

Common Paediatric Sports Injuries

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Introduction

- Spectrum of injuries
- Causes of injuries
- Regional
 - Spine:
 - Gymnast Spinal cord injuries cervical spine fracture
 - Stress fracture of Pars inter-articularis LS Spine, Badminton players
 - Upper limb
 - Shoulder throwing sports Baseball player fracture humerus arm wrestling
 - Elbow
 - Lower limb
 - Hip/knee/ankle ACL, Tibial fractures Triplane fractures
- Risks related to specific sports
 - Contact sports: Football/ basketball
 - Non contact : Badminton/ table tennis/ swimming
 - Track and field :Sprinting/ Hurdling/ long jump, high jump
 - Long distance running stress fractures

Spectrum of Injuries

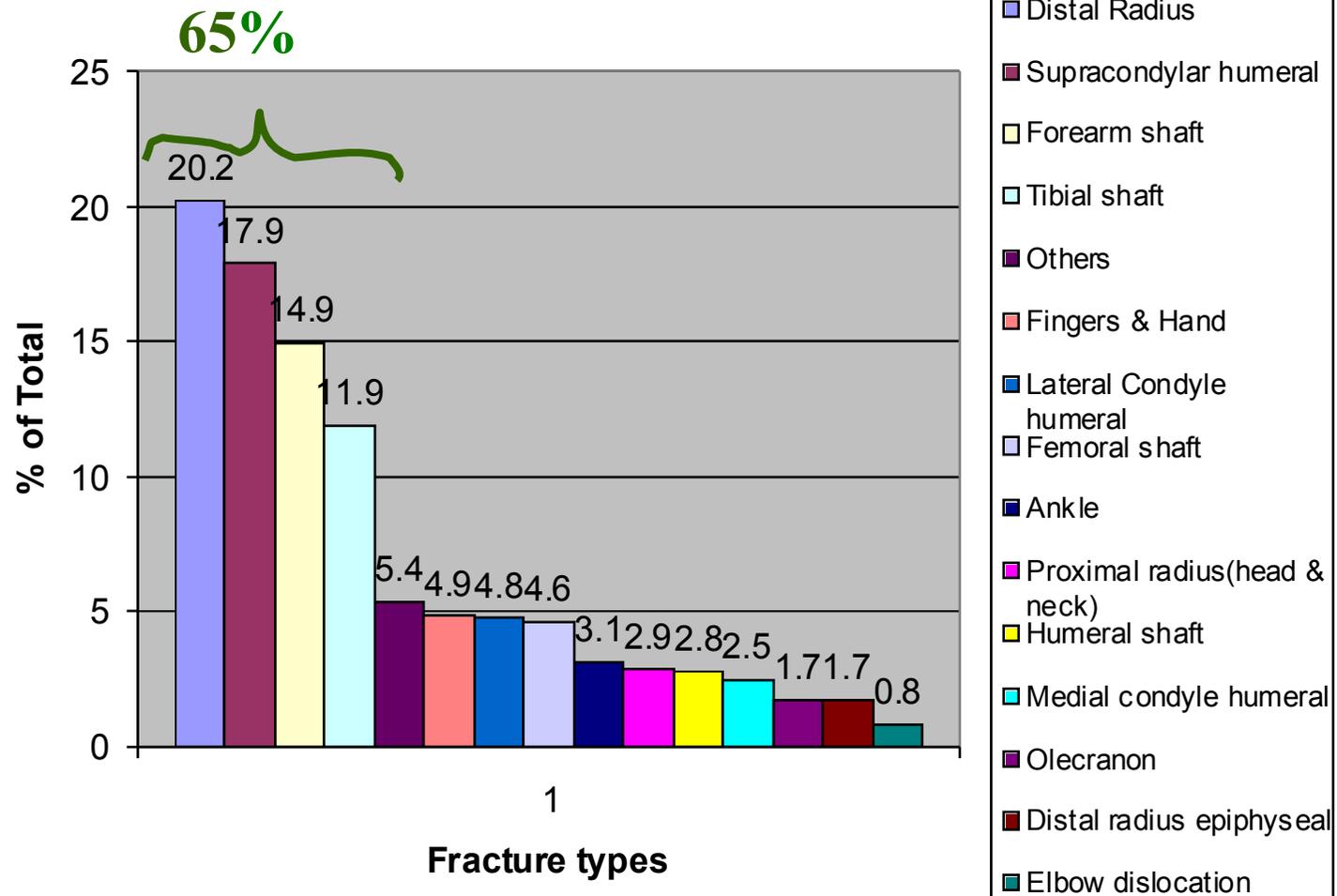
- Bone
 - All severity of fractures
 - In Children, specific growth plate injuries
- Joint
 - Dislocation, subluxation
 - Ligament tear
 - Intra-articular
- Soft tissues
 - Muscle tear, strain

