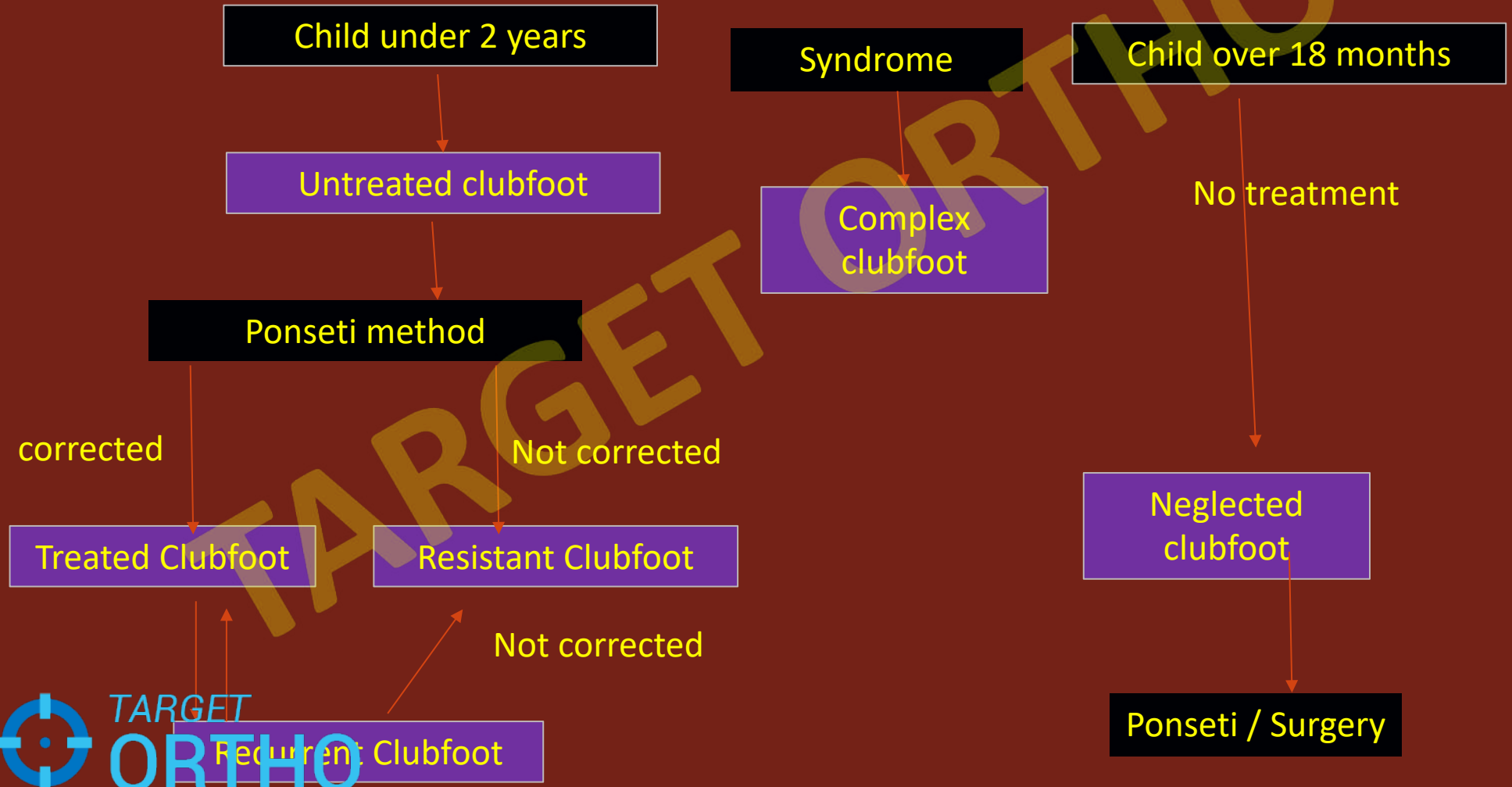
Pediatric Short Cases

Diagnosis

Congenital bilateral idiopathic talipes equino varus deformity of the feet.

Types of Clubfoot



Components

C- Cavus

A - Adductus

V - Varus

E - Equinus

Demographics

- Bilateral 50%
- Incidence : 1 in 1000
- Polygenic multifactorial inheritance

Differentials

- Rule out positional/
- Metatarsus adductus

- *”Dorsiflexion test/ Toe to heel test”*

Differentials

Syndromic

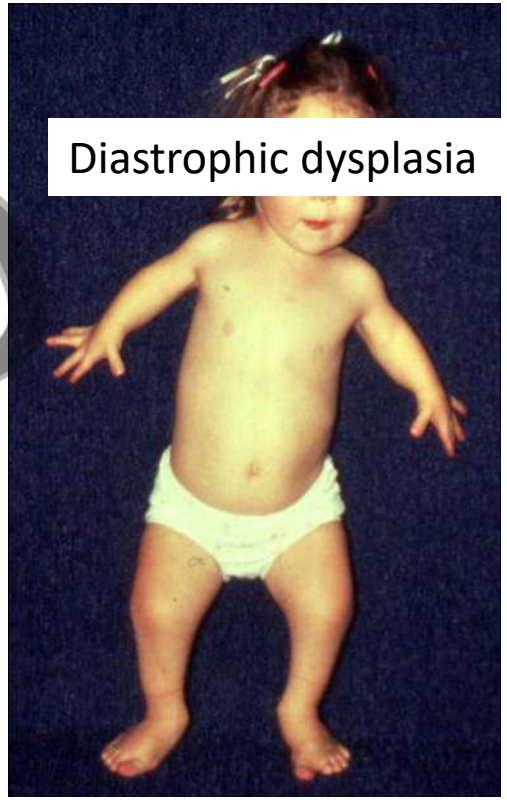
- Arthrogryposis
- Amniotic band syndrome
- Larsen

ASSOCIATED SYNDROMES

- arthrogryposis
- Freeman Sheldon
- diastrophic dysplasia
- myelodysplasia
- tibial hemimelia
- amniotic band syndrome (Streeter dysplasia)
- upper extremity and hand anomalies common in this population
- Pierre Robin syndrome
- Opitz syndrome
- Larsen syndrome
- prune-belly syndrome

Freeman sheldon

STREETER

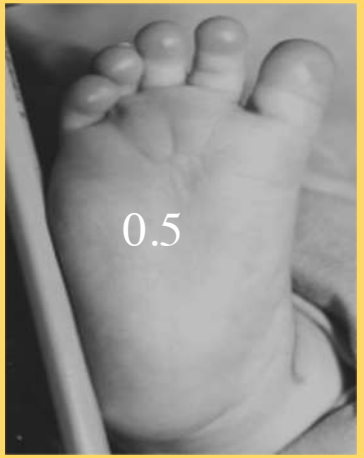


Diastrophic dysplasia

DOWN

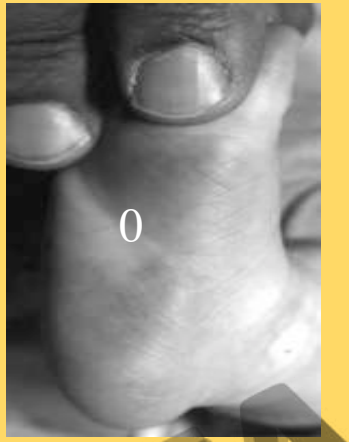
LARSEN

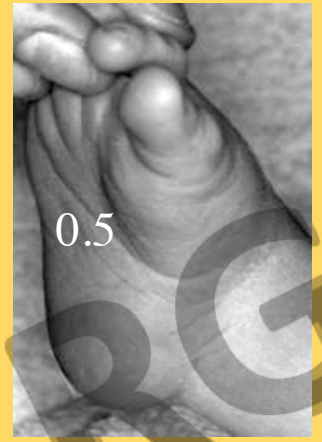
3 Midfoot Signs each scored 0, 0.5, or 1: MFCS = 0-3



Curved lateral Border

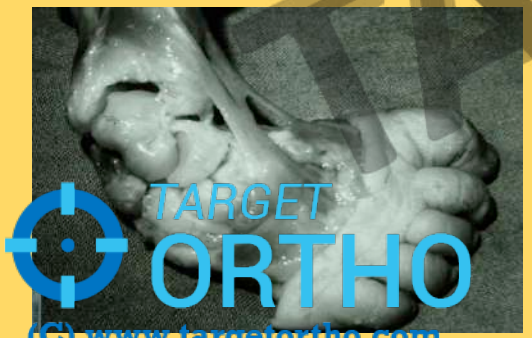
Feel

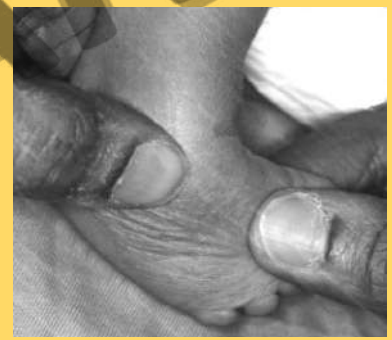


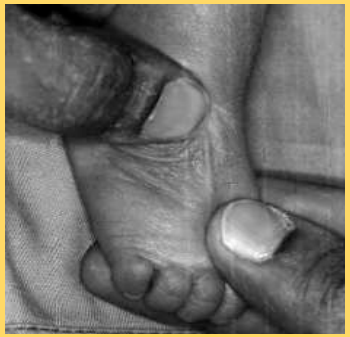


Medial Crease

Look



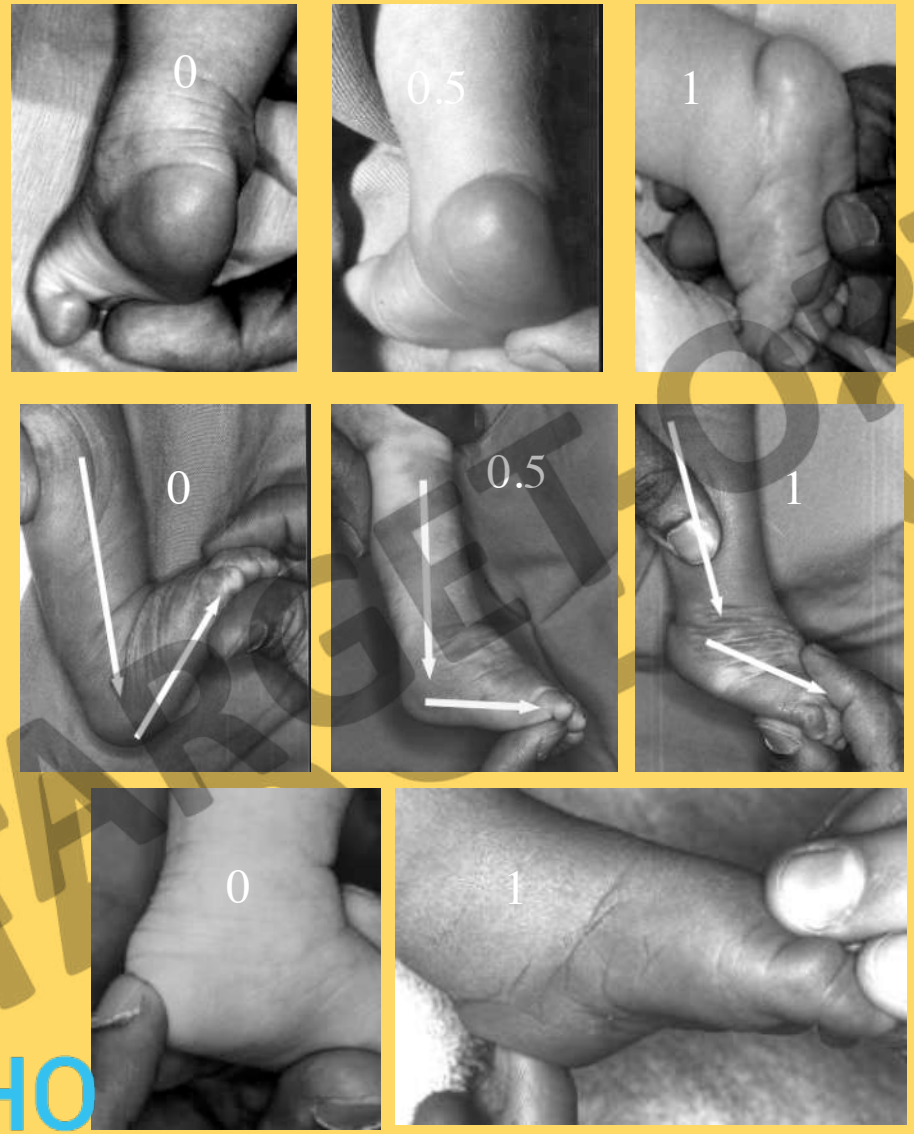




Talar Head Coverage

Move

3 Hindfoot Signs each scored 0, 0.5, or 1: HFCS = 0-3



Posterior Crease

Look

Rigid Equinus

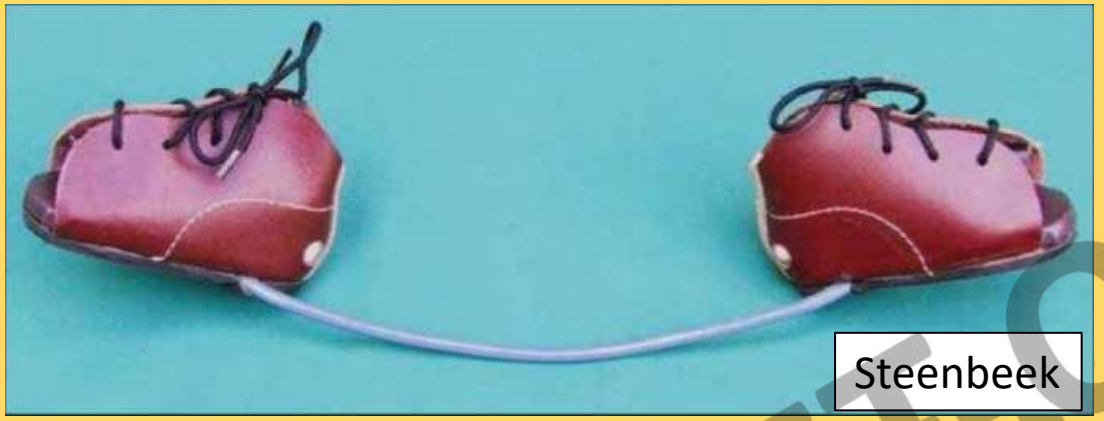
Move

MM- Navicular interval
Fibular AT Interval
Adductus rigidity
Long flexor contracture

