



NEET-PG

PART-C

VOLUME-III

Orthopedics, Phychiatry
and Radiology



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ORTHOPAEDICS

HISTORY:

1. GALEN:

- Father of Sports Medicine

2. NICHOLAS ANDREY:

- Coined the term 'Orthopaedics' (misnomer)
- Wrote 1st textbook
- Father of Orthopaedics
- Crooked tree Symbol of Orthopaedics.

3. JEAN ANDRE VENEL:

- Father of orthopaedics.

4. HUGH OWEN THOMAS:

- Father of British Orthopaedics.
- Thomas splint < was made for TB knee
Used for # SOF
- Thomas collar - Soft Cervical collar
- Thomas Wrench - # Reduction
- Thomas test - Flexion deformity @ Hip.

5. Percival POTT:

POTT'S # - Bimalleolar # (MM + LM)

POTT'S Spine - TB of spine.

6. JAMES PAGET:

Paget's ds of bone.

Paget's ds of Nipple

Fracture ds.

7. ROBERT JONES:

- Father of Modern Orthopaedics
- Jones #
- Robert Jones's bandage.

8. ALBIN LAMBOTTE:

- Father of Modern Internal fixation.
- Coined the term Osteosynthesis.
- Describe usage of Bio Degradable implants.

9. LORENTZ BOHLER:

- Father of Traumatology.
- Bohler Braun Splint
- Bohler's angle \rightarrow # Calcaneum
- Bohler's Stirrup \rightarrow Skeletal Traction.

10. GERHARDT KUNTSCHNER:

Kuntschner's Nail (K-Nail)

11. MARTIN KIRSCHNER:

Kirschner's Wire (K-wire)

12. MAURICE E. MILLER:

Co-founded AO (Arbeitsgemeinschaft für Osteosynthesefragen)
in 1958.

13. ABRAHAM COLLE'S:

- Colles' #

14. JOSEPH LISTER:

- Father of Antiseptic Sx.

15. AMBROISE PARE:

- Father of Amputation Sx

16. WTG MORTON:

- Father of Modern Anesthesia

17. W.C. ROENTGEN:

- Discovered X-Ray.
- Father of Radiology
- World Radiology day - On 8th Nov. 1895



2017 theme - Cardiac imaging

18. ENNEKING:

Father of Orthopaedic Oncology.

19. JOHN CHARNLEY

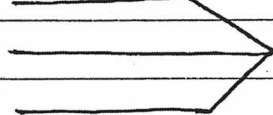
- Father of Arthroplasty.
- 1st joint replaced → Hip.

20. INSALL

NORMAN W. SCOTT

KELLY

ISK institute



TSK (Total Knee Replacement)

21. MASAKI WATANBE:

Father of Modern Arthroscopy

22. KENJI TAKAGI:

Father of Arthroscopy.

23. JOHN BARTON:

- BARTON'S # - Intraarticular # of distal end radius
- BARTON'S ds → Vit C ↓ = Scurvy
Vit D ↓ = Rickets.

24. CAFFEY:

Caffey's Syndrome - Battered Baby Syndrome

Caffey's ds - Infantile Cortical Hypertosis

M/c bone - Mandible.

25. GAVRILL ABRAMOVICH ILIZAROV:

- Distraction Histogenesis

26. DR. B.B. JOSHI:

JESS - Joshi's external Stabilizing System.

27. Dr. S.M. TULI:

Musculoskeletal T.B.

28. Dr. P.K. SETHI:

Jaipur Foot.

DAYS.

- Bone & joint day - 4th August.
- World spine day - 16th October
- World Arthritis day - 12th October
- World Radiology day - 8th Nov.
- World Clubfoot day - 3rd June.

ANATOMY OF SPINE

- DENNIS 3 column Concept of Spine Stability:

ANTERIOR	MIDDLE	POSTERIOR
<ul style="list-style-type: none"> • Anterior longitudinal ligament (ALL) • Ant. 2/3 V. Body. • Ant. 2/3 I.V. disc. 	<ul style="list-style-type: none"> • Post 1/3rd V. Body. • Post. 1/3rd I.V. disc. • Post. longitudinal ligament (PLL) 	<ul style="list-style-type: none"> • Post. ligament complex (PLC) • Neural Arch <ul style="list-style-type: none"> - Pedicle - Transverse process. - Superior articular process. - Inferior articular process. - Lamina - Spinous process.

LIST 1: TERMS in Spine

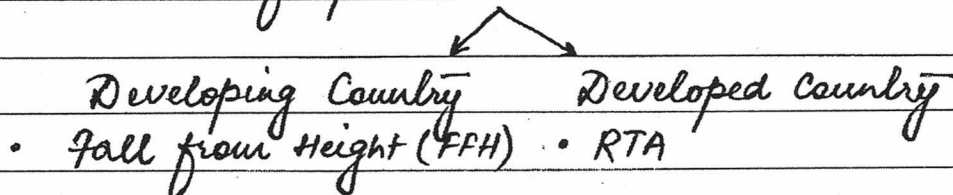
Spondylitis: Paraspinal muscle spasm.

