Kang Classification

- Grade 0
  - Absence of canal stenosis (subarachnoid space obliteration ≤ 50%)
- Grade 1
  - Subarachnoid space obliteration > 50%
- Grade 2
  - Spinal cord deformity (compressed)
- Grade 3
  - Spinal cord deformity with signal change

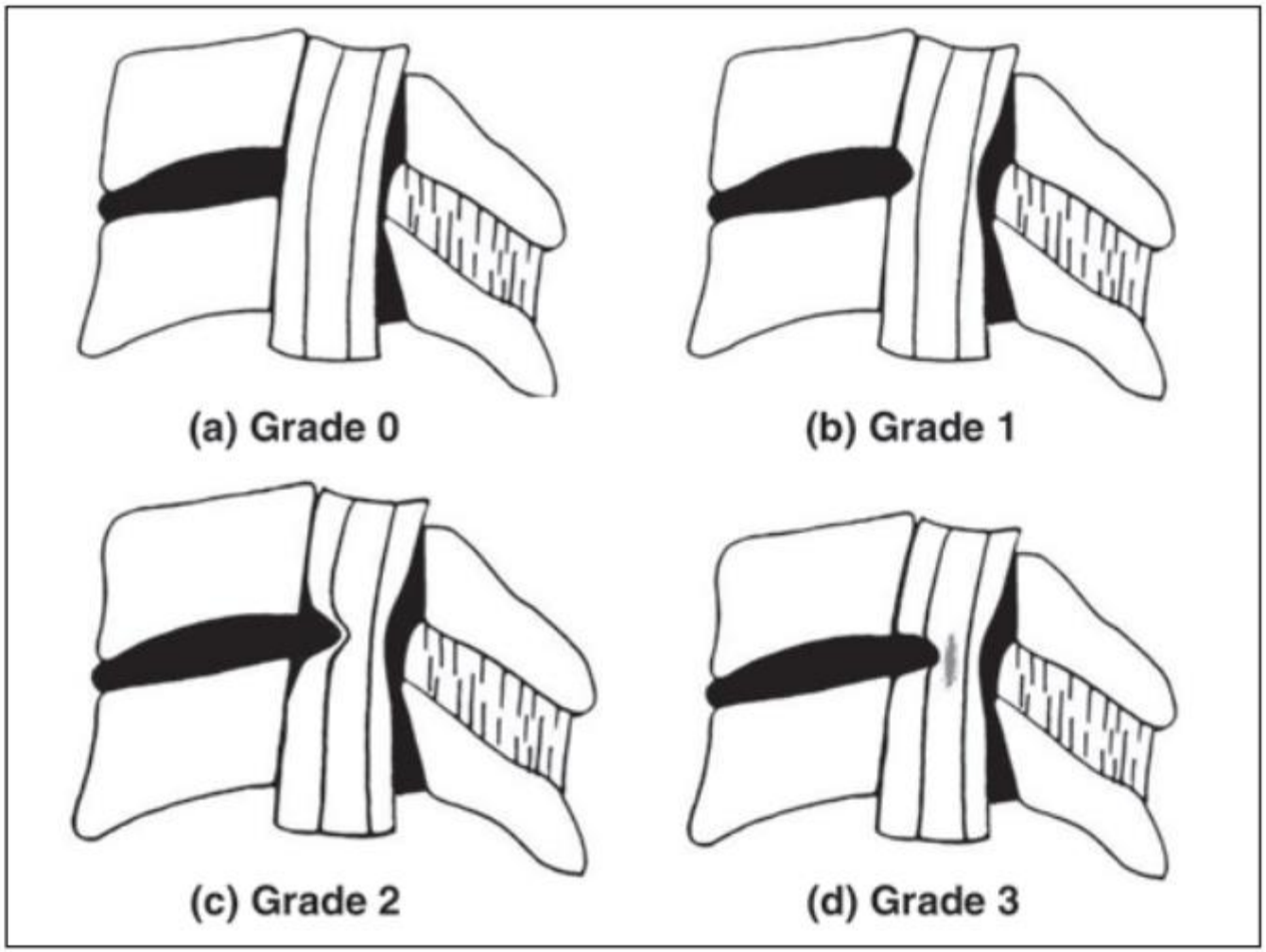
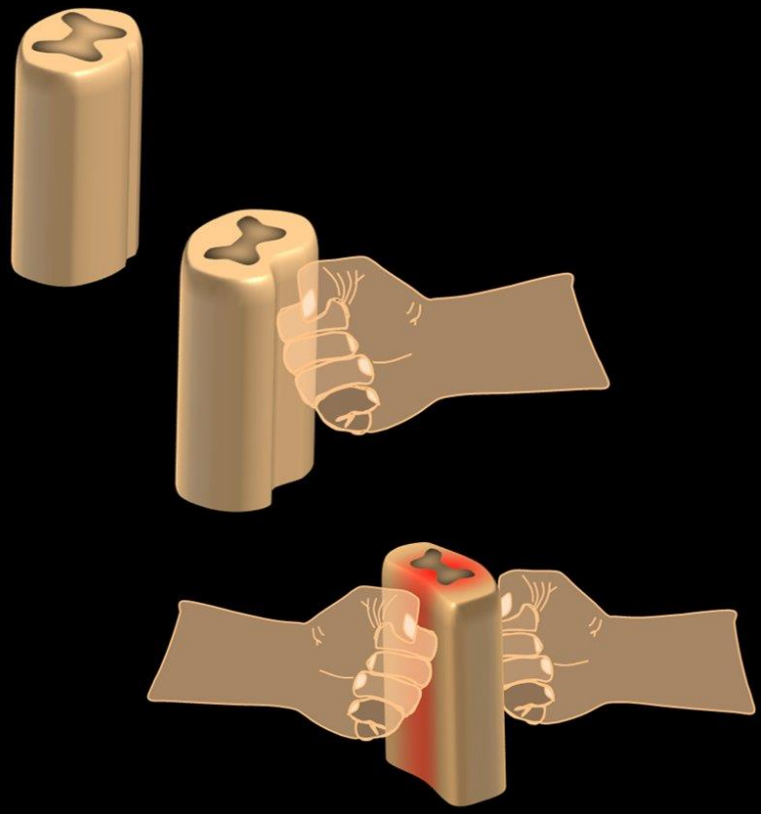