Empty Heel

Feel

Bracing



"The excessive collagen synthesis in ligaments and muscles may continue till 4 years of age"
- I Ponseti

Others

- Atypical Clubfoot
- Walking Age clubfoot
- Tenotomy
- Posterior release

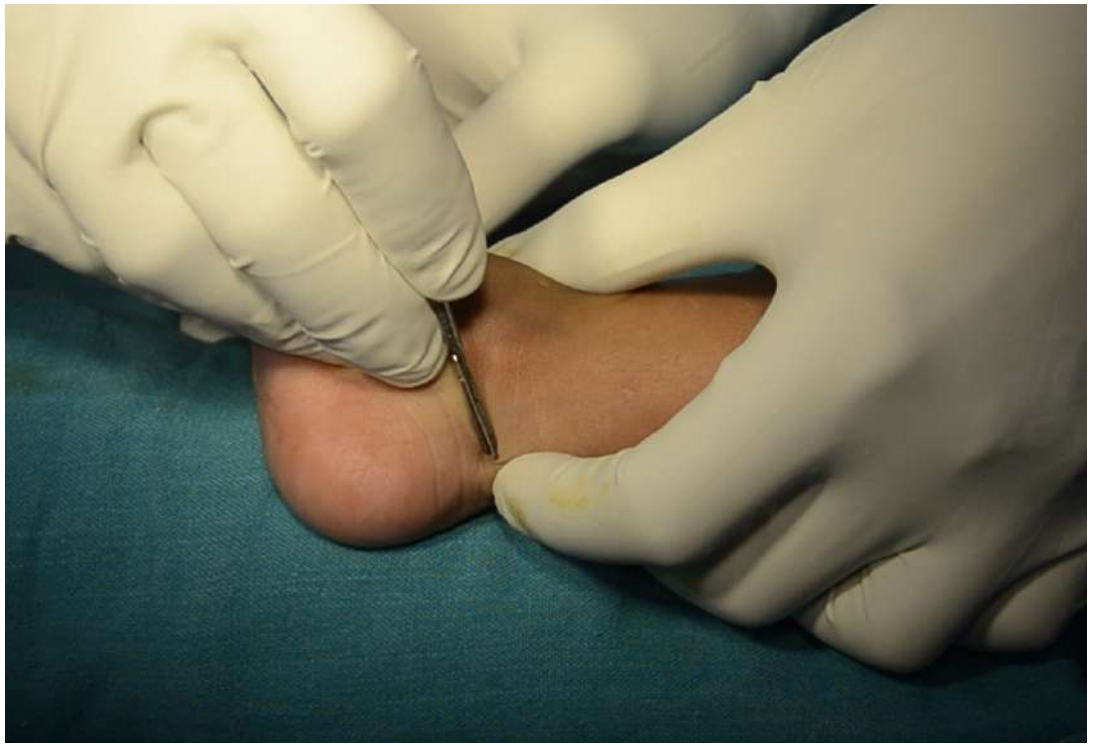
TA Tenotomy

- Performed under LA
- Medial to lateral
- Peroneal artery more commonly injured

-Loss of resistance

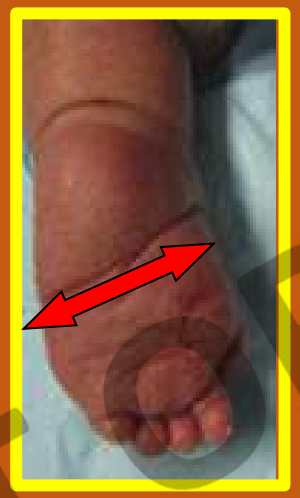
-Sudden increase in DF

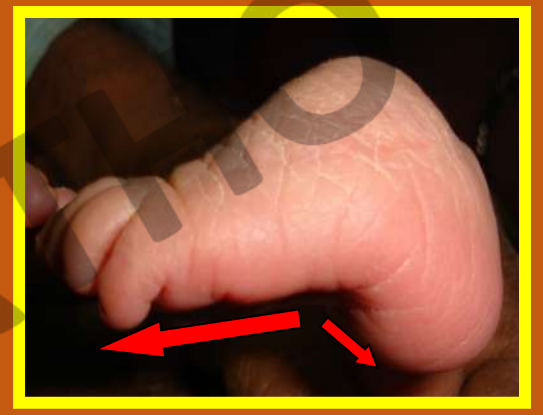
-*Pop*

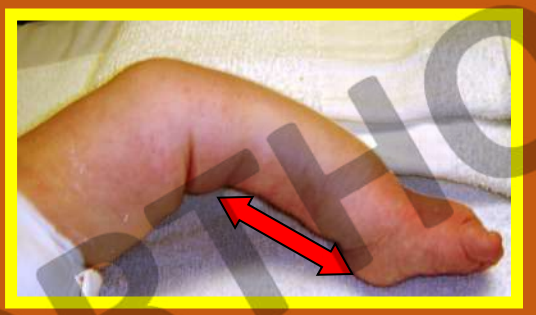


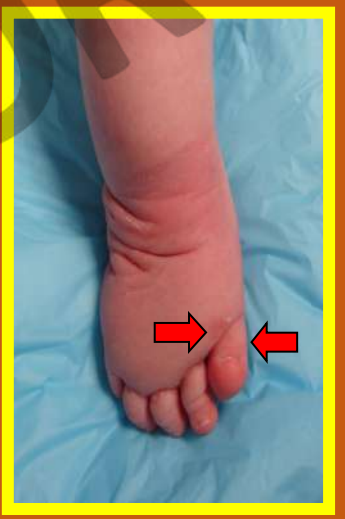
Clinical examination:

- Feet are short and stubby
- All metatarsals in severe plantarflexion
- Thereby, A transverse crease in the sole of the foot, showing prominent Cavus
- Rigid equinus
- A short and hyperextended first toe.
- The Achilles' tendon was fibrotic in the lower **two third** of the calf.









Postero Medial Soft Tissue Release

- **TENDONS**

  TA, TP, (FHL, FDL) - Z LENGTHENING

- **CAPSULOTOMIES**

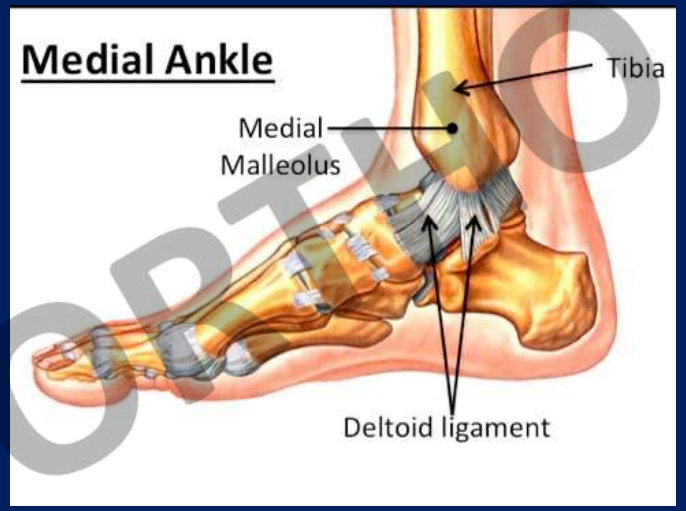
  ANKLE, SUBTALAR, TALO NAVICULAR JTS

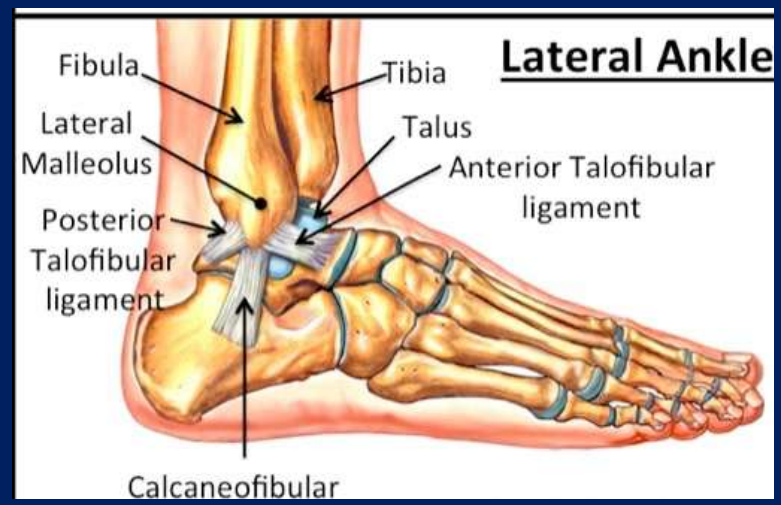
- **LIGAMENTS RELEASED**

  Medial: SPRING, SUPERFICIAL DELTOID, HENRY'S KNOT,

  Lateral: TALOFIBULAR, CALCANEO FIBULAR

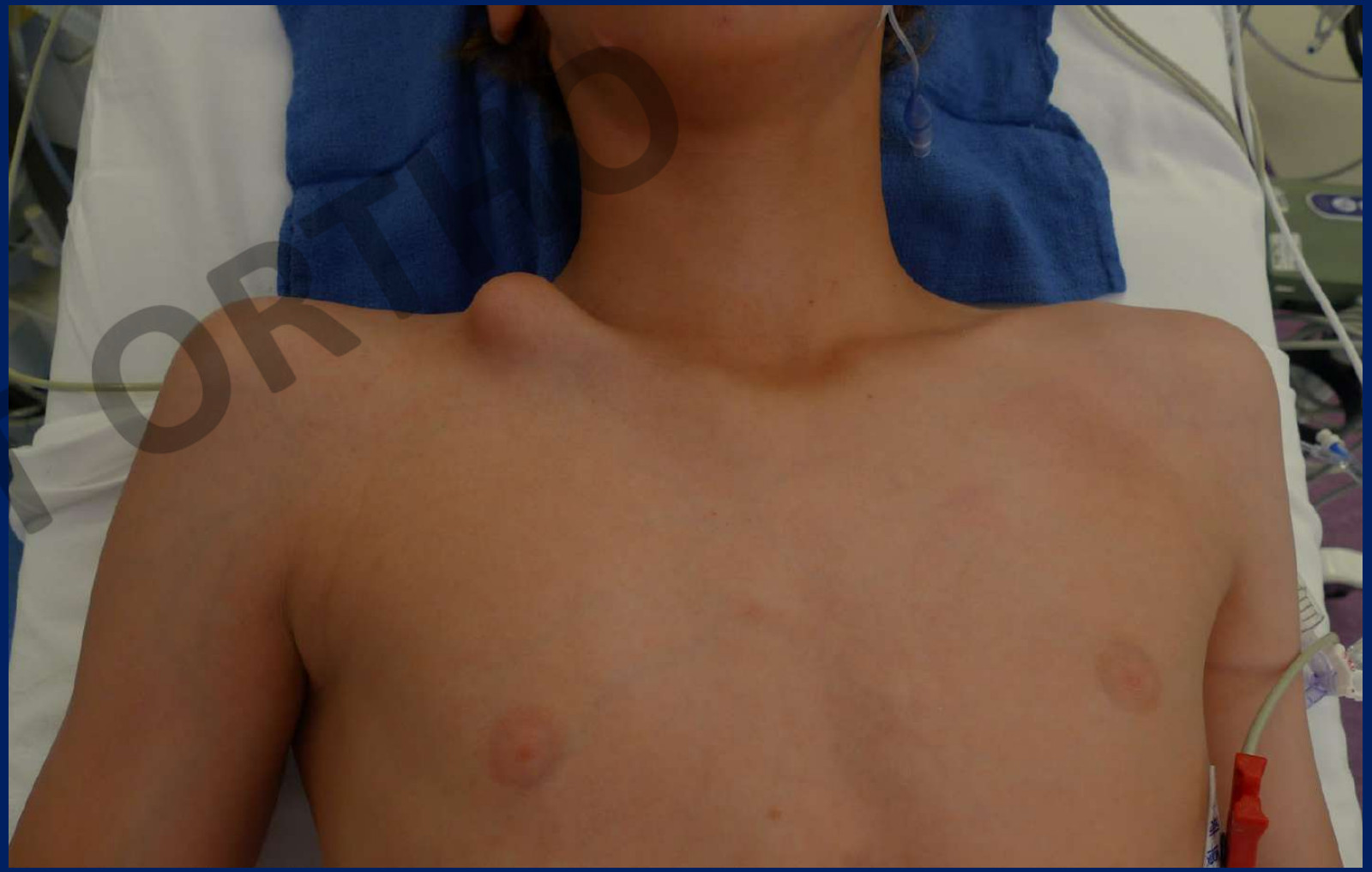
Talo Navicular joint to be reduced & fixed with a K-Wire