Epidemiology of Children Fractures

- **1 Distal radius fracture** 20.2%
- **2 Supracondylar humeral** 17.9%
- **3 Forearm shaft** 14.9%
- **4 Tibial Shaft** 11.9%
- **5 Fingers & hand** 4.9%
- **6 Lateral condyle** 4.8%
- **7 Femoral shaft** 4.6%
- **8 Ankle** 3.1%
- **9 Proximal radius (head & neck)** 2.9%
- **10 Humeral shaft** 2.8%
- **11 Medial Condyle humeral** 2.5%
- **12 Olecranon** 1.7%
- **13 Distal radius epiphyseal** 1.7%
- **14 Elbow dislocation** 0.8%
- **15 Rarities** 5.4%

Review of 6493 fractures JCY Cheng et al JPO 19:344-350 1999

Paediatric Fracture Patterns



Causes of injury

- Loading beyond the limits
 - Acute: fracture, muscle tear
 - Chronic: stress fracture, tendonitis e.g. Achilles
- Environmental risks leading to accidental fall
- Danger of human fatigue
- Danger of unaccustomed training, over training stress fracture
- Danger of inadequate warm up, de-conditioned after illness

Important General Principles

- Most sport injury are usually higher energy
 - **MORE SERIOUS WITH COMPLICATIONS**
- Serious injury causes
 - Pain
 - Deformity from
 - Fracture deformity
 - Swelling from soft tissue injury
 - Loss of function from
 - Pain inhibition
 - Loss of bone continuity
 - Neurological injury

Effect of Injury to Athletes

- Prevention from injury is most important
- Major interruption of training
 - Minor injury 2 weeks
 - Moderate injury 2 months
 - Severe injury 2 years (fracture)



