. If the angle beyond 15 this is ex-toeing. less than -10 degrees is intoeing. ⇒ normal is (-10°) to (+15°).



Treatment

- Establish correct diagnosis
- Parents education
- Annual clinic follow up → assess degree of deformity
- Operative correction indicated for children:
- ⇒ (>8)years of age with significant cosmetic and functional deformity <1%
- Out-toeing: Usually does not improve spontaneously, Will need an operation: After the age 8y or if the foot propagation angle >30°

In-toeing

- Big toe directed inward
 - How to apportion in-toeing : easily falling and sitting in W position .
 - ⇒ Crossed leg on the ground needs external rotation → difficult on them
- بالعربي يجلس ورجلينه جنبه أو جلسة الضفدع.


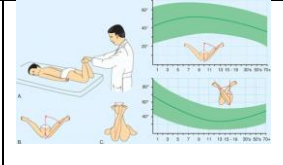
That's why they like to sit W shape position

- most common cause of in-toeing:
- ⇒ cerebral palsy
- ⇒ developmental dysplasia of the hip (DDH).

Femoral Anteversion

- Femoral Anteversion Normally the neck to the intercondylar is slightly more forward → normal anteversion (10-15 degrees).
- Excessive internal rotation of the head of the femur.

History	Examination
<ul style="list-style-type: none"> ➤ The patient usually presents with frequent fall. ➤ from the history, the patient can't cross his legs and sits in "Position 	<ul style="list-style-type: none"> ➤ Hip rotational profile: Position: supine or prone ⇒ Normal: Internal rotation /External rotation = 40-45/45-50 "total 90 degrees" ⇒ In-toeing: if the angle increased IR/ER = 70-90 / 0- 20 "total 90 degrees" ⇒ Out-toeing: if the angle decreased IR/ER = 0- 20 / 70-90

		Position	
		Supine	Prone
			
Treatment			
<ul style="list-style-type: none"> ➤ Sit cross leg ➤ If surgery indicated in femur anteversion we do osteotomy and derotation 			



Tibia torsion

➤ When normally there is no angle, between 2 bones, Medial tibial plateau with medial malleolus all in straight line once it rotated we call it torsion not retro-version

Examination

- Assess the inter malleolus axis: [\(Video\)](#)
- ⇒ Position: supine and sitting
- ⇒ Description: to feel 2 malleoli by your hand
- ⇒ Normal: normally lateral malleolus is posterior and the medial is anterior
- ⇒ If the lateral malleolus was in the same level or more forward to the medial = Internal Tibial torsion.

- ⇒ In toeing : internal tibia torsion lateral malleolus will be directed little bit more anterior indicating mild tibial torsion. If it becomes at the level of the medial malleolus “the intermalleolar axis becomes horizontal” indicating moderate tibial torsion, or if it becomes even more anterior indicating severe torsion.
- ⇒ Out-toeing: lateral malleolus is more posterior than usual

Position	
Supine	Sitting
	

- **assess the Foot thigh axis :** [\(Video\)](#)
- ⇒ position: prone
- ⇒ Description: The physician assesses the angle between the thigh and foot with the knee flexed ‘don’t hold the foot keep it and take our goniometer put the Center on heel and then correct the long axis of the foot and get the long axis of femur and check the angle in between Normal: (0°) to (- 10°)

- ⇒ In-toeing: if the angle decreased caused by internal tibial torsion
- ⇒ Out-toeing: if the angle increased caused by external tibial torsion



Treatment

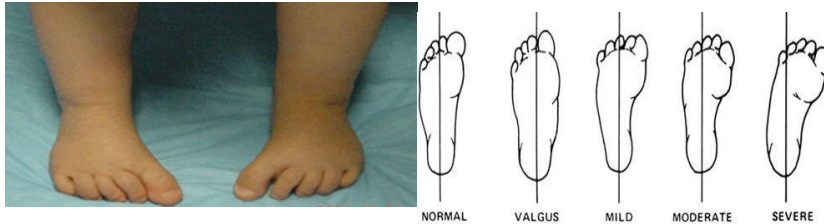
- **Spontaneous improvement** in embryology there is something called pre-axial and post-axial limb growing: the upper limbs grow inward then rotate outward, and lower limbs grow inward then rotate outward هنا كأنها بيكمل نمو لسا ويطلع زيادة على برا ويتعدل So treatment is observation till the age 8 years, if still significant then we operate
- In the past they used to wear Derotation cables, but it shouldn't be used now! because it's expensive and has psychological effect on the child "feels different from others" So no need for it as the bone will be corrected by itself [click here](#)
- If physiological wasn't corrected after observation, or if it was pathological, then it will be treated by surgery "supramalleolar osteotomy and derotation" العظمة ملفوفة بديها أكسرها وأرجع ألفها