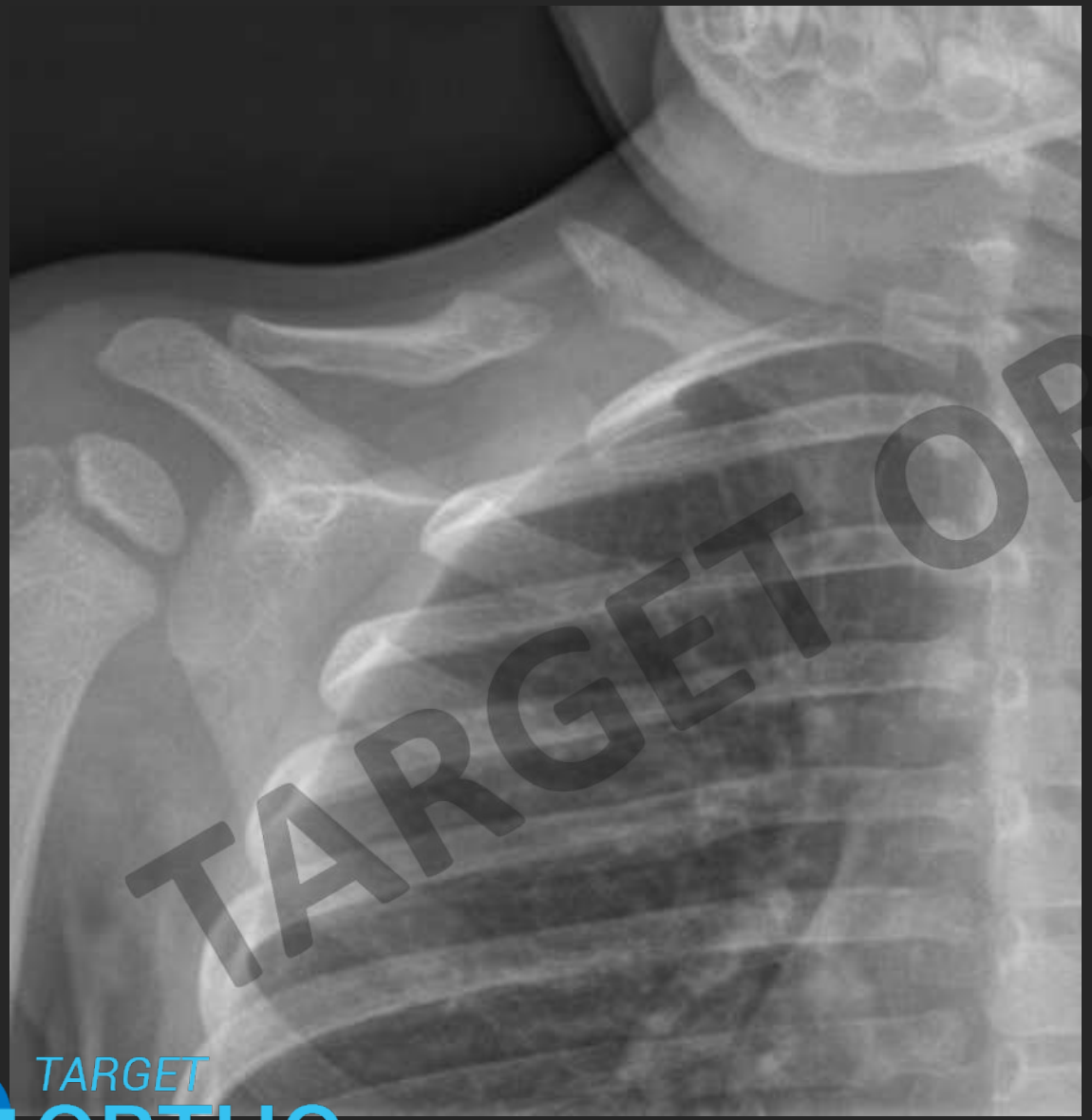


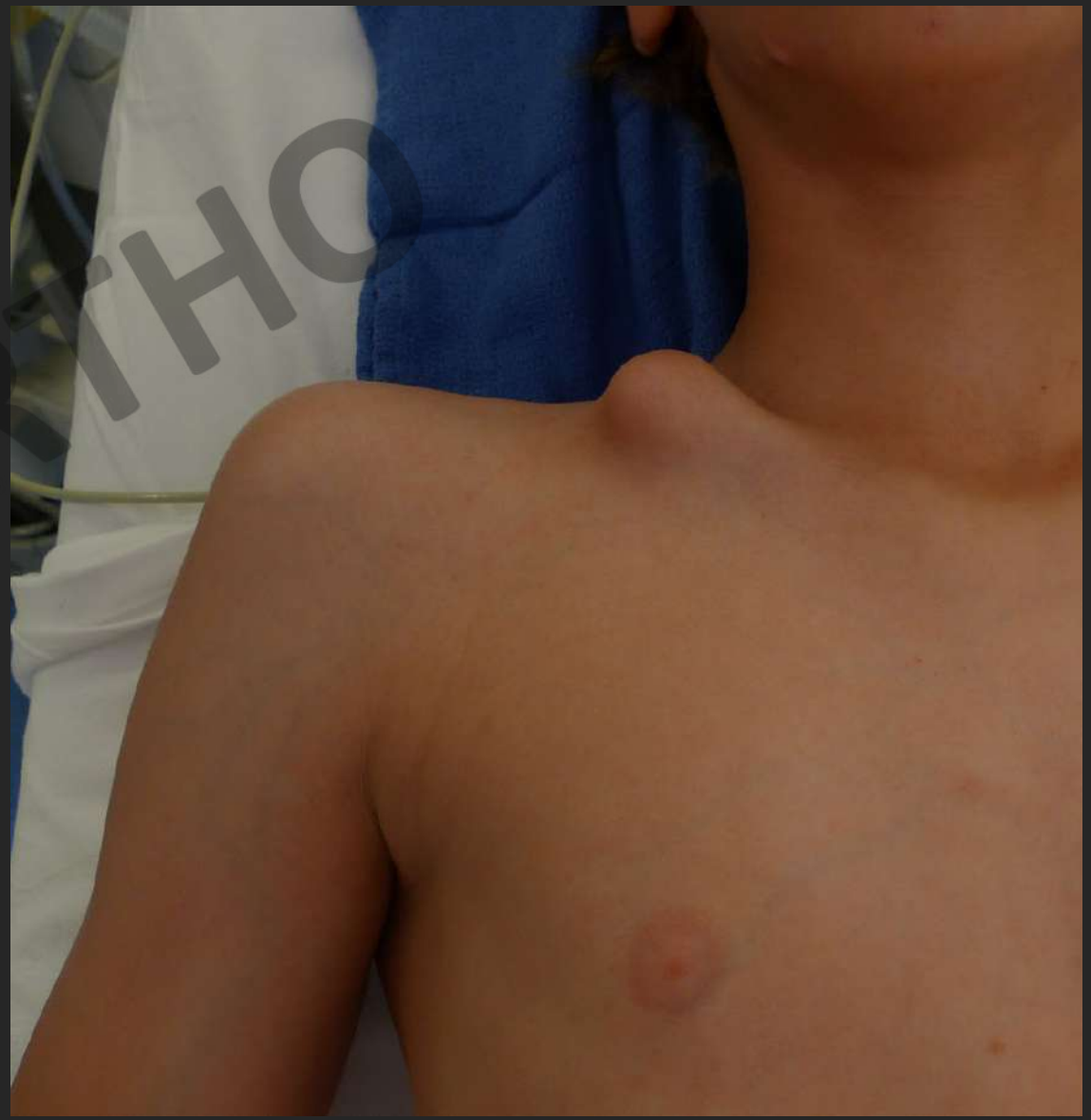


Case 2

- Rt Shoulder swelling
- 4 Year old
- Not painful







Diagnosis

- 4 year old male with right sided congenital pseudoarthrosis of the clavicle

Mx

- Excision of the pseudoarthrosis, curettage of the bone ends and fixation with plate and screws.
- A bone graft (tri-cortical iliac crest) is sometimes required to reconstruct the length and shape of the clavicle.
- A recon plate is then contoured and fixed with screws.
- Surgery can be carried out by the age of about 4 years
- Brachial plexus injury risk

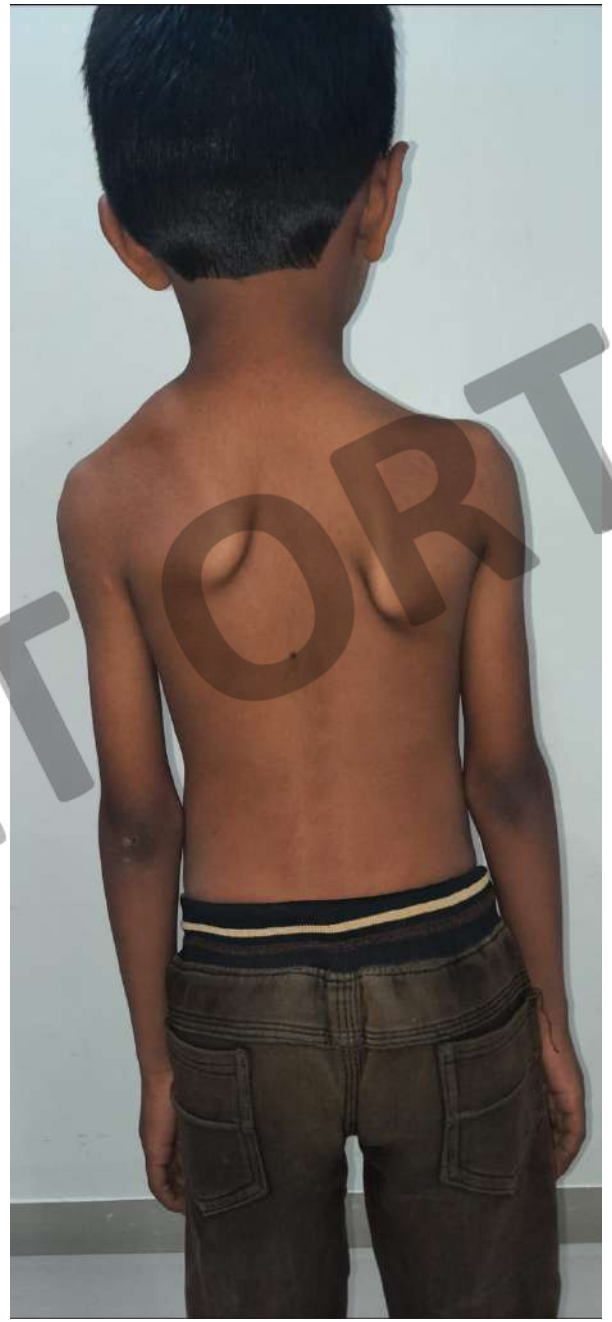
Important points

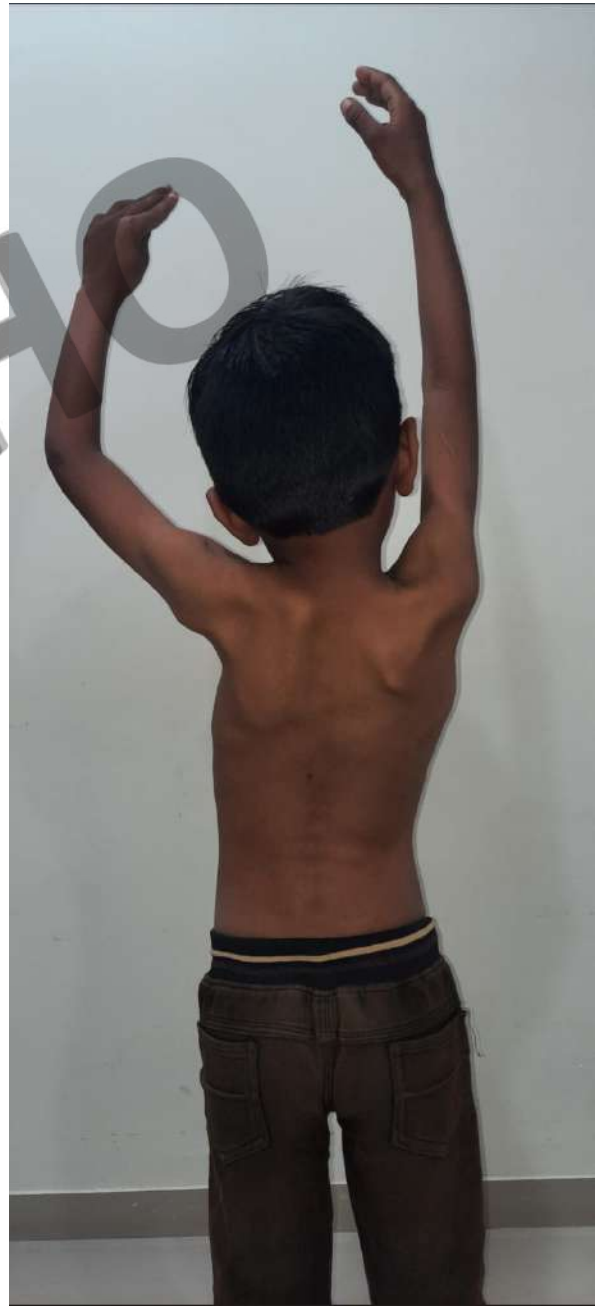
- No surgery unless pain/ Functionally limiting
- *Right sided*
- Subclavican Artery interferes with Medial lateral ossification centres