Spondylolysis: # of pedicle / Para interarticularis

Spondylolisthesis: Slippage of V. body over another V. body.

LIST 2: Most Common in Spine

- M/c mechanism of Spinal Trauma



- M/c mechanism of Spinal Trauma

Flexion distraction > Flexion.

- Worst mechanism of spinal trauma
Translation > Flexion Rotation.
- Spinal Canal: widest at C₂ level.
- Vertebrae: always constant in no. - Cervical
most variable in no. - Coccygeal.
- M/c site of:
 - spinal trauma = Cervical spine
 - Spinal # = Lower thoracic spine.
 - Spinal Cord injury = Cervical spine.
 - Peripheral nerve injury (PNI) = Radial nerve.
 - PNI ⚡ Best prognosis = Radial nerve.
 - PNI ⚡ Worst prognosis = Ulnar Nerve.
 - PNI ⚡ worst prognosis = Sciatic Nerve.
(despite Surgical repair)
 - Skull # = Temporal bone
 - Facial bone # = Nasal > Zygomatic
 - Mandible # = Neck of Condyle.

LIST 3: # / Injuries of spine ⚡ Eponyms

① JEFFERSON'S #:

- Burst # of ring of C₁ (ATLAS).
- Involves both anterior & post. rim.
- 85% pts - NO neurological deficit.
- Undisplaced # : collar
- Displaced # : HALO VEST

② HANGMAN'S #:

- Mech: Hyperextension followed by distraction.

- ^{yt} Spondylolysis → # of Pars interarticularis / pedicle of C_{axi}
- \bar{C} spondylolisthesis of C_2 over C_3 \bar{C} C_2-C_3 i.v. ~~di~~
- Disc disruption
- Levine & Edwards' classification

3. CLAY SHOVELLER'S # :

- Avulsion # of tip of spinous process of $C_7 > T_1$
- Seen in labourers who do heavy weight lifting with arm extended.

4. CHANCE FRACTURE / SEAT BELT INJURY / JACK KNIFE INJURY :

Mech: Flexion → Distraction → Rotation

- Head on collision during RTA.
- Horizontal # line traversing the vertebral body through all three columns.
- Level $\Rightarrow T_{12}-L_2$
- 50% pts - Concomitant intraabdominal injury.

5. Undertaker # :

- Post mortem finding.
- Due to careless handling of Dead body by Undertakers.
- # Subluxation of lower Cervical spine \bar{C} C_6-C_7 inter-vertebral disc tearing / injury.

Q 6. SCIWORA :

- Spinal cord injury \bar{C} out Radiological abnormalities.
- Children < 8 yrs.
- Initial X-Ray \rightarrow (N)
- Presentation \rightarrow Neuro-deficit
No spinal reflexes.
- Upper cervical spine.

NEUROGENIC SHOCK/ SPINAL SHOCK:

- Young ♂
- RTA
- Unconscious
- Hypotension (↓BP)
- Bradycardia (↓PR)

M/c site of Spinal cord injury - Lower Cervical spine.

Spinal Cord injury

Complete	Vs	Incomplete
⊖	Sacral sparing	⊕
⊖	Perianal Sensation	⊕
⊖	Flexor Hallucis longus	⊕
⊖	Rectal motor tone.	⊕
⊖	Bulbocavernosus reflex/ Anal wink	⊕

(Last reflex to disappear/
 1st reflex to reappear in
 pt. of spinal shock)

↓
IOC : MRI

PEDIATRIC SPINE:

KLIPPEL FIEL SYNDROME:

- Dystrophia brevicollis congenita.
- Bony pathology / Segmentation failure
- Congenital bony fusion of Cervical Vertebrae.

- Child

TRIAD of KFS, — Short Webbed Neck

- Low posterior Hairline
- ↓ ROM @ Neck.

↳ Range of movement.

Short statured child — But not in triad.

- M/c association — SPRENGEL'S DEFORMITY
(High elevated scapula)
- Other association
 - Congenital heart defect
 - Ocular anomalies.
 - Genitourinary abnormalities.

Mx: To prevent complication — Cervicothoracic Scoliosis
 ↓
 Avoid Collision Sports.

CMT (Congenital muscular torticollis): Wry Neck.

- Muscular pathology.
- Overcontraction of Sternocleidomastoid (SCM)
- Fibromatosis of SCM.
- Palpable Neck mass @ birth

○ in 4-6 hrs after birth.

- association — Developmental dysplasia of Hip.
(Metatarsus adductus)

- Contracted SCM at junction of upper $\frac{2}{3}$ & lower $\frac{1}{3}$.
- Right side is more commonly involved.

90-95% pts - Conservative Rx (Regular Stretching Exercise)
 5-10% pts - Surgical release of muscle
 (Only after swelling / mass persists > 1yr of age)

- Forceps injury - injures SCM.

- Complications (Rare/delayed):

- ① I/L Head tilt &
- ② CL lift deformity (Cock Robin Appearance)
- ③ Plagiocephaly (Asymmetrical division of skull & face).

