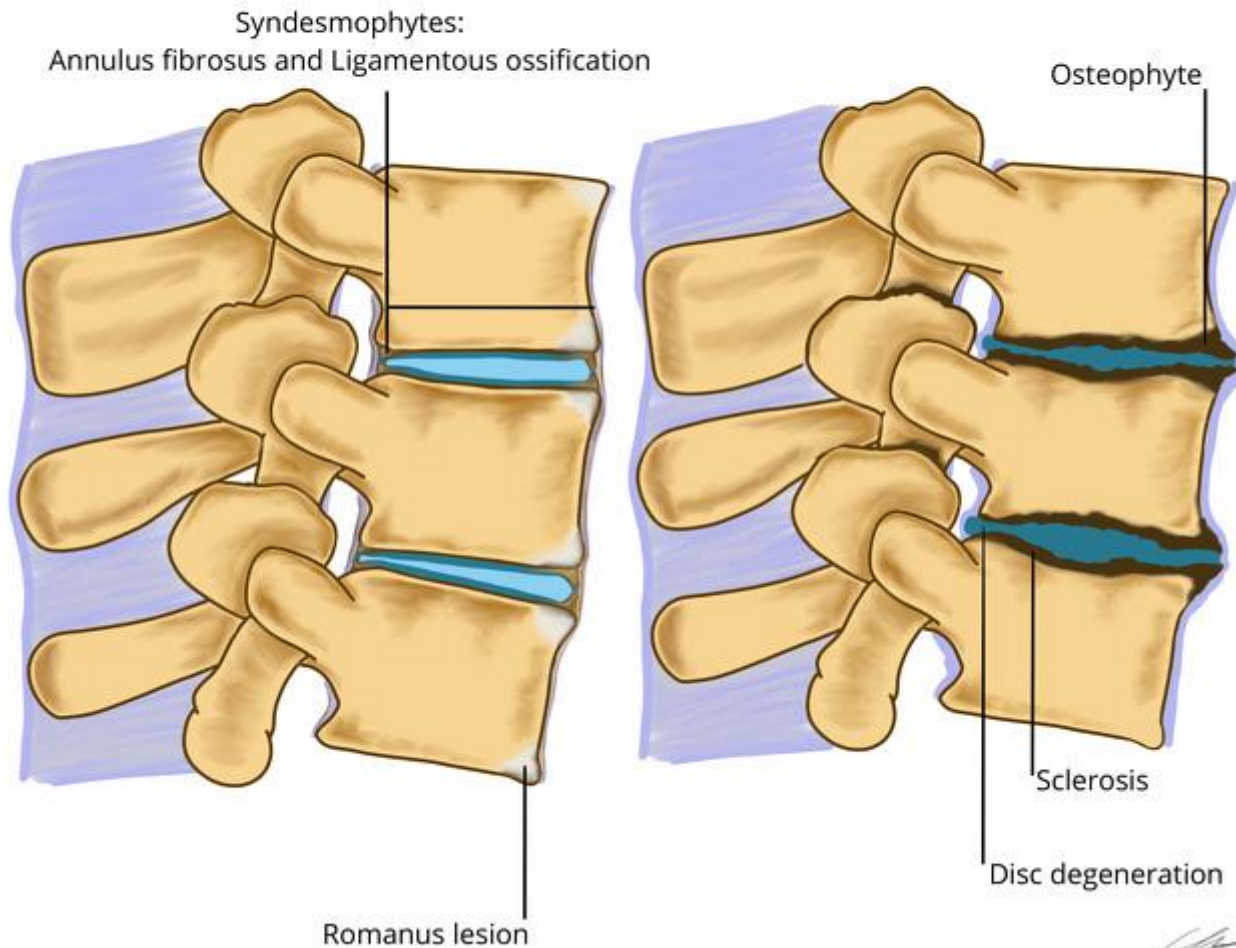


Syndesmophytes

- Calcifications or heterotopic ossifications inside a spinal ligament or of the annulus fibrosus.
- They are seen in only a limited number of conditions including:
 - Ankylosing spondylitis
 - Ochronosis
 - fluorosis
 - Reactive arthritis
 - Psoriatic arthritis
- Classified
 - **Marginal** (along the margins of the vertebral bodies)
 - **Non-marginal** (larger and bulky away from the vertebral bodies)
 - **Ankylosing spondylitis** classically displays symmetrical marginal syndesmophytes