- If Sx
  Iliac crest autograft, Plate fixation

Case 3

- Upper limb issues

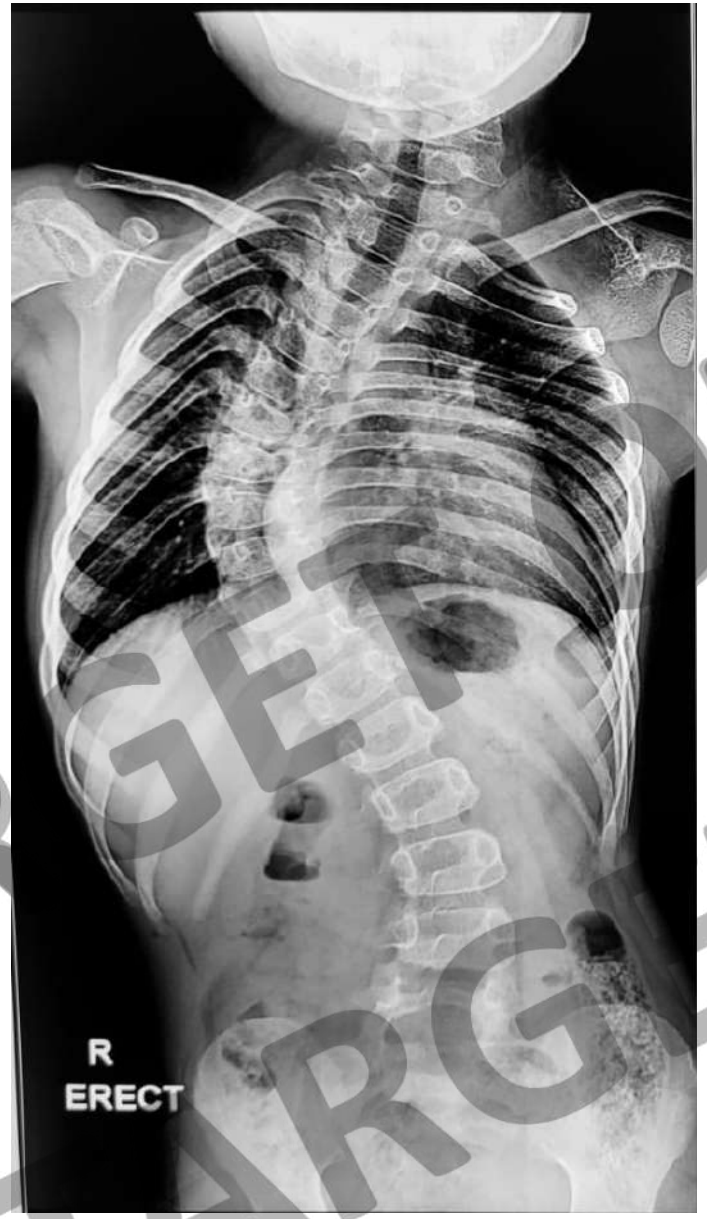


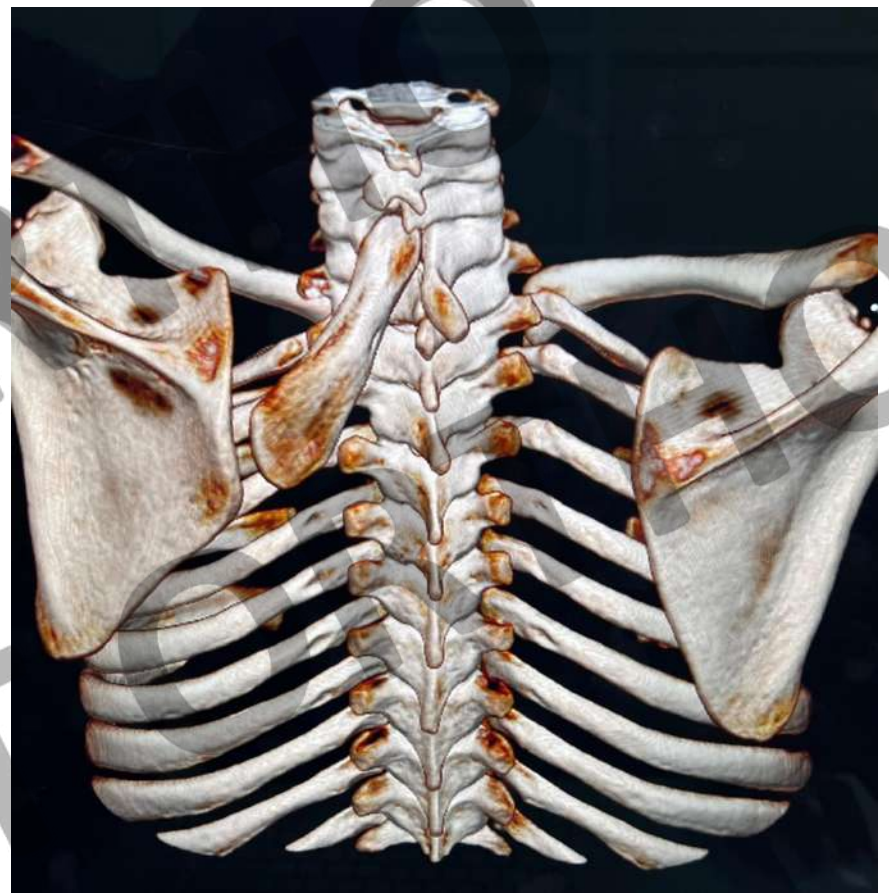


Diagnosis

- 4 year old boy with left sided sprengel shoulder with limited abduction Cavendish Grade 3

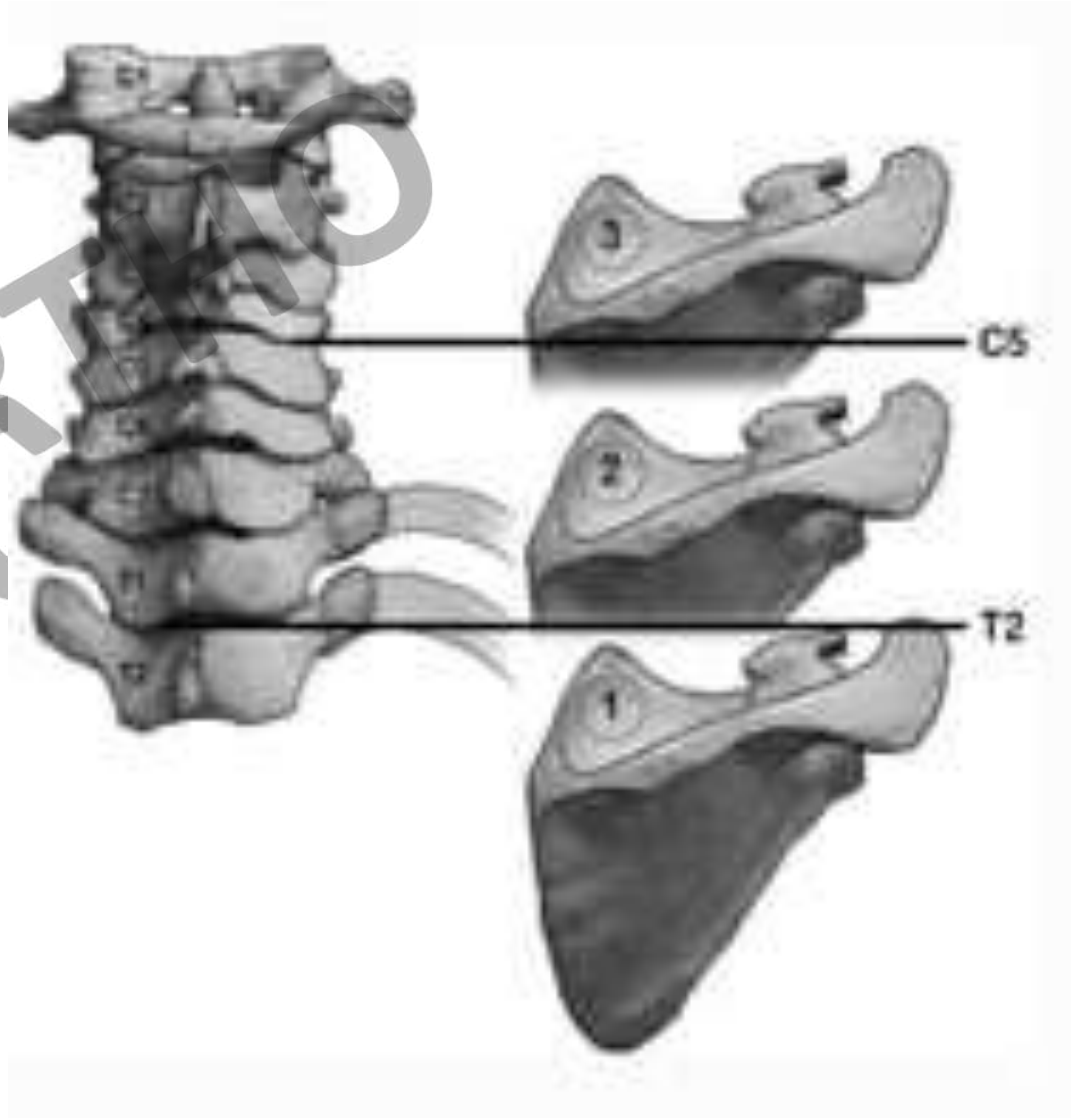
Imaging





Embryology

- Differentiates opposite C4-6 at 5 weeks
- Descends to thorax by 3 months IUL



Associations

Most Common:
Klipped Feil Syndrome

= Fused cervical ribs,
Low hairline

Associations

- Klippel feil
- Scoliosis, Congenital anomalies
- Poland syndrome
- VATER anomalies
- Fused ribs

Surgery

- Woodward
- Green

- Modification = Morcellization of clavicle

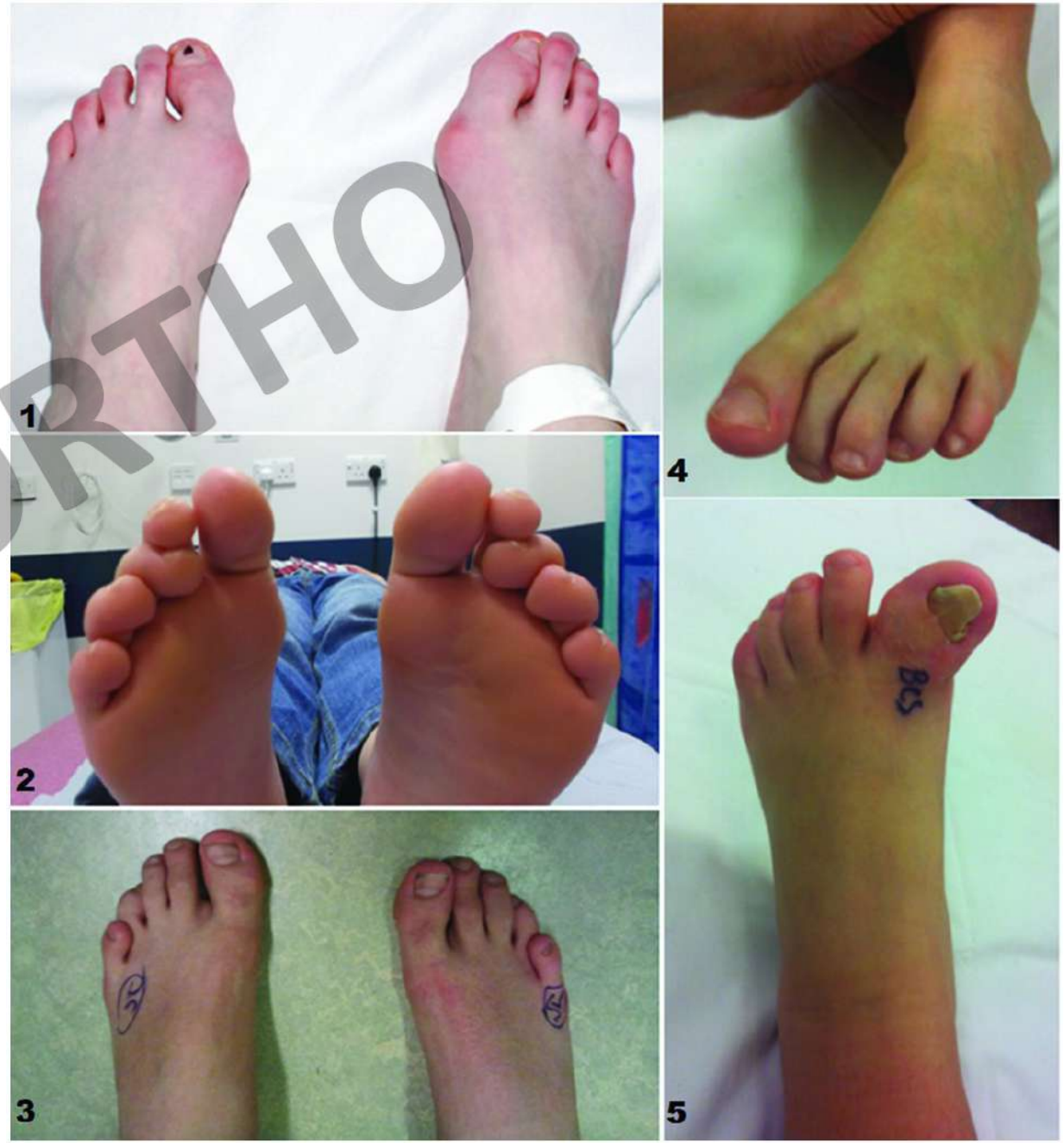
Sx

Woodward	Green
Origin of trapezius shifted	Insertion of muscles elevated extraperiosteally
Scapula shifted and placed in pouch of trapezius	Superomedial angle resection