Forefoot adduction

When you come and examine the patient you have to look to the foot from plantar side → kidney shaped foot → then we see is it correctable or not, usually it's fully correctable

Examination

- **Heel bisector line:**
 - ⇒ **Description:** نطلع قلم من جبيننا ونحطه بالكعب و يكون مرتاح مو محركها
 - ⇒ **Normal:** along 2 toe Pen axis between the 2nd toe and 2nd web space
 - ⇒ **In toeing:** if it pass lateral to third toe
 - ⇒ **Out toeing:** if it pass medially



Treatment

- **Anti-versionshoes, or proper shoes reversal**

يا يشتري وحده مخصصه او حفته العادية بس يقلب اليمين يسار و العكس ما اليسه هالشوز الا لمن يكون المشكلة من الرجل نفسها نبغى جزمه جلدها قوي تدف الرجل مو تكون مرنه و القدم هل اللي تدفها و كمان نقول لهم جزمة للبيت و جزمة للخروج و نشوفهم كل سنة لنفرض انهم مروا الطبيب بعمر 2-3 سنوات لو عالجتاهم بهالطريقة ووصلوا عمر 8-9 كم منهم يحتاج تدخل جراحي؟ بالمية بمعنى ان الطريقة هذي تعتبر فعالة بهالعمر لكن لو البداية ما راحوا للطبيب الا بعد 8-9 سنوات يصير التدخل الجراحي .

Big toe

- When the big toe is adducted alone. it's rare

4) In-toeing: Adducted Big Toe



Examination

- We can see it there is no special test

Treatment

- spontaneous improvement

- The important thing is that it could be combination of more than one level, which means if you examine the foot and find it abnormal you have to complete your examination may be here is other abnormalities

Limb Length Inequality

Etiology

- Congenital: As DDH
- Developmental: As Blount's (will explain later in this lecture)
- Traumatic: As oblique fracture (short), or multifragmented (long)
- Infection: stunted growth or dissolved part of bone
- Metabolic: As rickets (Bilateral)
- Tumors: Affecting the physis

Clinical features:

- Gait disturbance (tip toe walking or Trendelenburg gait).
- Equinus deformity: ex. Shortening in Rt. Side, child will involuntarily start to plantar flexion the Rt. foot (walk on tip toes) to compensate for The affected movement. With time, PF will become Fixed > cannot do dorsal flexion. Or he will put the left foot down to equalize the legs
- Pain: back, leg: Child with back pain think about Length Inequality
- Scoliosis (secondary)

Evaluation

True

First, the leg length is affected

- If you measure it: one leg will be shorter
- with time this will lead to: pelvic tilt to adjust
 - Measure from ASIS "anterior superior iliac spine" to medial malleolus

Apparent

- The Leg length: will appear asymmetric.
- but if you measure it: they are with the same length.
- Measure from umbilicus to medial malleolus

- Screening examination (Clinical measures of discrepancy):

- ⇒ [While the patient supine:\(Video\)](#) If there is pelvic tilt make sure that it's corrected then **by Measuring tape** measure true and apparent leg length
- ⇒ [While the patient is standing:](#) Adding blocks under the short leg until the pelvis becomes elevated
- Galeazzi Test:[\(Video\)](#) To know where is the defect, is it in tibia or femur when patient lies supine And bothknee flexedlook at the knees from front and side if one kneegoes backward=problem in the femur If one knee goes downward = tibia
- Imaging methods(Centigram)[accurate measure of legs length](#) byX-ray.A long film of the 2limbs from hip to toe sistaken, while a ruler is put in the x-ray to measure the difference b/w the 2 limbs in length & to locate where the difference is (femur/tibia).

Management

[Please click here](#)

Depends usually on the cause. Some syndromes will resolve spontaneously, and others (trauma, tumor and infection) will not. E.g. If the patient has LLD (Leg Length Discrepancy) due to Salter-Harris fracture distal femur at age of 2 years; expected discrepancy at age of 10 will be around 9-10 cm (and it will increase in the time). So, it needs immediate intervention to arrest the discrepancy.