Simple #

CR PKWF- No
controversy

F/10 Fell from height



Left Elbow

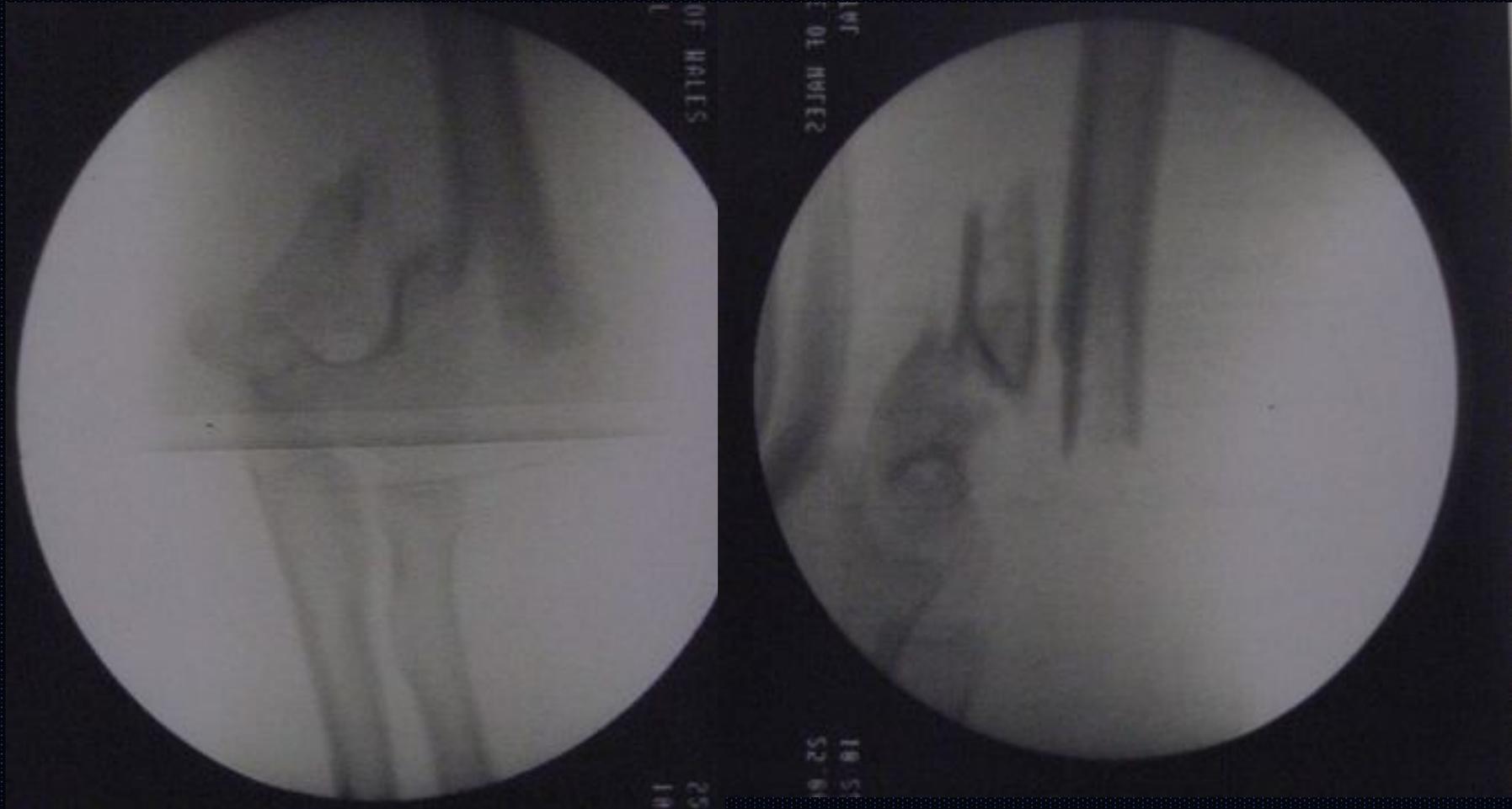
Medial



Lateral



Appearance under EUA, CR? Segmental

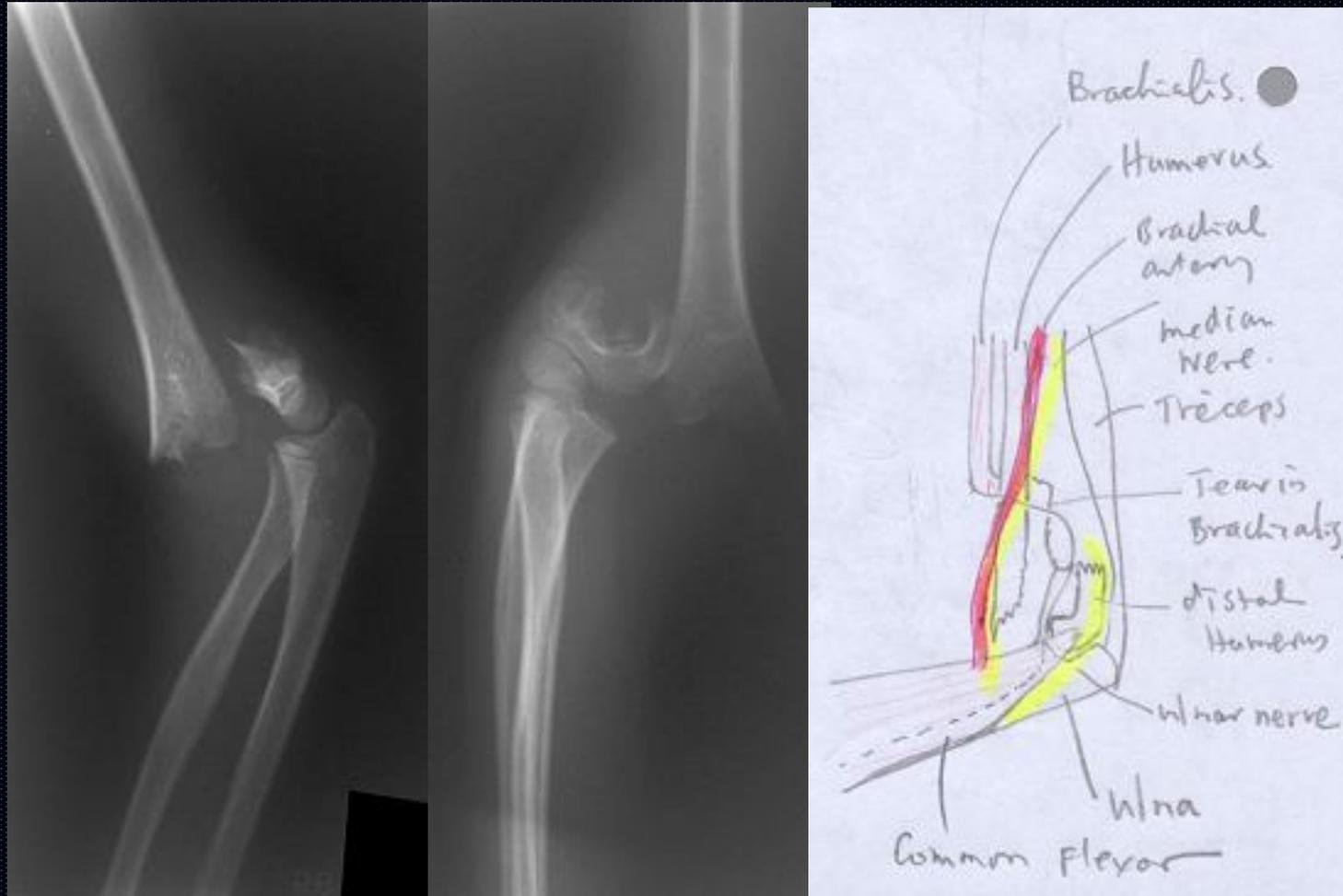


The Pulseless SCH#



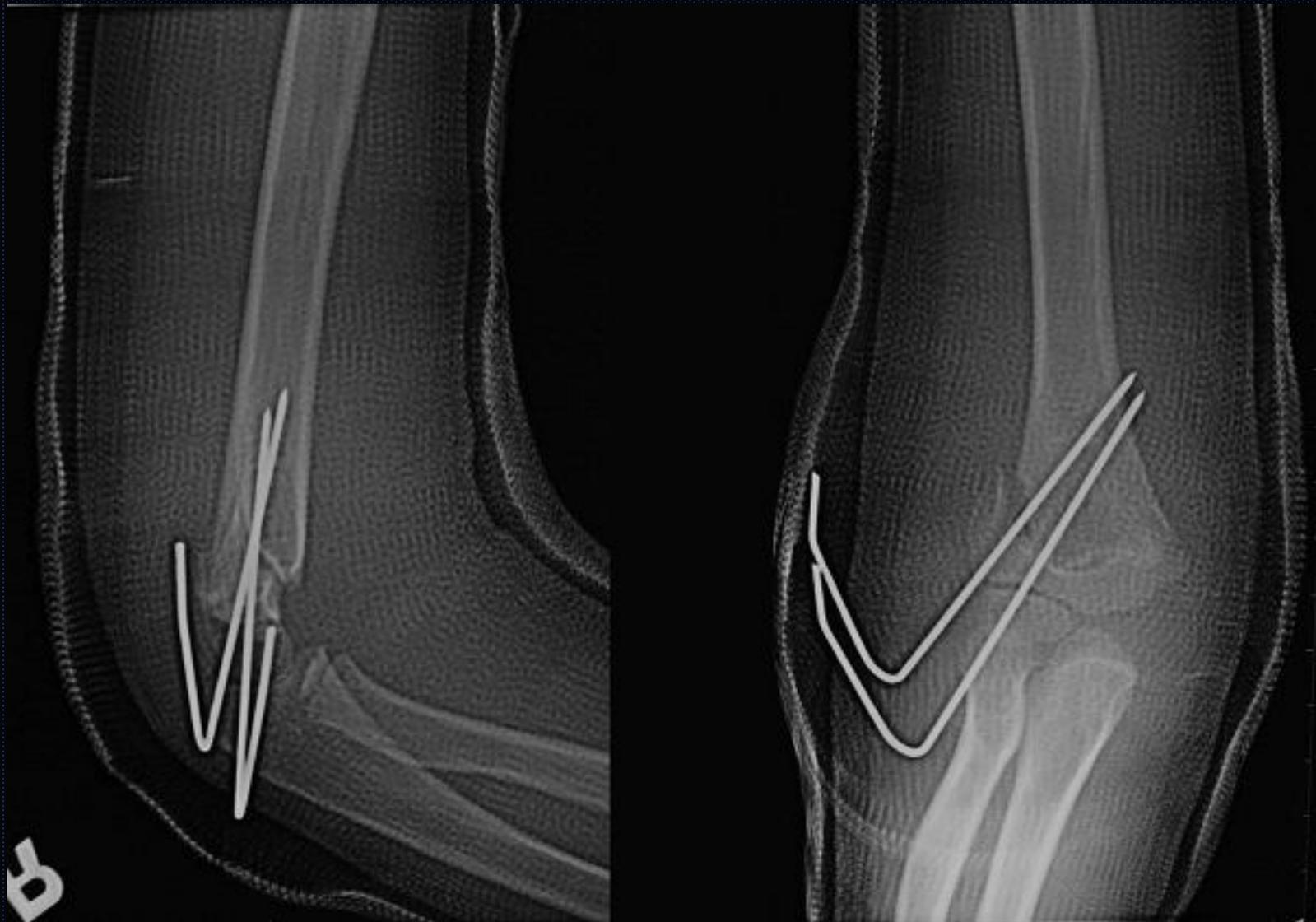
Pucker Tenting of
skin

Mechanism of Neuro-Vascular Injury PL Displacement

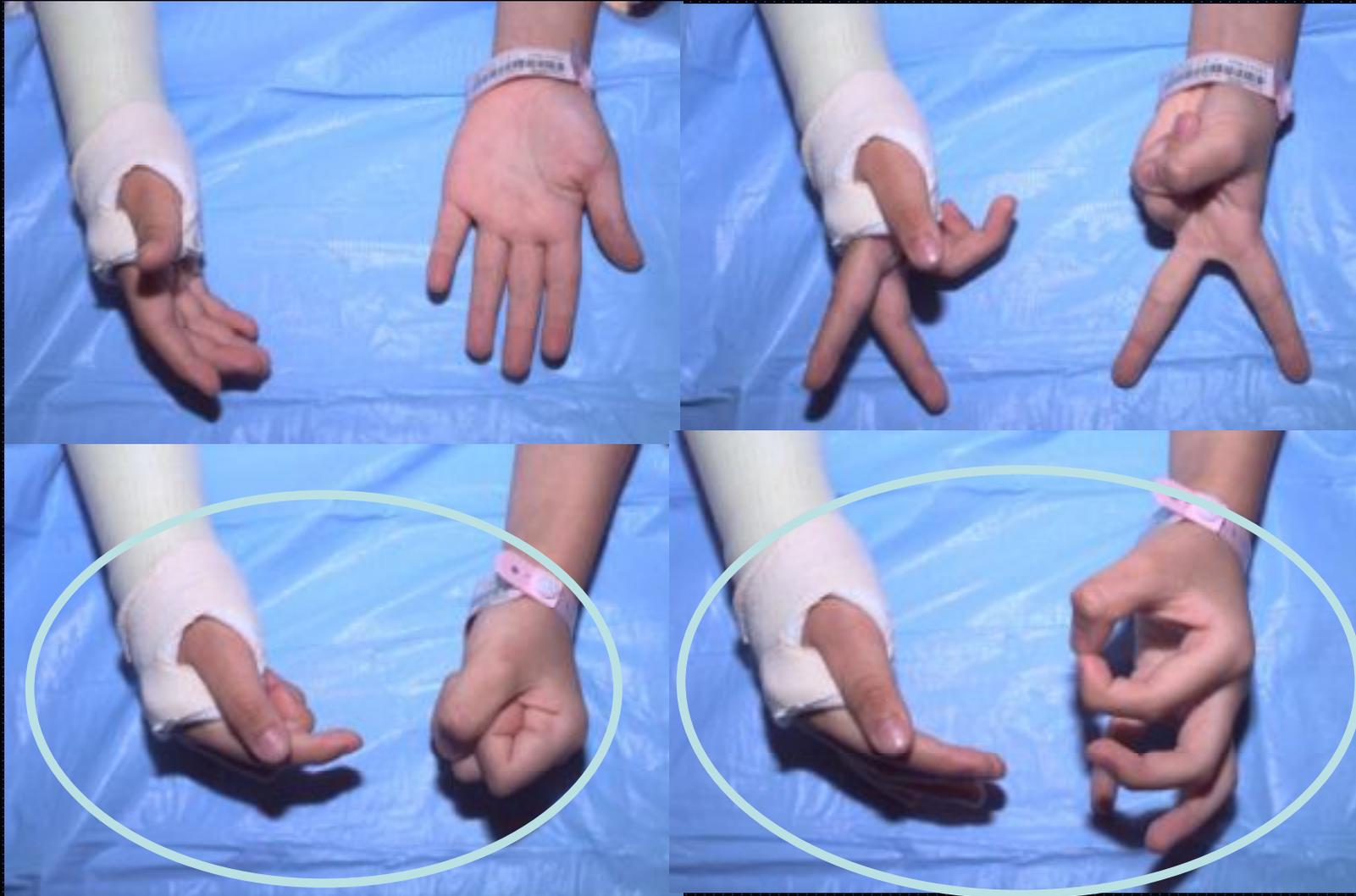








Patient post operation little flexion IF



Forearm Shaft Fractures- Best treated by CR+/- IMPKWF