Syndesmophyte v Osteophyte

Lumbar spine illustration



Syndesmophytes



Annulus fibrosus
ossification
Symmetric



**Ankylosing
spondylitis**

Parasyndesmophytes

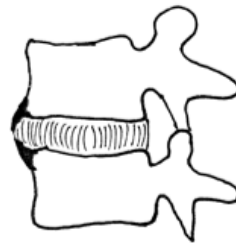


Para-vertebral
connective tissue
Assymmetric



**Reactive Arthritis
Psoriatic Arthritis**

Claw osteophytes



No gap
Associated with
response to tension



**Degenerative
"Stress"**

Traction spurs



With gap
Associated with
shear tension



Degenerative

Flowing anterior ossification



Anterior longitudinal
ligament, diskus and
connective tissue

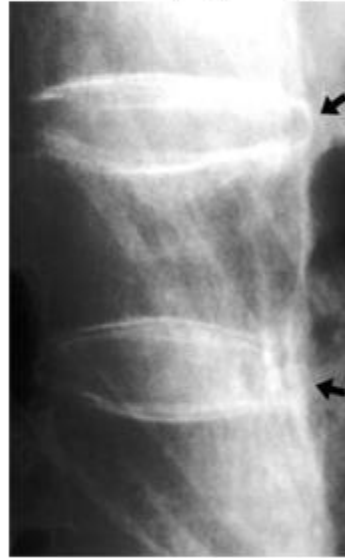


DISH

Osteophytes



Marginal
syndesmophytes (AS)



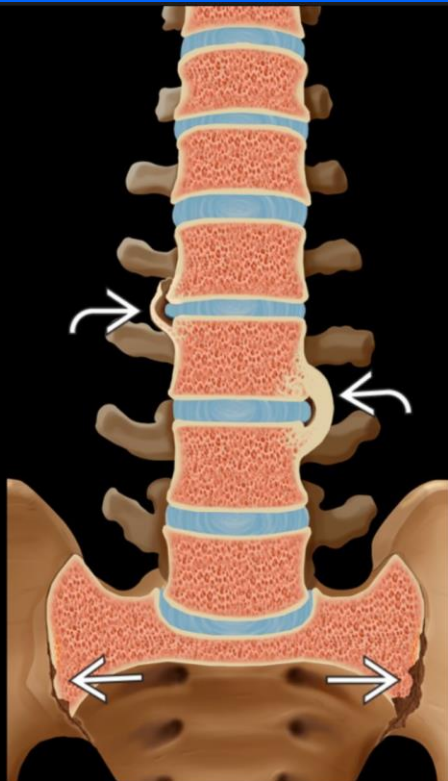
Nonmarginal
syndesmophytes (DISH)



Longitudinal Ligament Ossification – Comparison

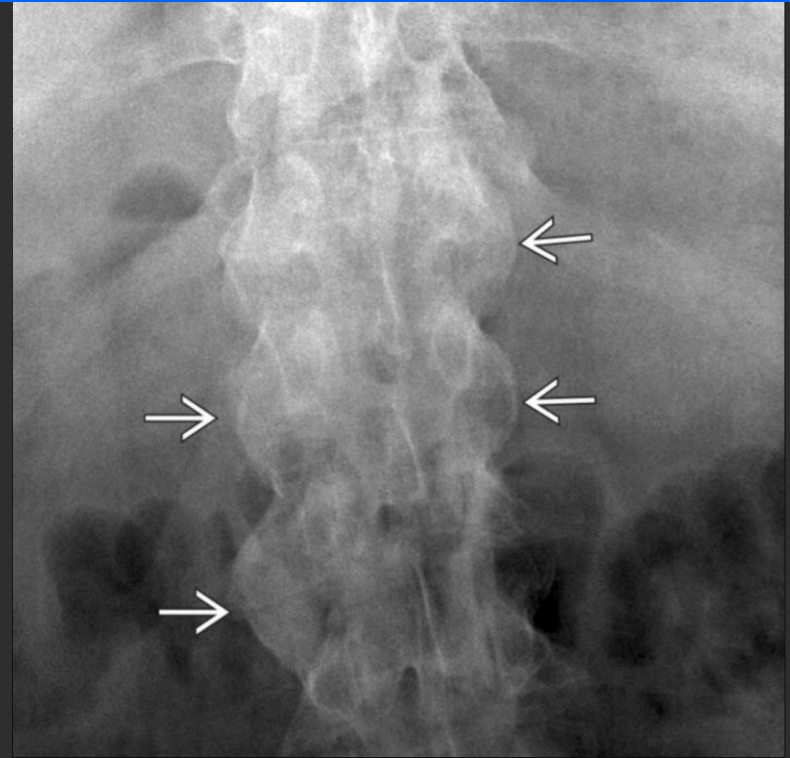
| | Ankylosing Spondylitis | DISH RGP 1 | OPLL |
|----------------------------------|---|---|---|
| Ligament involved | Both anterior and posterior longitudinal ligaments | Anterior longitudinal ligament | Posterior longitudinal ligament |
| Shape | Thin calcifications contiguous with syndesmophytes, <u>"bamboo spine"</u> | Prominent <u>"flowing"</u> anterior osteophytes <u>involving >4 levels</u> | Thin or thick linear sheet of ossification |
| Location | Diffuse | Most common in lower thoracic spine (T7-T11) | Most common in cervical or upper thoracic spine |
| Associated degenerative changes? | Often yes-inflammatory | <u>Not significant</u> | Often yes- associated with disc degeneration |