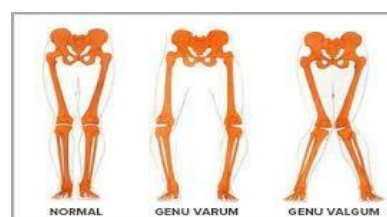
- **Depends on the severity: (>2cm)**
 - LLD < 2 cm: Observe (the body with its muscles can compensate)
 - LLD 2-5 cm: Shoe lift (Shoe raise) (for the whole foot NOT only heel)
 - LLD > 5 cm: Consider surgery or active treatment
- **For the shorter limb:**
 - ⇒ Bone Lengthening: (**More common**) Osteotomy then insert a device that will start to lengthen bit-by-bit 1 mm per day (or so), by having the patient manipulate a screw of the external apparatus. (Observe the patient because of the neurovascular structure) ○ Shoe raise
- **For the longer limb:**
 - ⇒ Bone shortening (remove part of bone. usually we don't use it)
 - ⇒ Epiphysiodesis (temporary or permanent) (stop the growth) temporary Epiphysiodesis is done when you want to do shortening in young children that still have growth potential ○ Permanent method is done for children that are close to skeletal maturity (12-13 y/o). They'll have around 4-5 cms of growth potential left to reach

Genu Varus & Valgus

[Kaplan notes](#)

[high yield osmosis notes](#)

- Bow legs (genu varus)
- Knock knees (genu valgus)



Types	Physiologic	Pathologic
Etiologies	<ul style="list-style-type: none"> ➤ observe and reassure the parents (usually bilateral). ➤ The natural history for genu (knee)development: <ul style="list-style-type: none"> ⇒ Born – 2 years: Genu varus ⇒ 2-5 years: Genu Valgus ⇒ after 5 years the legs will straight to be normal 	<ul style="list-style-type: none"> ⇒ trauma ⇒ infection ⇒ tumor ⇒ syndromes
Frequency	Common	Rare
Family history	Usually negative	May occur in family
Diet	Normal	Maybe abnormal
Health	good	Other MS abnormalities
Onset	Second year for bowing, third year knock knees	Out of normal sequence, often progressive
Effect of growth	Follows normal pattern	Variable
Height	normal	Less than 5th percentile
Symmetry	Symmetrical	Symmetrical or asym
Severity	Mild to moderate	Often beyond ± 2
Evaluation	<ul style="list-style-type: none"> ➤ History ➤ Examination (e.g. Signs of Rickets) ➤ Laboratory (Ca level and vit.D) ➤ Imaging: Centigram 	
Complications	early osteoarthritis	
Management	<ul style="list-style-type: none"> ➤ Non-operative: <ul style="list-style-type: none"> ⇒ Physiological: Observation ⇒ Pathological: must treat underlying cause, (e.g. in Rickets give vit D) ➤ Epiphysiodesis: <ul style="list-style-type: none"> ⇒ Valgus: Insert clip on medial side of bone to stop it from growing and allowing the lateral side to continue growing ⇒ Varus: Insert clip on lateral side of bone to stop it from growing and allowing the medial side to continue growing ➤ Corrective osteotomies (tibia & femur together) 	

if it Unilateral think about trauma , tumor , infection .

If bilateral think about metabolic (rickets) ,congenital .

Why we need to detect it early ?to prevent osteoarthritis

Proximal TIBIA VARA (BLOUNT DISEASE)

[medscape](#)

- Damage of proximal medial tibial growth plate of unknown cause.
- Blount disease: If there is no history of metabolic, tumor, truma and there is one side
- genu varum



Risk factors

- Overweight
- Dark skin

Types

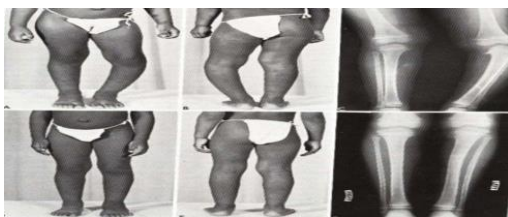
- Infantile:
 - ⇒ < 3 years of age
 - ⇒ Usually bilateral
 - ⇒ Early walker
- Juvenile:
 - ⇒ 3 – 10 y
 - ⇒ Combination (bilateral)
- Adolescent:
 - ⇒ > 10 y
 - ⇒ Usually unilateral

Staging

- Radiological (M.D.A = metaphyseal diaphyseal angle):
 - ⇒ Metaphyseal Diaphyseal angle < 11° observe closely
 - ⇒ Metaphyseal Diaphyseal angle > 15° operate

Treatment

- Mostly surgical
- More late more damage
- High stage; bad prognosis
- we correct it either by using gradual correction with external fixator or acute correction with high tibial osteotomy, Infantile bilateral → we do high tibial osteotomy.