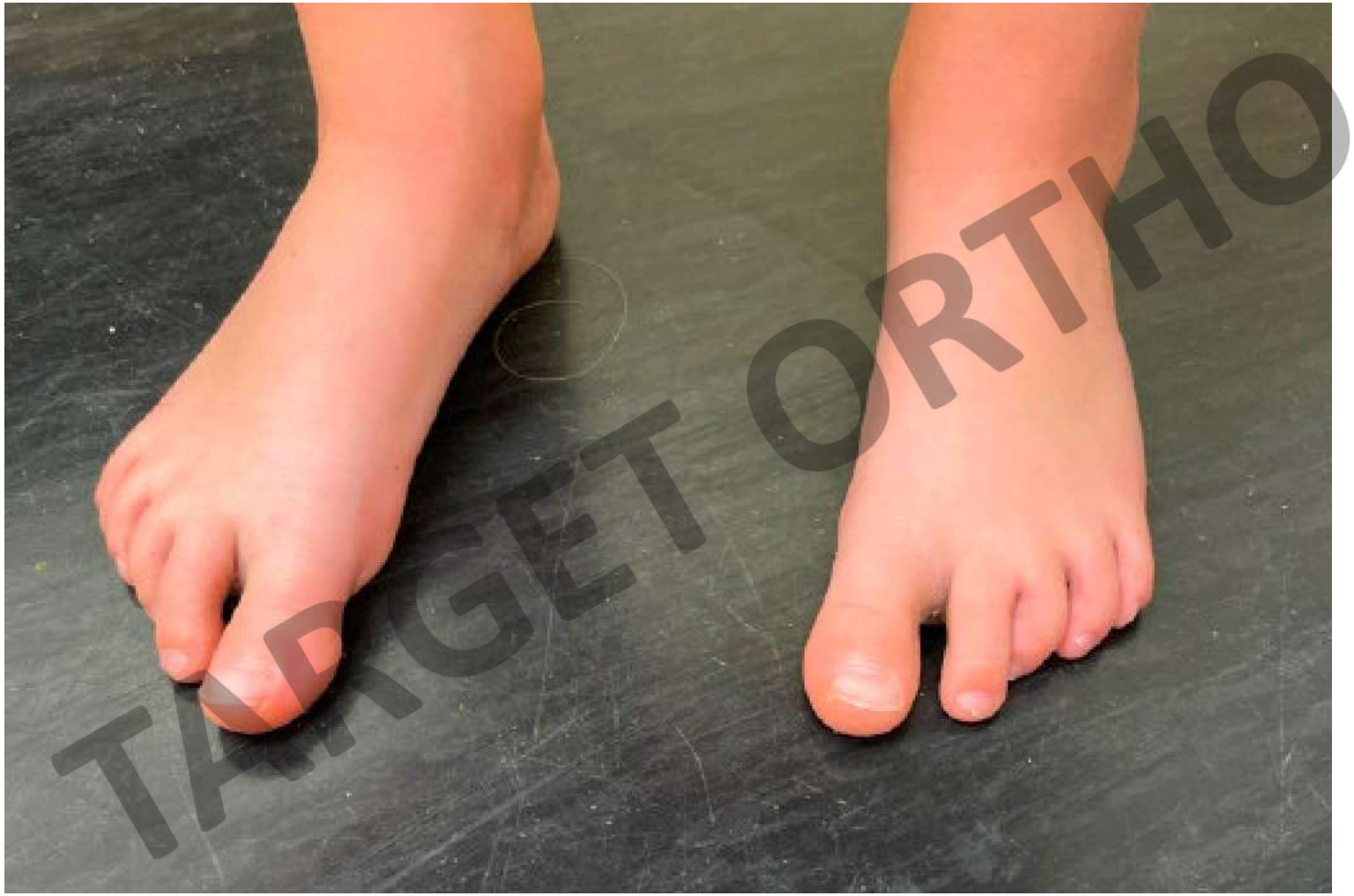
Case 4

- Foot issues

1. Hallux Valgus
2. Curly Toe
3. Overlapping 5th toe
4. Hallux varus



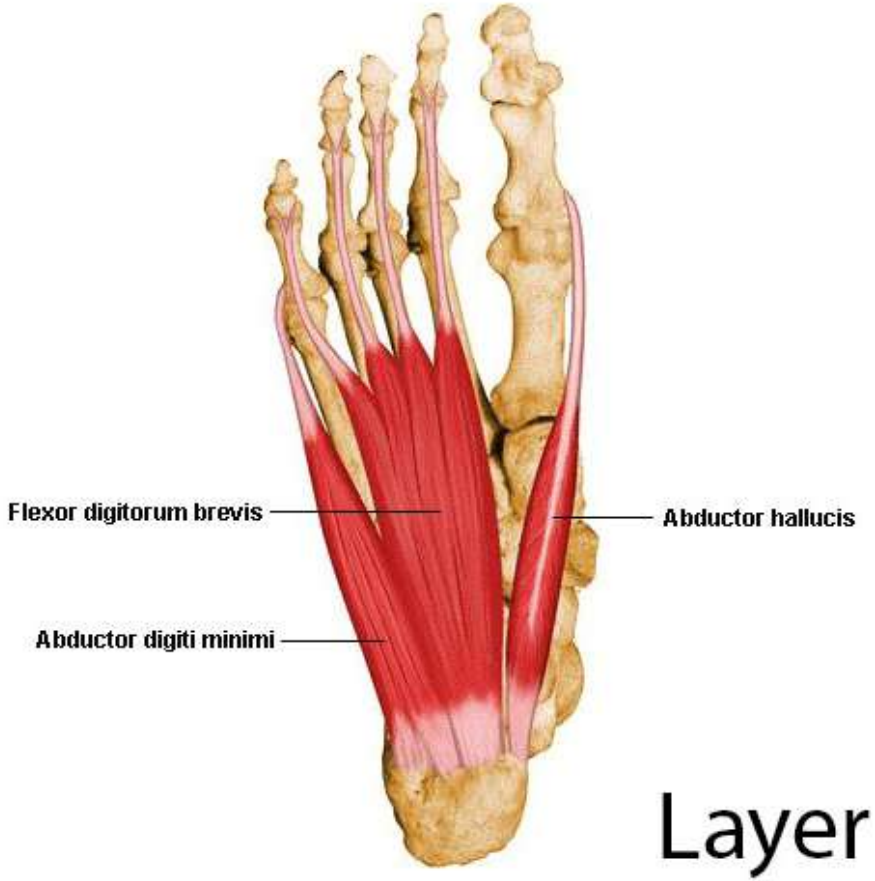
Deformity	MTPJ	PIPJ	DIPJ
Hammer toe	Dorsiflexed or neutral	Plantar flexed	Neutral, hyperextended,
Claw toe	Dorsiflexed	Plantar flexed	Plantar flexed
Mallet toe	Neutral	Neutral	Plantar flexed
Curly toe	Neutral or plantar flexed	Plantar flexed	Plantar flexed



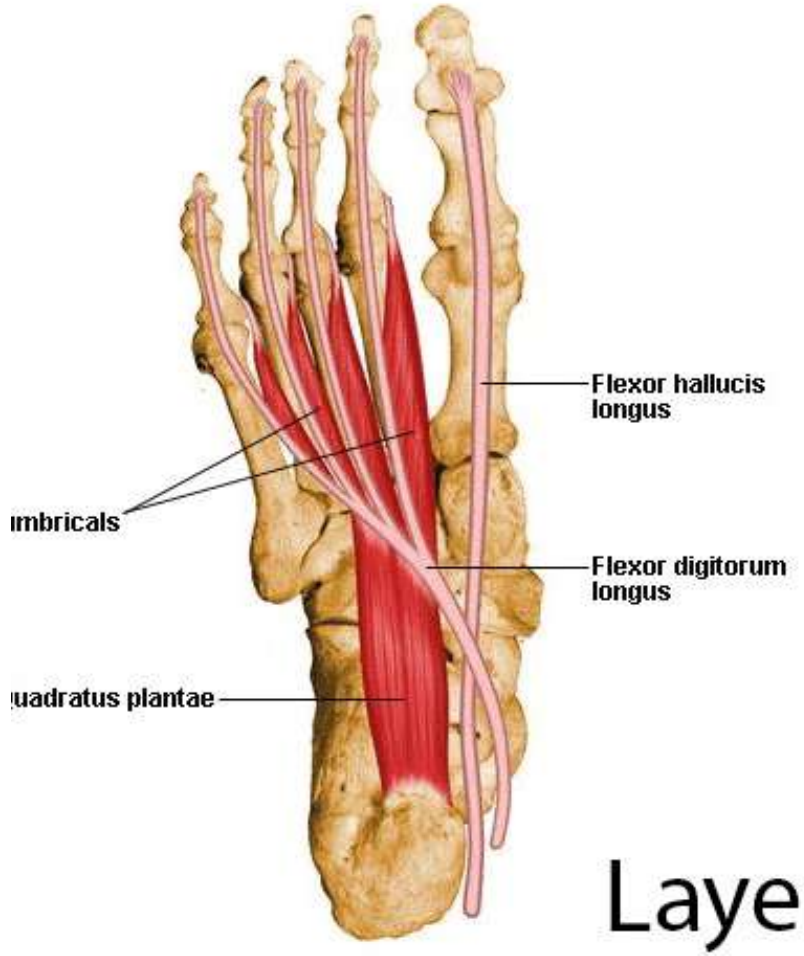
7 F
Diagnosis?

Rx: Curly toe

- Flexed and medial deviated toes
- FDL, 2 slips of FDB tenotomy

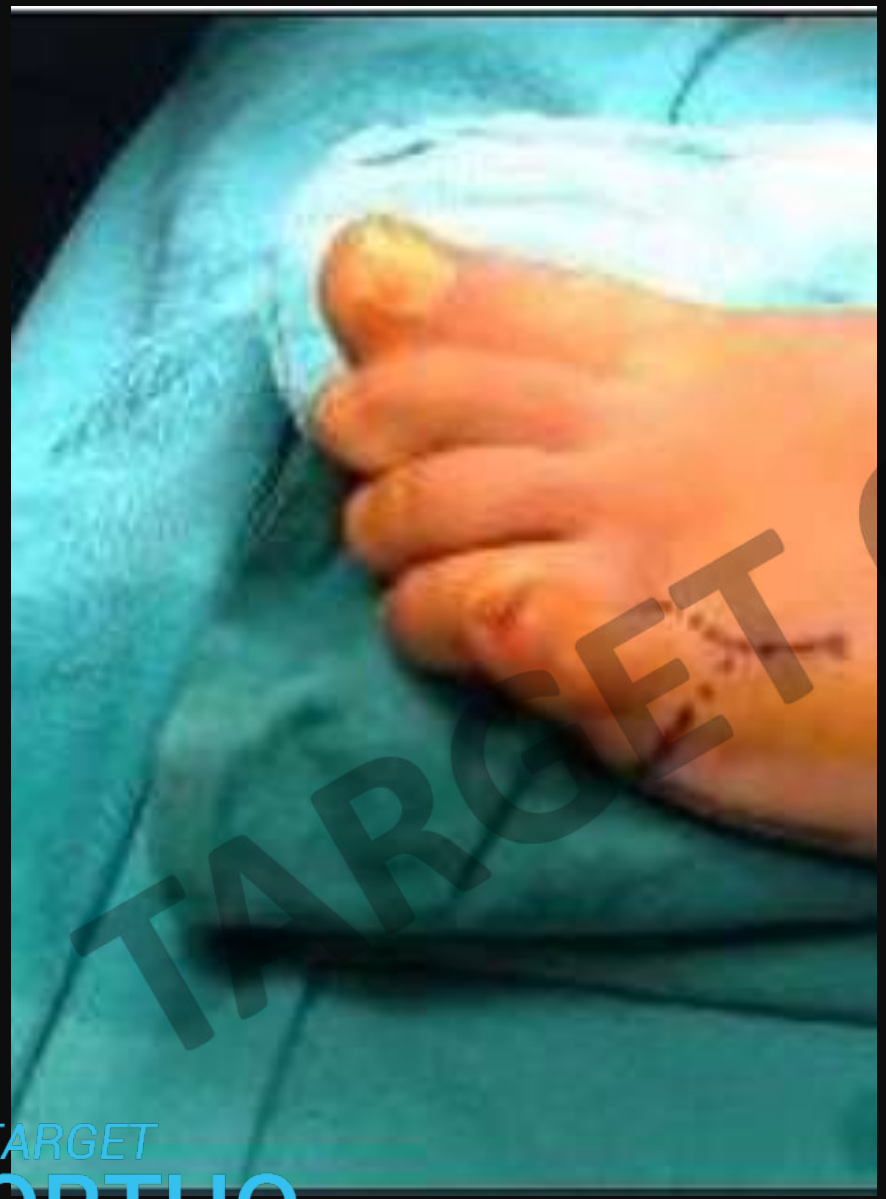


Layer 1



Layer 2

Diagnosis?