Fig. 1—Schematic diagrams of grading system of cervical canal stenosis in sagittal scans of cervical spines. Grade 0 is normal. Grade 1 denotes obliteration of more than 50% of subarachnoid space without any sign of cord deformity. Grade 2 denotes central canal stenosis with spinal cord deformity; cord is deformed but no signal change is noted in spinal cord. Grade 3 denotes increased signal intensity of spinal cord near compressed level on T2-weighted images.

Cord Flattening

- Cord flattening can cause myelopathy regardless of degree canal stenosis.
- It's like being punched in the face
- No matter how far away the hit comes from, it still hurts.
- Cord flattening is like being punched—it hurts even in mild stenosis

Kang classification system

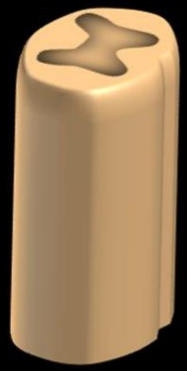


- High interobserver agreement
- Higher grades correlated with more symptoms of myelopathy but not pain

Kang et al. AJR Am J Roentgenol. 2011 Jul;197(1):W134-40

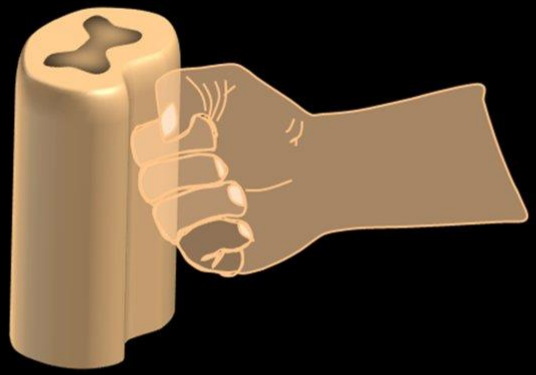
Park et al. AJR Am J Roentgenol. 2012;199:197–201