Club foot

[Toronto notes](#)

[Kaplan notes](#)

[high yield osmosis notes](#)

Normal foot:

- ⇒ Stable: for supporting the body weight in standing
- ⇒ Resilient: for walking and running
- ⇒ Mobile: to accommodate variations of surface
- ⇒ Cosmetic

Etiology:

- Postural: Abnormal postural in the uterus. Spontaneous correction (fully correctable)
- Idiopathic (CTEV): Congenital Talipes EquinoVarus (partially correctable)
The term 'talipes' is derived from talus (Latin = ankle bone) and pes (Latin =foot)
- Secondary (Spina Bifida): Neurological and muscular problems (rigid deformity), Most common cause (Spina Bifida)

Clinical examination:

(the patient usually presents with pain due to unequal distribution of the weight on the foot)

- **Hind foot** (posterior $\frac{1}{3}$ of foot) : (Calcaneus, Ankle, Tibia)
 - ⇒ Equinus: fixed plantar flexion of ankle Joint (FPF) (Ankle joint)
 - ⇒ Varus: inversion of subtalar joint (Subtalar joint)
- **Midfoot** (Mid $\frac{1}{3}$ of foot) :
 - ⇒ Cavus (high-arched foot)
- **Forefoot:**
 - ⇒ Adduction
 - Short Achilles tendon (due to FPF)
 - High and small heel (due to FPF)
 - No creases behind Heel (due to FPF)
 - Abnormal crease in middle of the foot (due to forefoot add)
 - Affected foot is smaller (obvious if unilateral)
 - **Callosities (dead skin)** at abnormal pressure areas
 - Internal torsion of the leg
 - Calf muscles wasting
 - Deformities don't prevent walking

Management:

The goal of treatment is to obtain a foot that is plantigrade (straight foot), functional, painless, and stable over time looks cosmetically acceptable and fits normal shoes. A cosmetically pleasing appearance is also an important goal sought by surgeon and family

- Manipulation and serial casts:
- ⇒ **Ponseti technique:** 3 stages, change the cast every week. Age limit is upto 12 months (after 12 the soft tissue will become tighter. Theyounger they are the better the result)



- ⇒ **Then maintain correction** by: Dennis Brown splints until 3-4 years old
(To maintain external rotation of the feet)
- ⇒ Success rate is very high
- Follow up watch and avoid recurrence, till 9 years old (the foot at age of 9 will be fully developed, not maturing anymore after 9 it will only increase in size)
- Avoid false correction by going in sequence
- When to stop? not improving, pressure ulcers
- Indications of surgical treatment:
- ⇒ Late presentation, after 12 months of age.
- ⇒ Complementary to conservative treatment.
- ⇒ Failure of conservative treatment.
- ⇒ Recurrence after conservative treatment.



Types of surgery:

- Soft tissue only (regain function) (before 5 years):
 - ⇒ Lengthening soft tissues and tendons
- Bony + soft tissue (regain function) (after 5 years):
 - ⇒ Wedge osteotomy: wedge removed of calcaneus
- Salvage (regain appearance) If sever, rigid, and in an older child:
 - ⇒ Triple osteotomy (talus – calcaneus – navicular)
 - ⇒ Most common salvage procedure
 - ⇒ Loss of inversion or eversion. (Patient will feel pain walking on uneven ground; otherwise, they will walk normally).

Lower Limb Deformities in CEREBRAL PALSY (CP)

- a group of disorders that result from non-progressive brain damage during early development and are characterized by:
 - ⇒ abnormalities of movement and posture
 - Can be associated with:
 - ⇒ Mental retardation (various degrees),
 - ⇒ Hydrocephalus and V.P shunt
 - ⇒ Convulsions.

Classification:

- Physiological classifications:
 - ⇒ Spastic: surgery to fix muscle contracture (commonest & best prognosis)
 - ⇒ Ataxia: (Surgery contraindicated)
 - ⇒ Athetosis: slow, involuntary, convoluted ,writhing movements of the fingers, hands ,toes, and feet (Surgery contraindicated)
 - ⇒ Rigidity
 - ⇒ Mixed

➤ Topographic classification:

1-Monoplegia:	one limb affected	2-Diplegia:	all limbs are affected but the lower limbs are more
3-Paraplegia:	only lower limbs	4-Hemiplegia:	one side of the body (arm & leg) affected
5-Bilateral:	both sides are affected but uppers more than the lowers	6-Triplegia:	three limbs affected
7-Quadriplegia or tetraplegia:	all four limbs (+/- trunk, tongue and windpipe) affected		