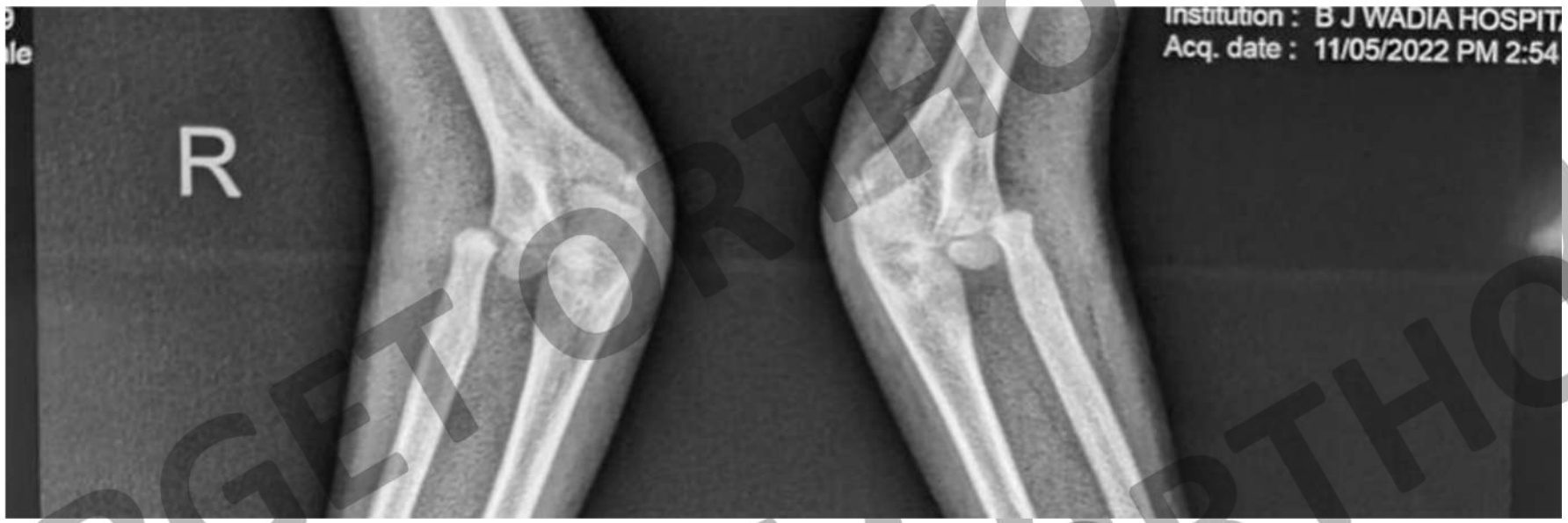


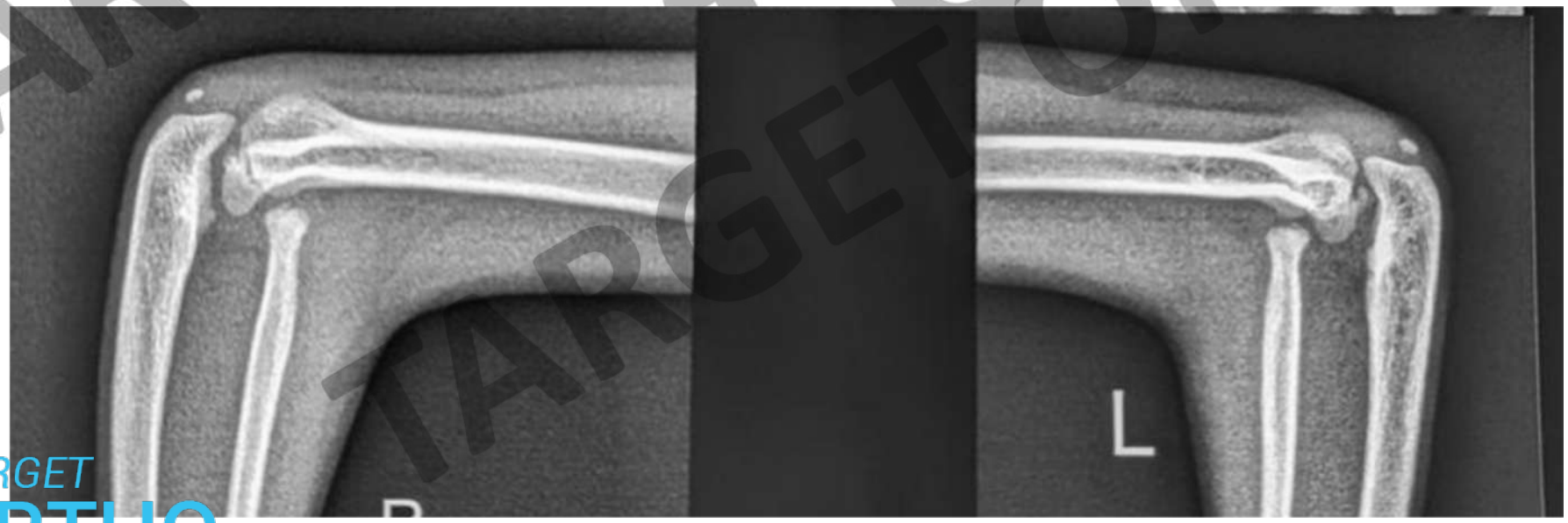
Congenital overlapped 5th Toe

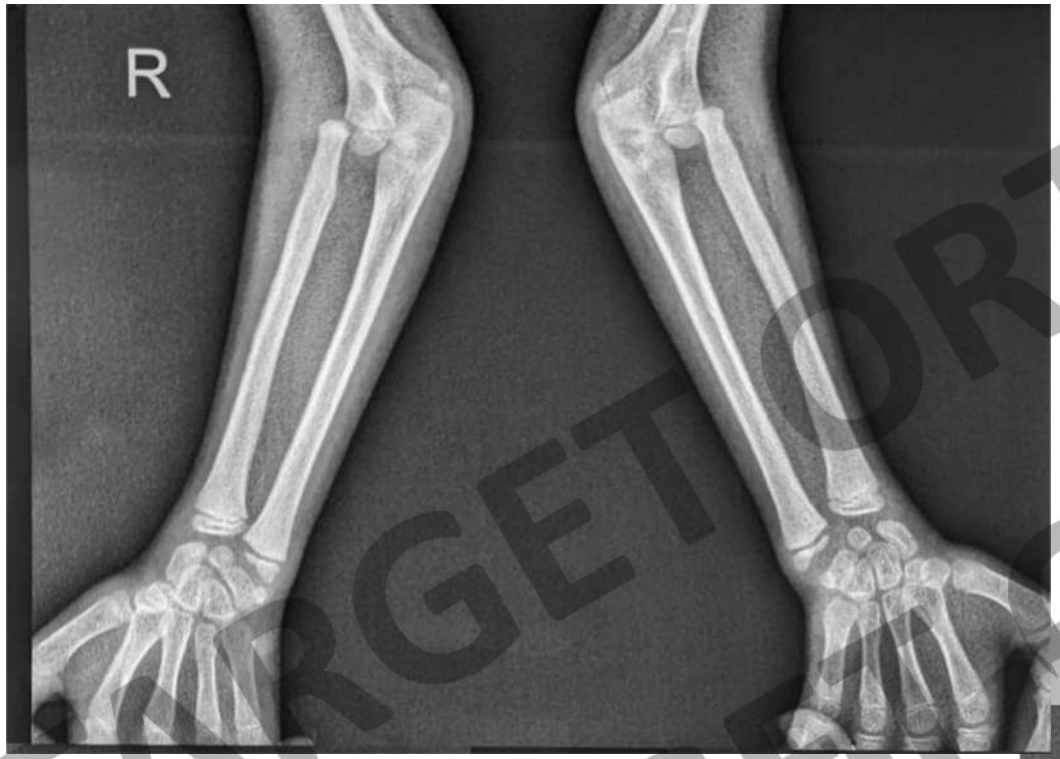
- Rx
- Extensor digitorum longus and dorsal capsule release
- Racquet incision