Grade 1



Attenuation of subarachnoid space w/o cord deformity

Grade 2



Cord deformity but no cord signal

Grade 3

Cord deformity with cord signal

Grade 1

Fig. 2—62-year-old man without cervical canal stenosis. Sagittal T2-weighted fast spin-echo image shows cervical spine without compromise of spinal canal. Normal CSF space is visible around spinal cord, and there is no evidence of cord deformity or signal change within cord.

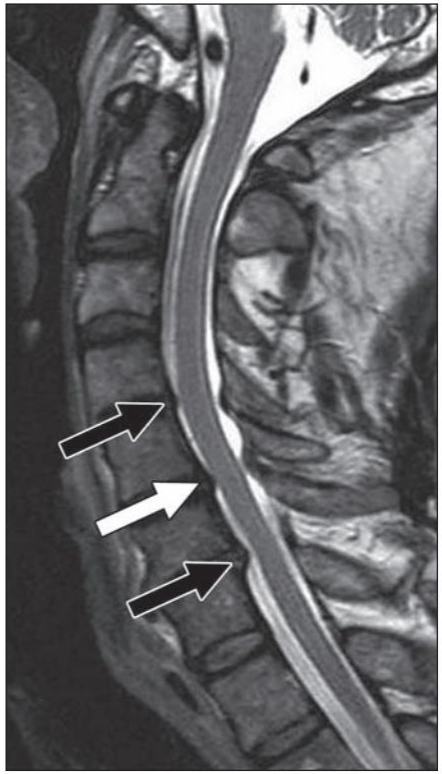


Fig. 3—62-year-old man with cervical canal stenosis. Sagittal T2-weighted fast spin-echo image shows grade 1 stenosis with obliteration of CSF space exceeding 50% of arbitrary subarachnoid space at C4–5, C5–6, and C6–7 levels (*arrows*).

- Grade 2
- Grade 3

- Grade 1

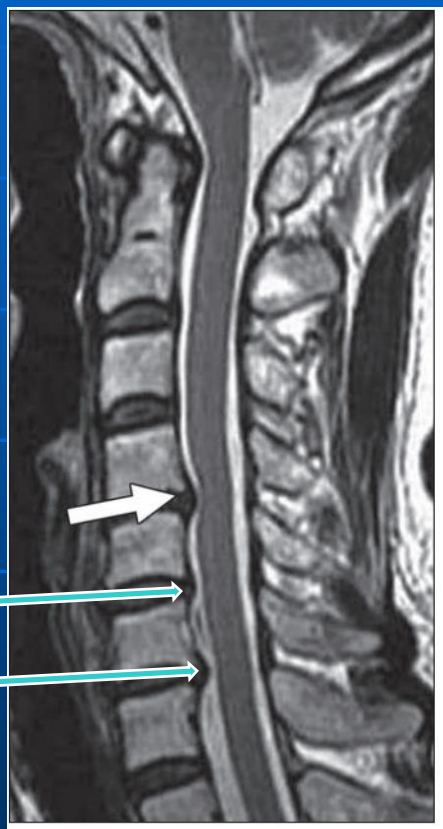


Fig. 4—61-year-old woman with cervical canal stenosis. Sagittal T2-weighted fast spin-echo image shows grade 2 stenosis at C4–5 level (*arrow*). Spinal cord is compressed and deformed, but spinal cord shows no signal changes. Grade 1 stenoses were also seen at C5–6 and C6–7 levels.

Fig. 5—66-year-old woman with cervical canal stenosis. Sagittal T2-weighted fast spin-echo image shows grade 3 cervical canal stenosis at C5–6 level (*arrow*). Spinal canal is significantly narrow at C5–6 level, and signal intensity of spinal cord is increased at corresponding level.