Examination and assessment :

Hip	<ul style="list-style-type: none"> ⇒ Flexion: Do Thomas test to assess fixed flexed deformity of hip ⇒ Adduction: Scissoring gait (Hip Range of movement (ROM)) ⇒ Internal Rotation: In-toeing (Hip ROM) 	Knee	<ul style="list-style-type: none"> ⇒ Flexion: Popliteal angle: Flex hip then extend knee > normally angle of knee extension is 0°. If not, we subtract the measured angle on examination from 180°. That will give us the popliteal angle
Ankle	<ul style="list-style-type: none"> ⇒ Equinus (Ankle ROM) ⇒ Varus/Valgus Podoscope 	Gait	<ul style="list-style-type: none"> ⇒ In-toeing (femoral anteversion & tibial torsion) ⇒ Scissoring

Management:

- Multidisciplinary approach:
 - ⇒ Parents education
 - ⇒ Pediatric neurology diagnosis, Follow-up, treat fits
 - ⇒ Physiotherapy (home & center) joints R.O.M, gait training
 - ⇒ ➤ Orthotics maintain correction, aid in gait
 - Social / Government aid
- Other:
 - ⇒ Neurosurgery (V.P shunt)
 - ⇒ Ophthalmology (eyes sequent)
- Surgery indications:
 - ⇒ Severe contractures preventing physiotherapy.
 - ⇒ Physiotherapy is plateaued due to contractures
 - ⇒ Perennial hygiene (sever hips adduction) (predispose to fungal infections and dermatitis)
 - ⇒ In a non-walker, to sit comfortable in wheelchair

⇒ Prevent:

→ Neuropathic skin ulceration (as feet)

→ Joint dislocation (as hip)

➤ Options of Surgery:

⇒ Neurectomy

⇒ Tenotomy

⇒ Tenoplasty

⇒ Muscle lengthening

⇒ Tendon Transfer (rarely done)

⇒ Bony surgery Osteotomy/Fusion > for longstanding deformities.

MCQs

1- in toeing management of a 4-year-old child with W sitting position?

- A. Reassurance
- B. Night brace

Ans: A

2-Child was brought by his mother and she's complaining of leg deformity, was noted to have in toeing. What is the management?

- A. Spontaneous correction.
- B. Corrective osteotomy.

Ans: A

3-6-month-old boy presented with "picture of clubfoot" No other back problem, no treatment. what is the best management?

- A. Dennis brown cast
- B. Manipulation and casting
- C. Soft tissue release

Ans: B

4-5year old boy came with clubfoot what type of surgery would you do?

- A-bone and Soft tissue only
- B-Soft tissue only
- C-bone only
- D-Salvage

Ans: A

5-A 1-week-old infant is brought to the office for a routine follow-up. After the birth of their newborn, the parents note their baby's "foot looks funny." Physical examination shows that the right foot is extremely plantar-flexed, but that it reverts to a normal, neutral position with gentle manipulation. There is also some inversion of the arch that the parents have noticed. The rest of the baby's exam is appropriate. Which of the following may be what caused this deformity?

- A. Cerebral palsy
- B. Atypical positioning of the foot in utero
- C. Aneuploidy
- D. Toxic ingestion by the mother during pregnancy

Ans: B

6-A 5-day-old neonate has a mild congenital deformity of the talus. Soft tissues of the medial side of the foot are underdeveloped with a concomitant displacement of the talo-calcaneo-navicular joint. There is reduction in length of the gastroc-soleus and posterior tibial muscles and their tendons. The feet are adducted and supinated but otherwise normal. An image of the observed deformity is depicted below and the diagnosis of talipes equinovarus is made. Which of the following is the best step in management?

- A. Cast and bracing
- B. Surgical correction
- C. Orthotic splint
- D. Reassurance



Ans: A

7-An 8-year-old boy comes to the clinic with his newly adoptive mother because of difficulty walking. The mother informs you that her son was adopted from a country with low resources and he has only been in the United States for 1 week. She believes he was not fed well before he was adopted. His temperature is 37.1°C (98.8°F), pulse is 90/min, respirations are 20/min, and blood pressure is 100/70 mm Hg. Physical examination shows a small appearing boy for his age with a protuberant abdomen and bleeding gums. Gait analysis shows his knees contract often and his lower legs extend laterally. A Q-angle measurement is taken. Which of the following is the most likely cause of his gait abnormality?

- A. Vit D deficiency
- B. Vit c deficiency
- C. Folate deficiency
- D. Protein deficiency

Ans: A