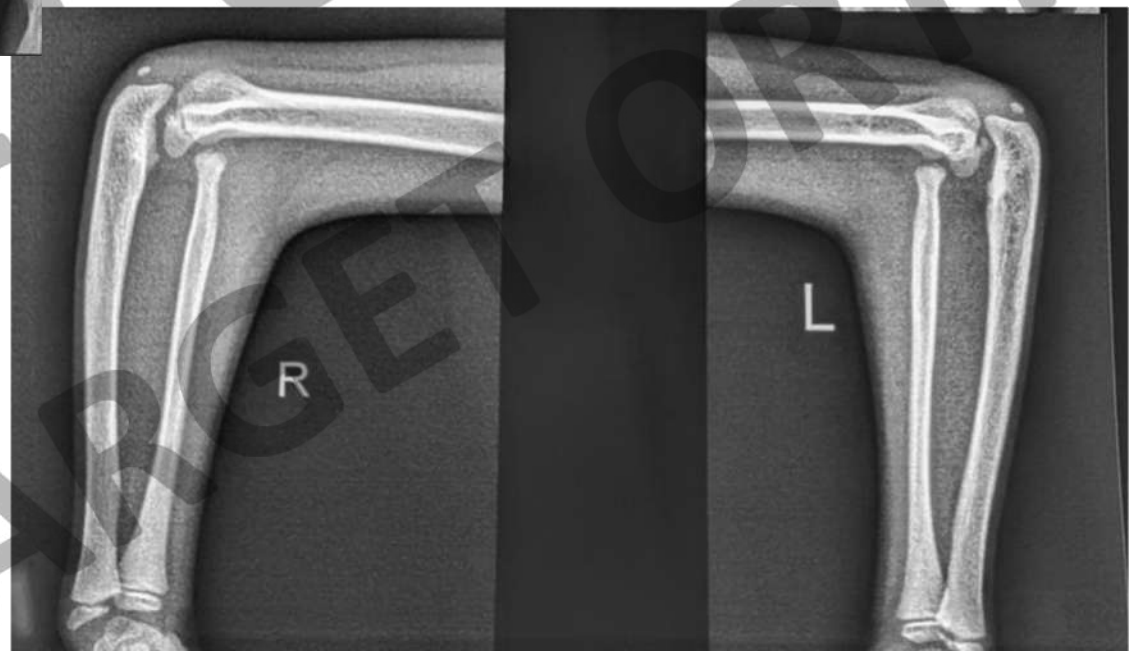
Case 5

- Elbow issue

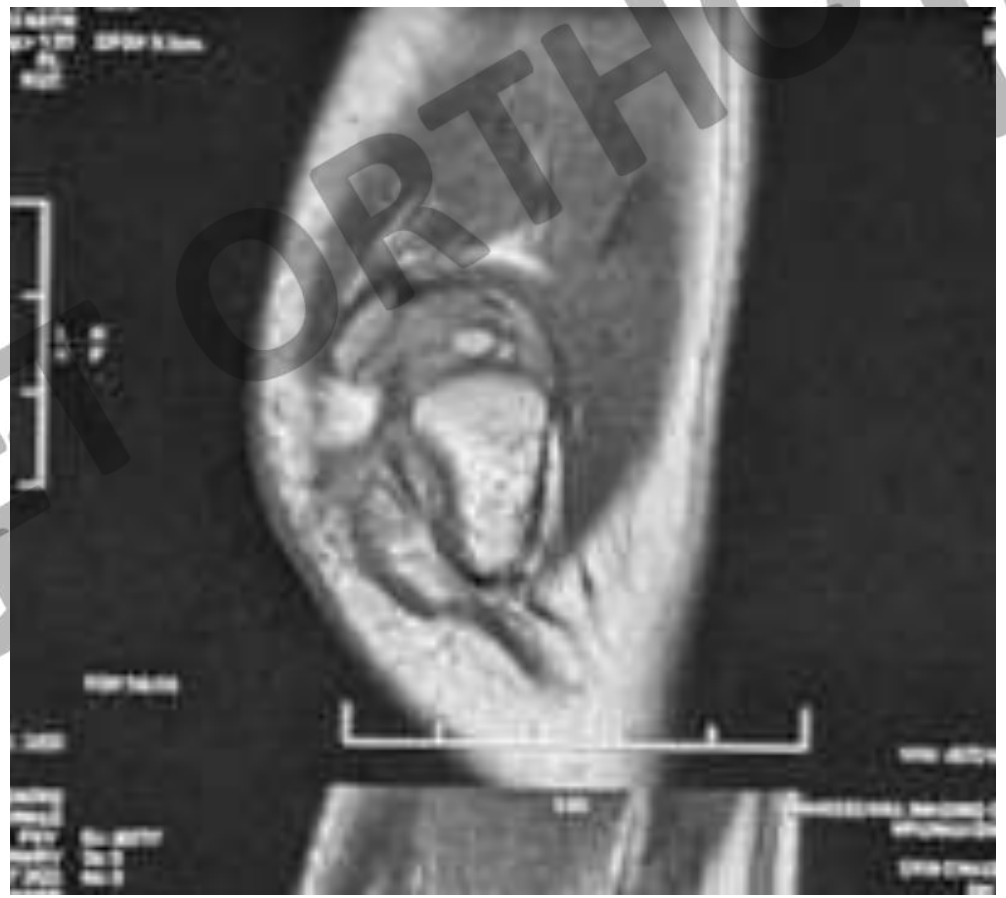








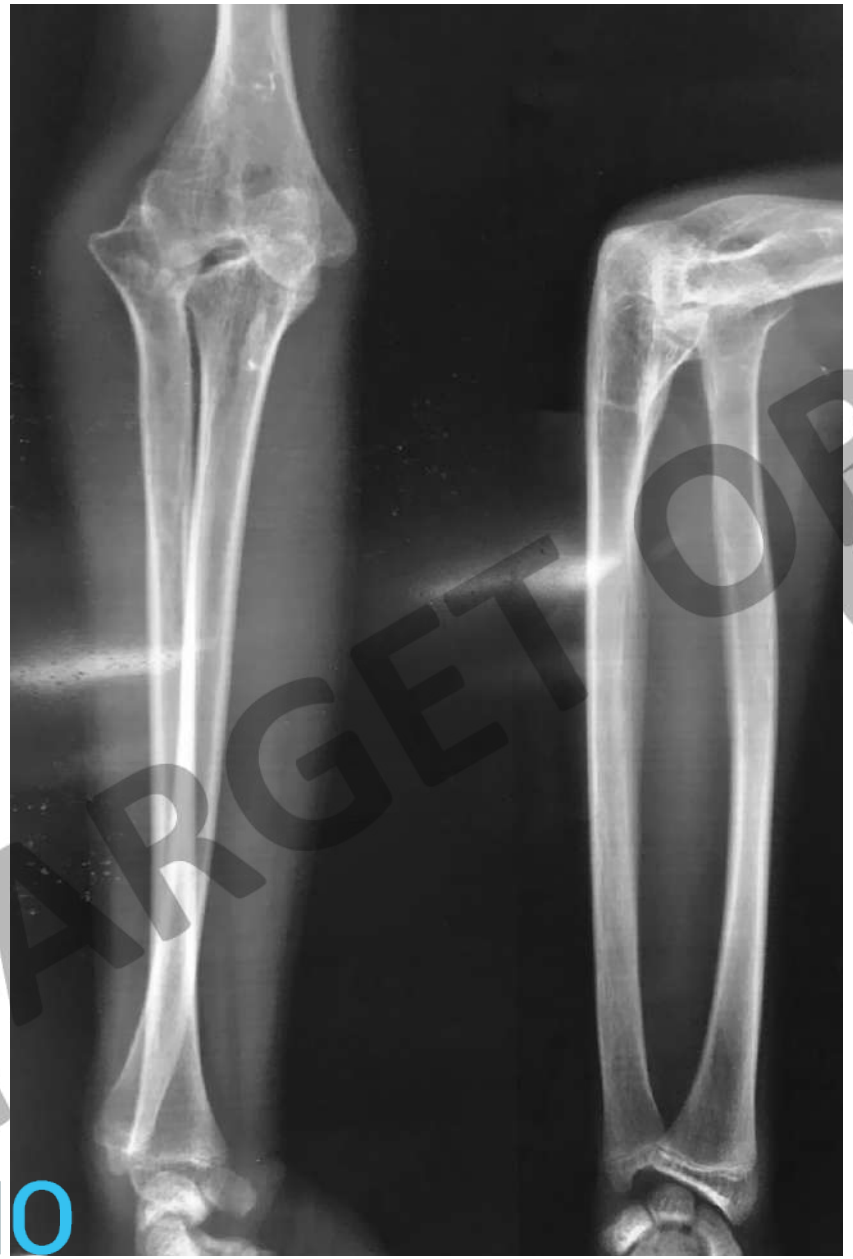
MRI

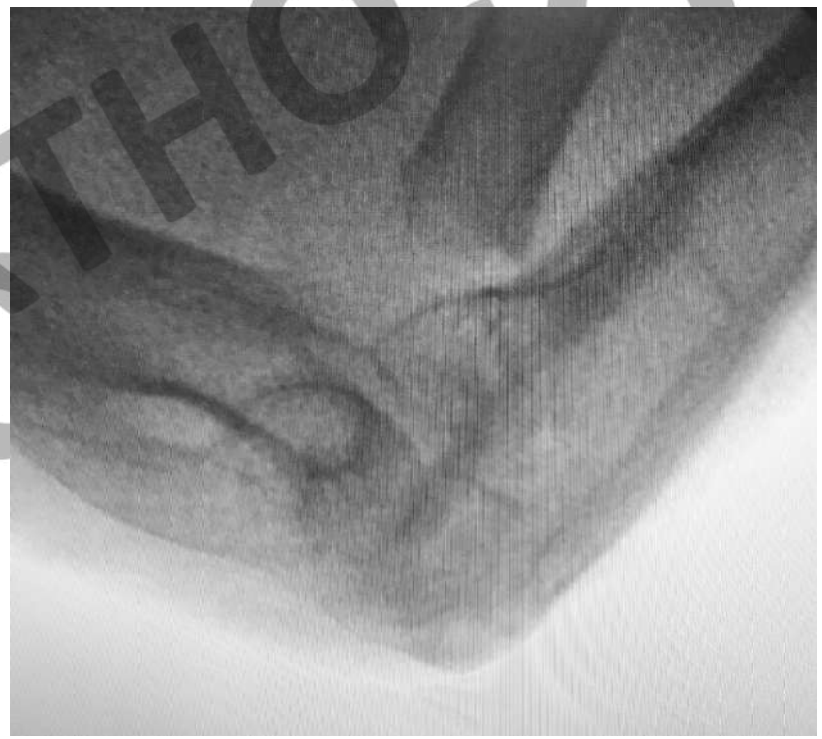


Diagnosis

- Bilateral congenital radial head dislocation

Rx





Diagnosis

Congenital Dislocation of knee

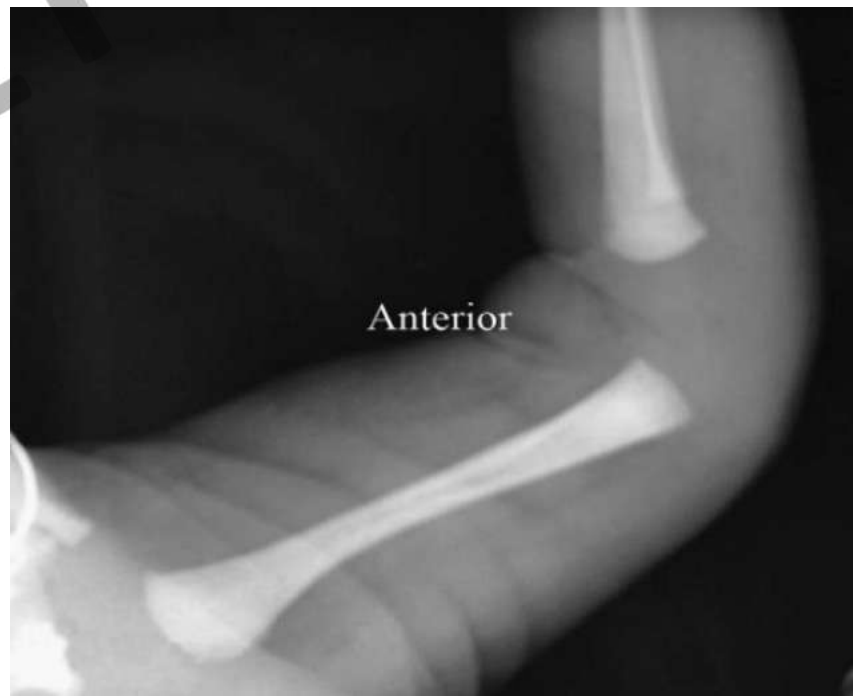
- Rare condition, first described by ‘Chatelaine’ in 1822
- Incidence 1 in 100,000 (i.e. 1% of DDH)
- Association:
  AMC, Larsen, Myelomeningocele
  CTEV, DDH, Vertical Talus, Congenital dislocation elbow

1. Shattock SG. Genu recurvatum in a foetus at term.;
2. Jacobsen K, Vopalecky F. Congenital dislocation of the knee. ActaOrthop Scand.1985;
3. Curtis BH, Fisher RL. Heritable congenital tibiofemoral subluxa-tion. Clinical features and surgical treatment. J Bone Joint Surg Am, 1970.

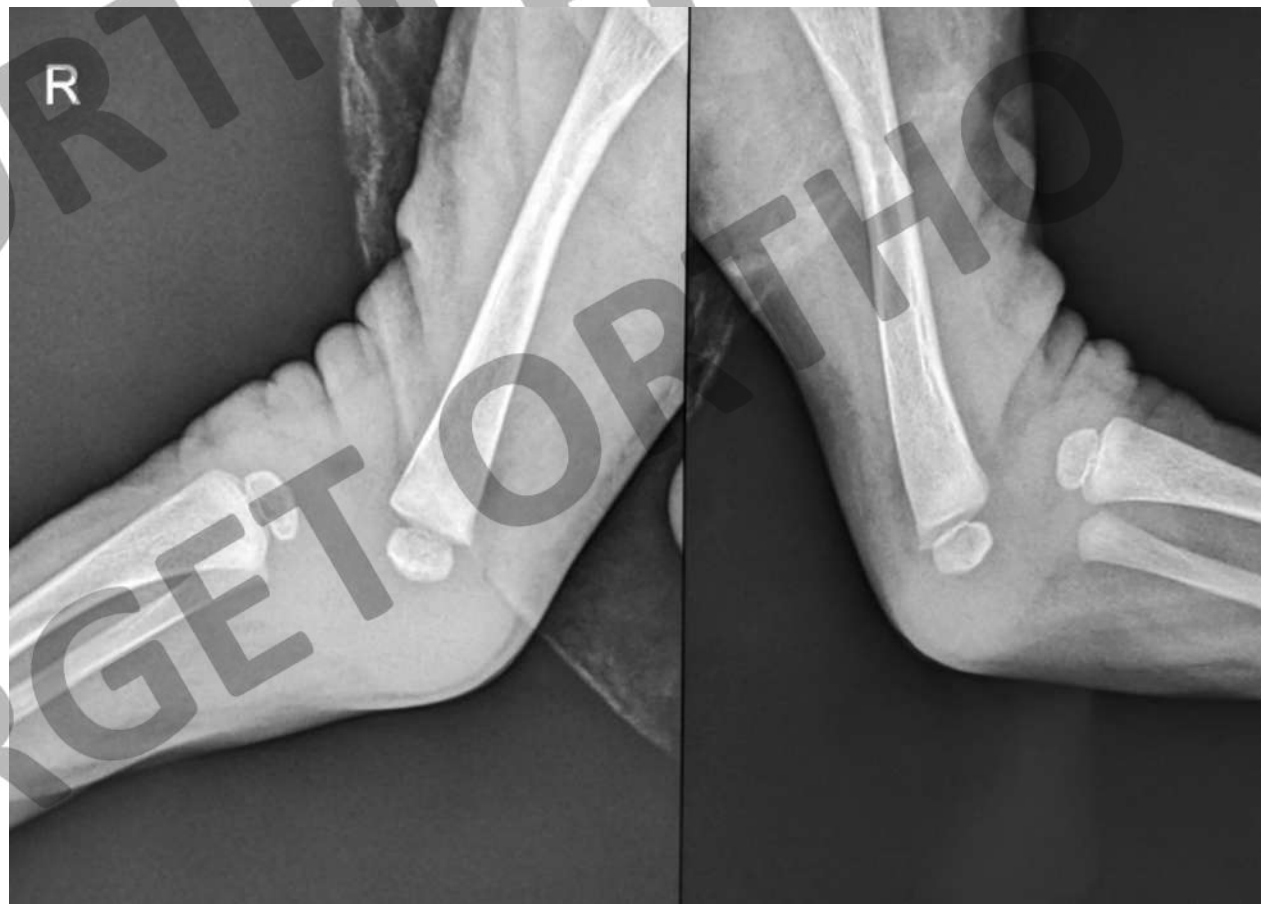
Diagnosis

- Clinical exam : hyperextension
- Radiograph :
  differentiate from frank dislocation
  to hyperlaxity
- Examination of **Hips, feet and upper limb** for

  idiopathic CDK ⇔ Syndromic



Case example: Larsen with Bilateral CTEV and CDK



Ideal treatment

- If starts early on:
- Casting Ponseti for the foot, CDK casting for the knee
- First perform the below knee part like Ponseti and then reduce the knee and perform the above knee part