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Coronal cut graphic of the lumbosacral spine depicts the axial abnormalities commonly found in chronic reactive arthritis (CRA). There is bilateral though asymmetric sacroiliitis →. There is also bulky paravertebral ossification bridging the vertebral bodies → that is commonly asymmetric and non-marginal.



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AP radiograph in a 48-year-old man with CRA shows advanced bulky and somewhat asymmetric paravertebral ossification →, typical of this disease process.



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Lateral radiograph in a patient with CRA shows bridging syndesmophytes → at 2 levels of the cervical spine. The patient had more advanced and bulky syndesmophytes involving the thoracolumbar spine (not shown). Normal bone density is more typical of CRA or psoriatic arthritis (PsA).



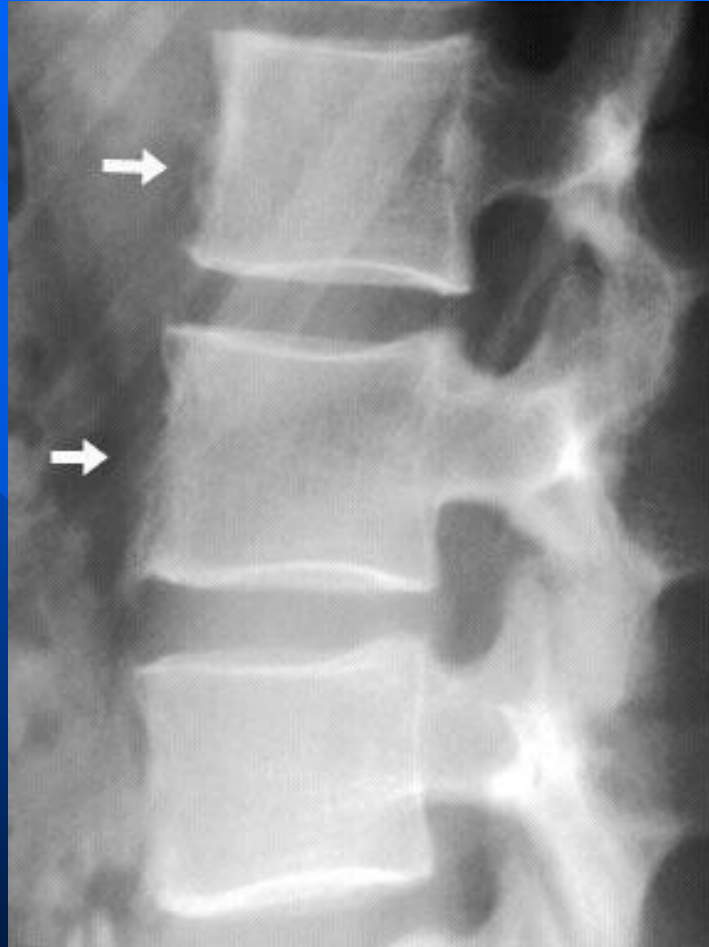
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AP radiograph shows early paravertebral ossification in a patient with CRA →. Note that it arises from the vertebral body some distance from the endplate and extends toward the vertebral body above. This is the nonmarginal pattern of CRA and PsA.

Psoriatic arthritis



Reiter's syndrome



Bony proliferation (arrows)