*Yung SH, Lam CY, Choi KY, Ng KW, Maffulli N, Cheng JCY
Percutaneous intramedullary Kirschner wiring for displaced
diaphyseal forearm fractures in children JBJS B 1998 Vol
80-B No 1 January 1998*



Mid shaft # R&U

M14, Slipped on parallel bars-
head looked odd- AS point up and out

Scapular lateral no
dislocation



Post Op X-rays



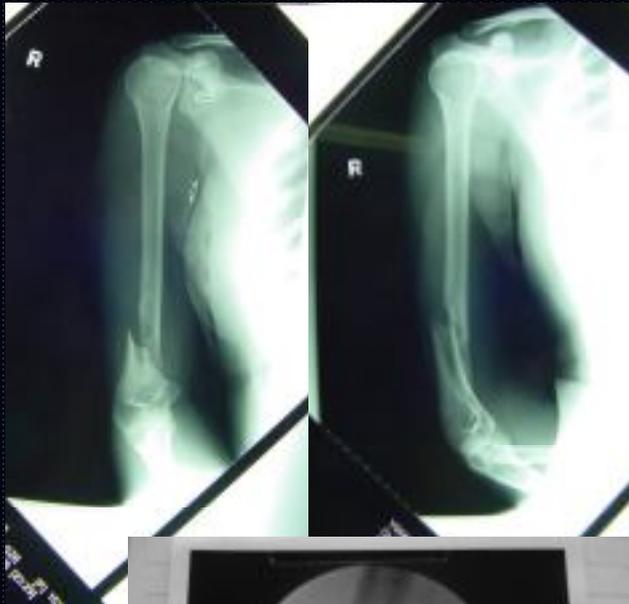
Often looked subluxed post op Deltoid
inhibition , no need for alarm



Patient reported a previous injury 1 months ago treated by bone setter to be a dislocation- probable an impacted fracture at the metaphyseal area. Thick periosteal bone = infection or fracture

Deceptive Humeral shaft

Seemed simple 2 parts



Really 3 pts

Great pain & wobbly pre-op.
felt arm useless



post op Move like magic

Complex Dislocations Nerve Injury

M/9 fell off slide at playground 1.5M, elbow deformed, unable to move





Locked in this position



Note bruising along flexors





Reduced and looked right







LI
Ex: 13489
De: 102
Volume Rendering: No cut

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CHW, HO: MING GLORIA
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Mar 22 2008

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Volume Rendering: No cut

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Mar 22 2008



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M/14 Injured left leg
on sports day tripped
and fell