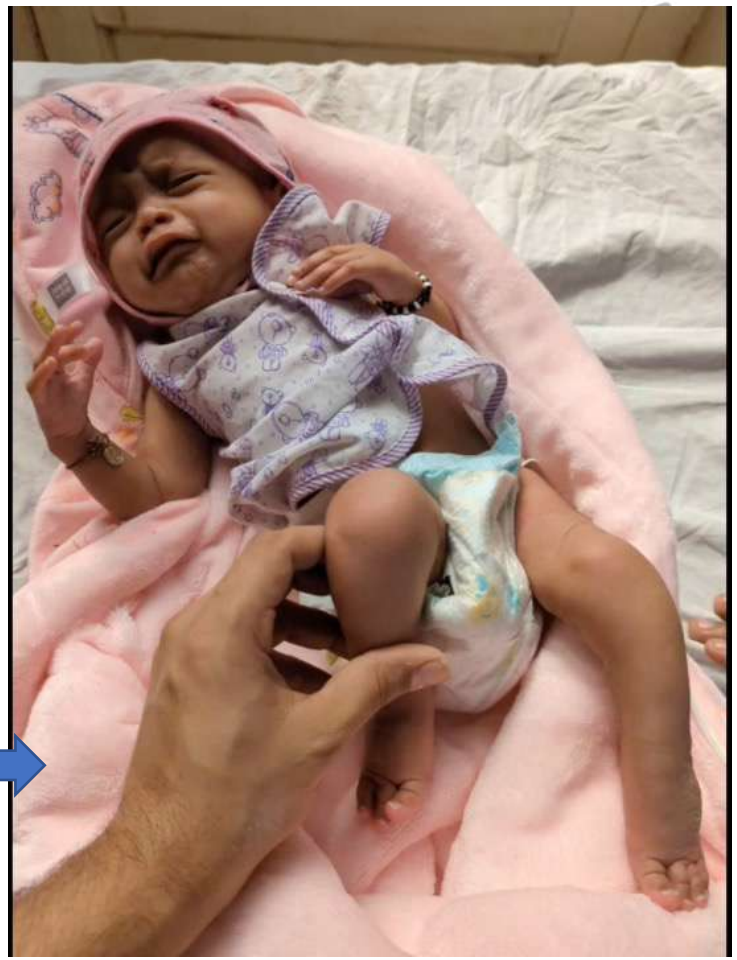
A Minimally Invasive Treatment Protocol for the Congenital Dislocation of the Knee, Shah, Noppachart, Dobbs et al
JPO 2006

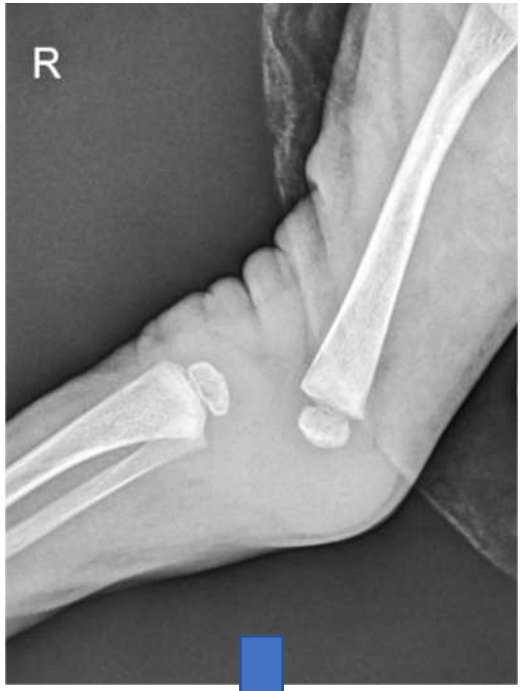
Casting technique

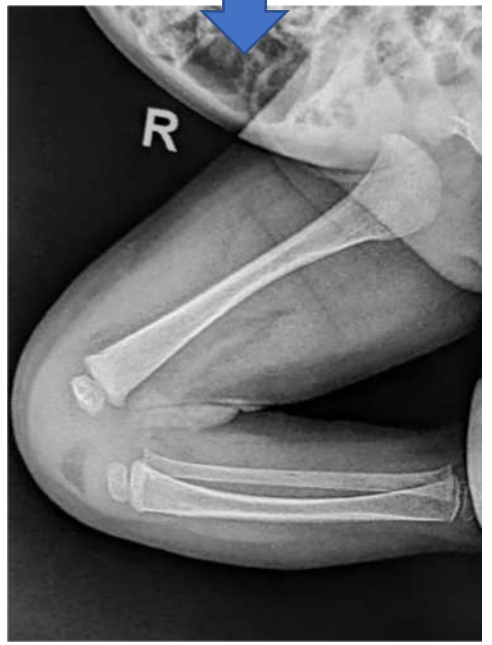
- Below knee Ponseti -> CDK Casting
- Traction with femur anterior pull and tibia posterior push to locate the knee
- Important to identify the rotation by palpating posterior femoral condyle

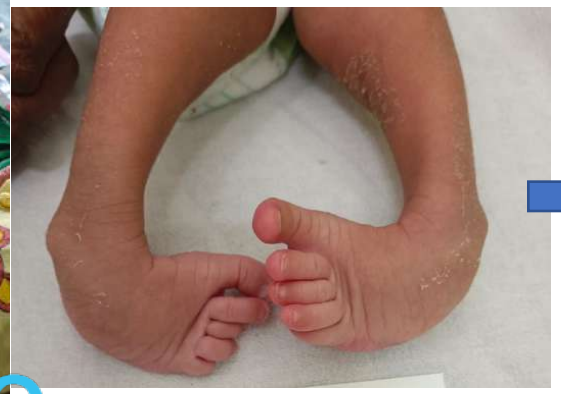
End Point

- 90 degree of knee flexion
- 6-7 Casts
- Xray can Aid to visualize reduction if unsure







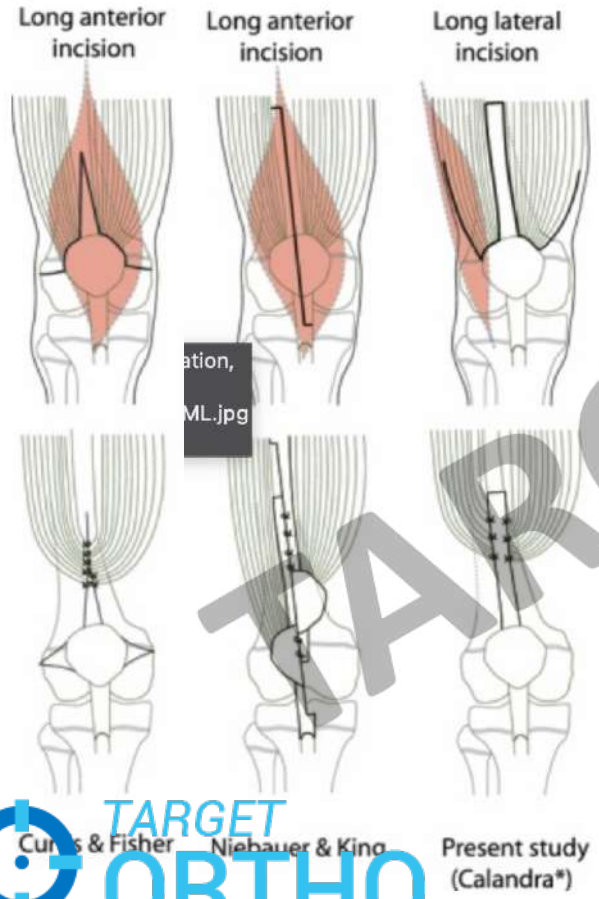


However…

- Casting does have some residual subluxation

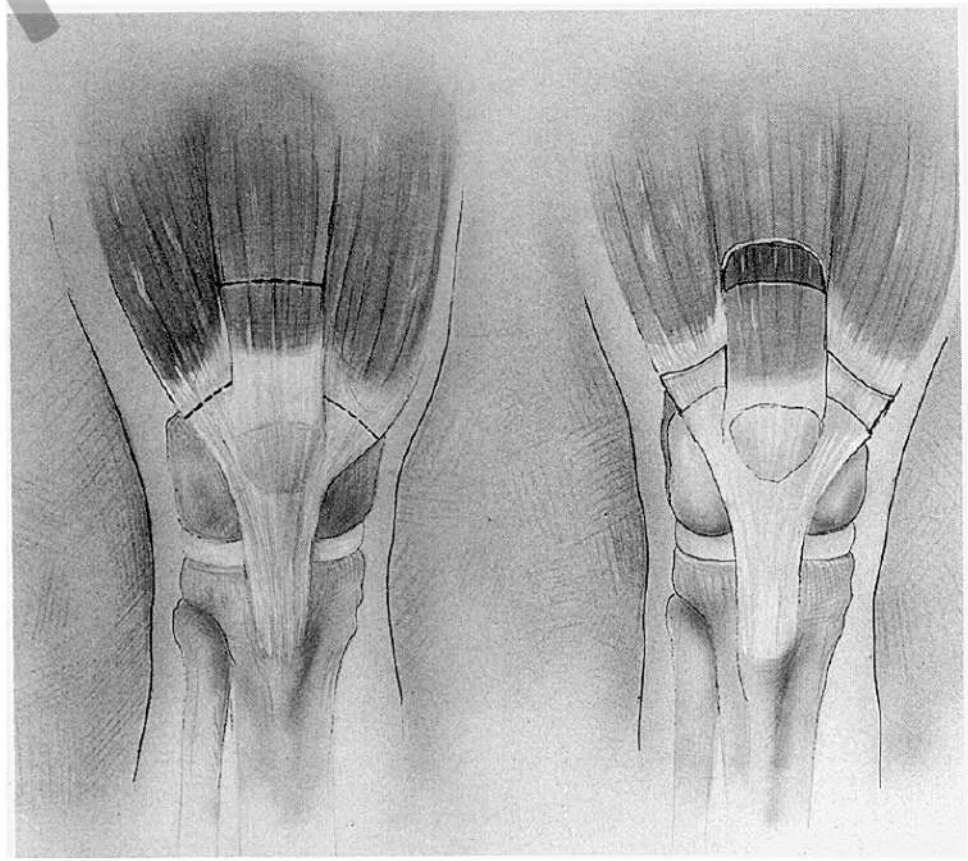
Congenital dislocation of the knee. Its pathologic features and treatment, Oishi et al, CORR
100% residual subluxation

Spectrum of Surgical options for CDK



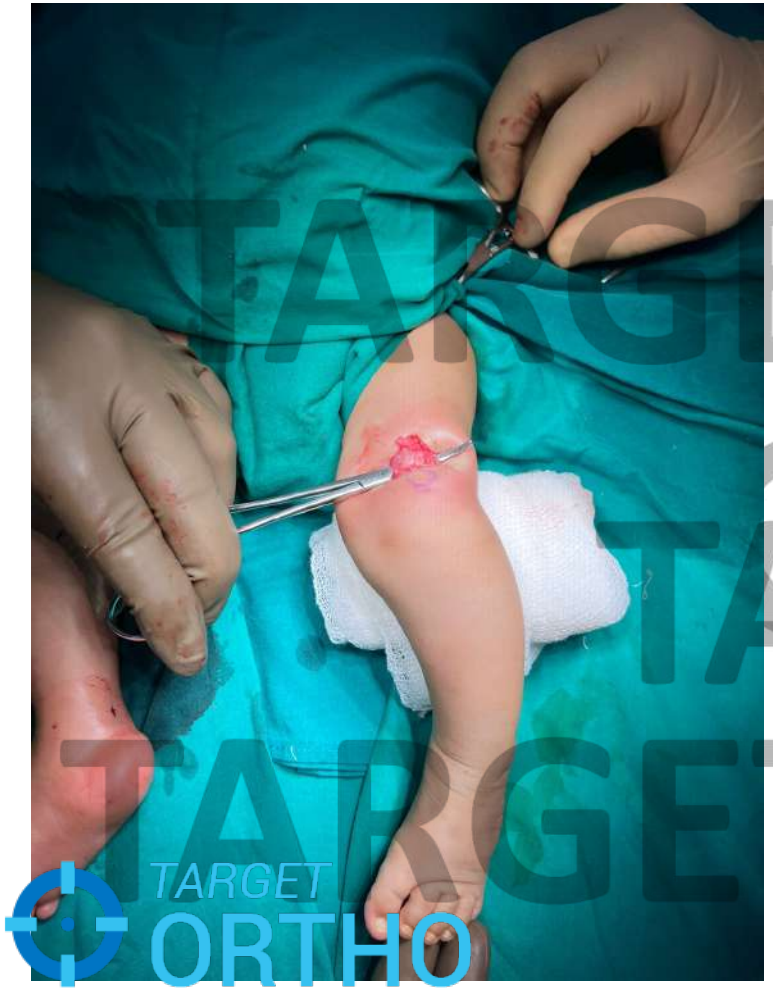
Open Quadricepsplasty

Dobbs:
Mini Open RF Tenotomy



Roy Crawford: Percutaneous
RF Lengthening

If Casting Fails, Minimally invasive Rectus femoris lengthening



Can be combined with TA Tenotomy

Summary

- Good to know options for management
- Look for etiology
- Know

Diagnosis?