IAS (Idiopathic Adolescent Scoliosis):

- ♀ > ♂
- Around puberty
- Double curve → Thoracolumbar
- Single Curve → Thoracic Curve (M/C)
Lumbar Curve

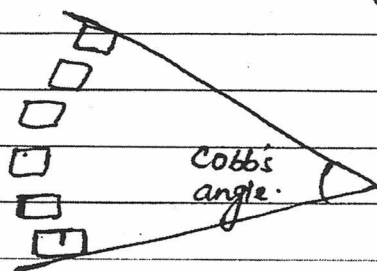
- Right Sided Thoracic Curve.
- Double curve progresses earlier than Single curve.

COBB'S ANGLE:

< 30° & maturity = Unlikely to progress.

30-50° = 10-15° progression.

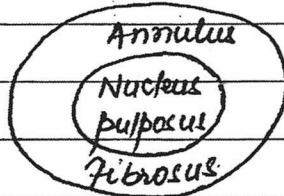
> 50° = progress @ 1°/year



3% - Scoliotic tilt

↳ less than 10% of population requires Sx.

PIVD (Prolapse intervertebral disc):

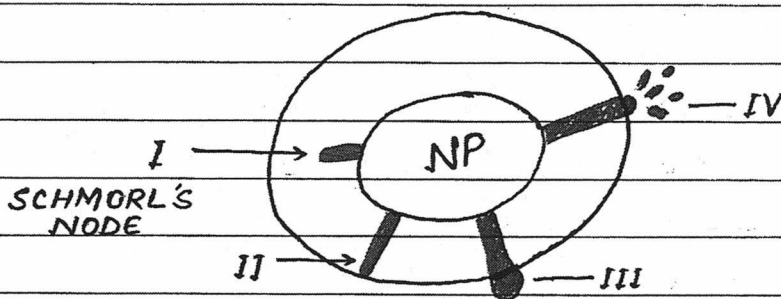


M/c level of PIVD:

L₄L₅ > L₅S₁ > C₅C₆ > C₆C₇

MRI based Staging of PIVD:

- I) Disc buldge / Disc degeneration
- II) Disc protusion
- III) Disc herniation / extrusion
- IV) Disc sequestration



Types of PIVD: Depending upon the direction of prolapse

Posterolateral /
Paracentral

- Lower level Nerve root

Far lateral /
Foraminal

- Upper level nerve root

Spondylolisthesis:

- Slippage of one V. body over another V. body.
- M/c level = L5/S₁ > L₄/L₅
- M/c nerve root irritated = L₅
- Types of Spondylolisthesis:

(A) Isthmic / lytic:

- M/c type
- Defect/# in pars interarticularis
- Congenitally weak pars interarticularis.

↓
Sports activity → Fatigue[#] of pars interarticularis

(B) Dysplastic:

- Rare, Congenital type
- No defect/No # in pars interarticularis
- Defect in formation of 1st sacral arch & Superior facet of S₁
- Neuro deficit is more in this type as compared to isthmic type.
- As there is growth spurt (14 yrs ♀, 16 yrs ♂)

↓
LISTHETIC CRISIS

↓
Acute Onset of Sudden pain & Rigidity in paraspinal muscle & functional/spastic scoliosis.

(C) Degenerative:

- 2nd M/c type > Isthmic
- M/c level: L₄-L₅
- ♀ > 50 yrs of age.

Severity → disc degeneration → Facet joint
Osteoarthritis/
2° Osteoarthritis →

→ Facet joint unstable → Slippage
(Usually low grade)

D. Traumatic:

in an area (other than pars ^{inter}articularis)
↳ Slip.

E. Pathological:

Generalised/
localised bone pathology → # of pars ^{inter}articularis

Clinical spectrum of spondylolisthesis:

- Asymptomatic initially.
- Incidental diagnosis.
- 1st Symptom → Backpain
 - ↳ Degenerative type
 - ↳ Low back discomfort
 - ↳ Dysplastic type
 - ↳ Acute & Sudden pain
- Radiculopathy.
- Hamstring spasm on passive stretching of legs.

Diagnosis:

X-Ray: Oblique view of lower segment spine

↓
Defect in Pars interarticularis

↓
Break in Neck of Scotty Terrier Dog Shadow

↓
Beheaded Scotty Terrier Sign or,
Scotty dog wearing a collar Sign.

(Scotty dog terrier shadow is a normal finding in oblique X-Ray of L.S. spine)

AP view — Inverted Napoleon Hat Sign
↓ (due to superimposition of sacrum & L5)
Least information view.

Flexion & Extension Views (Spinal flexion & Extension Views)
↓
To see spinal instability.

Mx of Spondylolisthesis:

Based on Meyerding's classification / Staging
(AP diameter of superior surface of lower vertebral body is divided into quarters).

I → < 25%
II → 25-50%] — Conservative

III → 50-75%
IV → > 75%] — Surgical where there is
① Canal Stenosis
② Refractory pain
③ Advancing Neurodeficit.