PRINCE OF WALES HOSP

86556747 00700 0124



01.8000.6+0.5005F0.5
FEMUR/KNEE JOINT
01.705650+1.0+1.0

PW86005500
LAW, HD SZE
EXP:04.NOV.2000[17:50] SCALE:50% RT-01

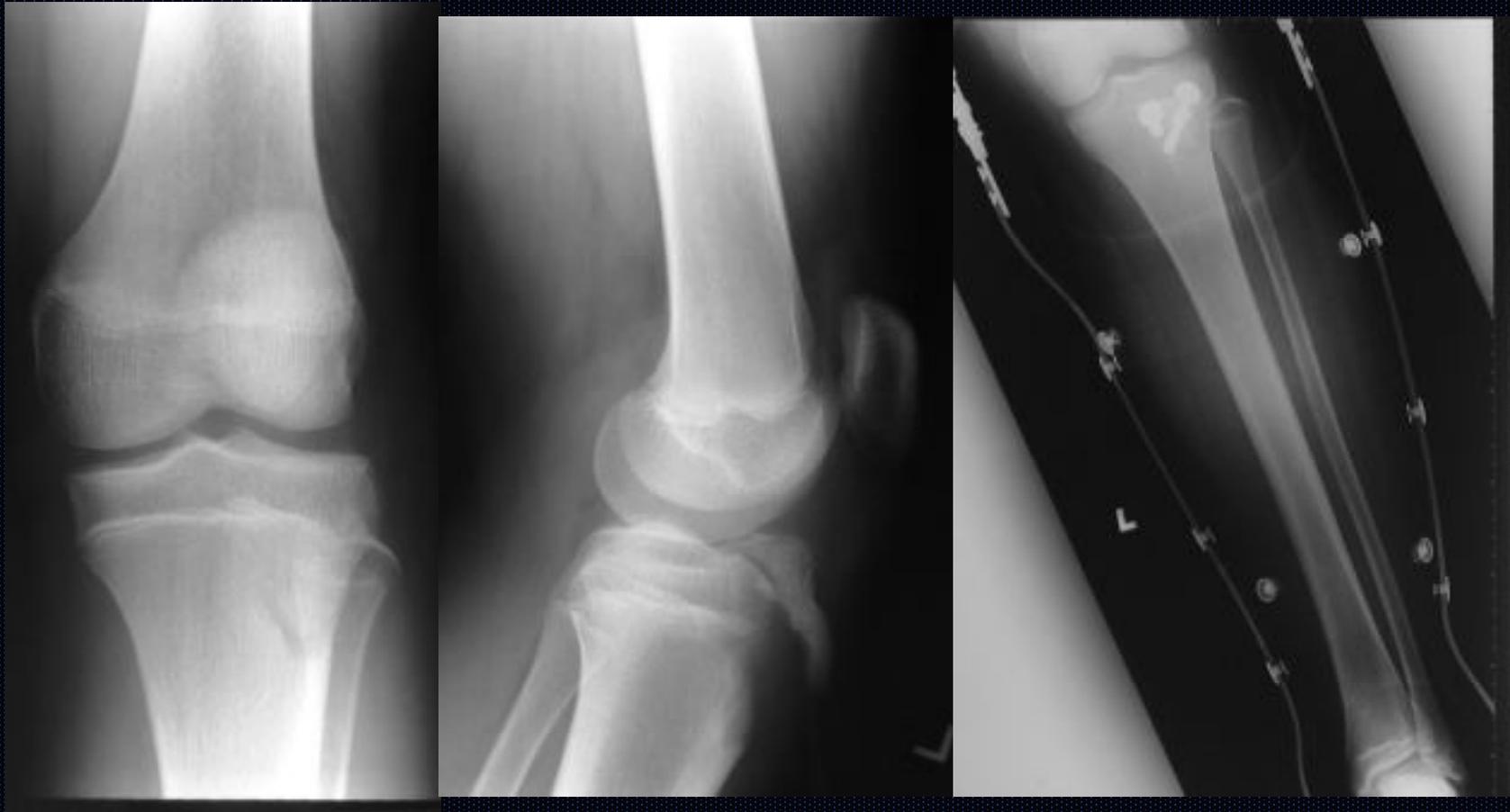
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Ender Nails worked just as well





Powerful Quadriceps



Comminuted unstable compound Fractures- Ext. Fix. fixes well works great- heals fast too- simple AO Frame CB rods



Specific Cartilaginous Injuries- Apophyseal Avulsion fractures

- Hip
 - Avulsion AIIIS
 - Adductor longus origin
- Knee
 - Osgood Schlatter
 - Johannson Sinding Larsen

M/13 right hip pain after sprinting



M/14 Left hip pain after sprinting



Knee Injury can be subtle



Swelling is important





M/14 bicycle injury crash



Epiphyseal injury



M/16 Twisted ankle at basketball



Conclusion

- Wide spectrum of injury
- Wide distribution of injury
- It could also affect spine- rare
- It could cause some very serious injury with major consequence
- Most important is to prevent injury