Spondylolisthesis

- Anterior displacement of a vertebra in relation to the segment below
- Occurs mainly at L5 then L4
- Spondylolysis = Pars interarticularis break

Imaging

- Only if: high degree of suspicion for pars defect
- Patients who do not improve with short term treatment
- MRI for suspected active spondy/neurological symptoms/disc lesions

DDx

- F#
- Infection
- Neoplasm
- Spondylolysis
- Growth Plate F#
- Scheuermanns
- Degeneration
- Disc lesions
- Facet Syndrome
- Sprain/Strain
- Myofascial Pain syndrome
- Hip/SI pathology
- Viscerosomatic referred pain

Classifications

- **Type I : Dysplastic:** Congenital abnormality of upper sacrum or neural arch of L5
- **Type II : Isthmic:** A: Fatigue F# of pars, B: Enlongated, intact pars C: Acute f# of pars
- **Type III: Degenerative:** facet and disc degeneration
- **Type IV: Traumatic:** F# of neural arch other than pars
- **Type V: Pathologic:** Bone disease - Paget's osteoporosis, metastasis
- **Type VI: Iatrogenic:** Above/below spinal fusion

Type I:



- Rare, congenital thin pars
- Not present at birth
- Trapezoidal L5, dome shape S1
- Elongated Neural Arch (SP to posterior vertebra body)

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Type II

Isthmic Spondylolisthesis

Most Common is IIA: Stress f#

Common in Athletes (Gymnast, Weight lifters, Divers) and Alaskan Indigenous People

Younger skeletal immature (thinner pars, immature isthmus, decreased ability of the disc to resist shear stress)

Usually due to repetitive microtrauma

Clinical Features

Common in childhood/adolescence

Further displacement rarely occurs after 18 years old

Step Defect (gap)

Hyperlordosis

Tight Hamstrings

Achy lumbrosacral pain with standing or slow walking

Prominent Buttocks

Waddling Gait (stiff, short stride)

Prominence of the SP at the involved level

+ve Stork Test

Transverse Skin Fold - Advanced Slippage

Insidious onset back pain

Aggravated by activity - repetitive extension, rotation/axial rotation

Spondy caused by pregnancy will notice increased symptoms

Assess for CE

ROM painful during ext

+ve Kemps, +Ve Mcgills +ve Yeomans

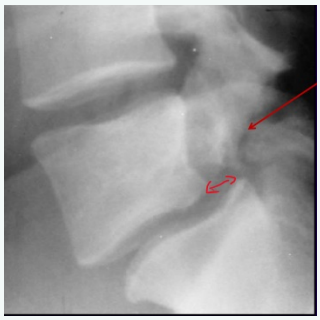
Lower Crossed signs

Scleratogenous referral to theposterior thigh

Clinical Features (cont)

Radicular complaints that change side common in Type III

Imaging



Arrow: Pars Defect

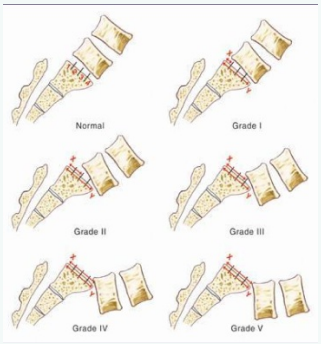
Active Spondy: developing stress f# of the pars, not yet broken.

S&S = Pain on palpation of the lumbosacral region, +ve stork's test, negative plain film

Management Boston overlap anti-lordotic brace, stop offending activity, Pain killers No NSAIDs, isometric contraction of muscles, pulsed Ultrasound, Electrical bone stimulators, physical rehab

Best imaging = MRI

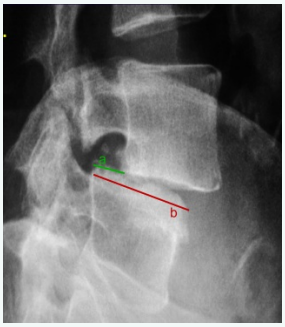
Meyerding's grading



Grade V = Spondyloptosis

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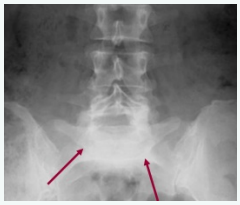
Method of Taillard



a/b X 100 = % of displacement

Unstable spondy = >4mm translation between flexion and extension

Inverted Napoleon's Hat Sign



Seen with >3 grade spondy

Type III

- Degenerative Spondy
- Rarely passes Grade 1 and never passes grade 3
- 3 F's : Female, Fourth Lumbar Vertebra, Forty years or older
- Cartilage degeneration - ligamentous laxity - tension on facet capsule, disc, ligaments, muscle instability
- Can cause spinal stenosis/myelopathy
- Common in L4/5
- Anatomical risk factors:
Facet tropism
Sagittaly orientated facet joints
Lx hyperlordosis
L5 sacralisation
Joint laxity

Cervical Dysplastic Spondy

- Common at C6
- Associated with spina bifida
- Congenital - hypoplastic neural arch
- Usually asymptomatic
- Flexion/Extension x-rays needed

Scheuerman's Disease

S&S

- Adolescent onset (13-17)
- More common in males
- Mid and lower Tx affected
- Pain, Fatigue + Defective posture
- Increased kyphosis
- Hyperlordosis of lx and cx
- Protruberant Abdomen
- Hypertonic Hamstrings, iliopsoas and pecs

Imaging Features



- Kyphosis due to at least 3 contiguous segments
- Wedging of 5 degrees or more of each segment
- Irregular Endplates
- Loss of Disc Height
- Enlongated VB
- Schmorl's nodes in at least 4 segments

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Management

- Explanation and reassurance
- SMT (above and below spondy) and soft Tissue work of lumbar erectors, hip abductors and hip flexors
- Flexion biased exercises
- Strengthening of tx and lx extensors
- Postural Correction
- Stretching/Relaxing of Pecs and Hammies
- Boston bracing for 3-6 months
- If seriously deformed, consider referral for bracing/surgery
- Stopping of aggravating activity for 2-6 months
- NSAIDs
- Flexion/distraction
- Home exercises - knee to chest, posterior pelvic tilt, dead bug, piriformis stretching, abdominal strengthening (10 weeks)
- Lifestyle advie: proper lifting, weight loss, aerobic exercise, mattress selection, sleep position, limit hyperextension movements and avoid wearing high heels
- If conservative care fails, consider injections/surgical consultation
- **Criteria for surgical consultation:** high- grade slip
slip progression
Neurological deficit
unresponsive to conservative care after 6 months

Criteria

Grade I spondy can return to sport if:

- Full pain free ROM
- Normal strength
- Appropriate aerobic fitness
- Adequate spinal awareness of mechanics
- Ability to perform sports related skills without pain
- Avoid repetitive extension/loading

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