Minimally Invasive Spine Surgery

Will Beringer, DO, FACOS
Neurosurgeon
Hawaii Brain & Spine

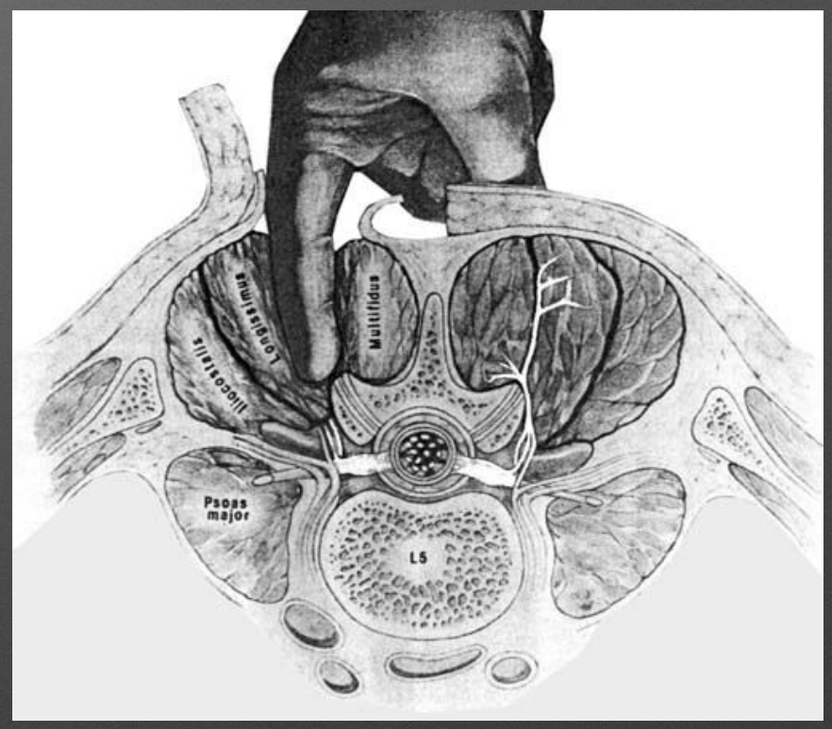
Hawaii
BRAIN & SPINE

Disclosure

- William F. Beringer, DO, has no financial relationships to disclose.

What is Minimally Invasive Spine Surgery?

- Achieve the same goals of open conventional spine surgery through smaller incisions and safer tissue corridors to cause less collateral tissue damage



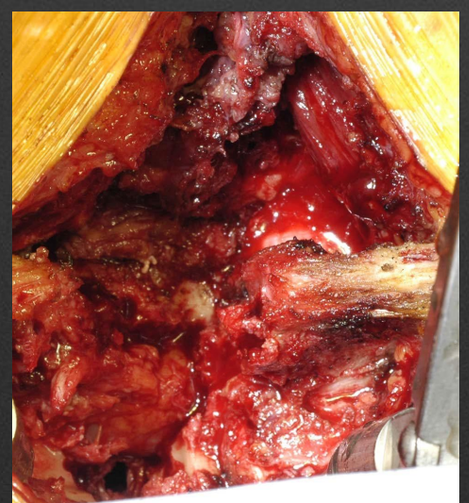
- Since small, different tissue corridor is used to get to the pathology, revision (fixing previously operated on) surgery is easier

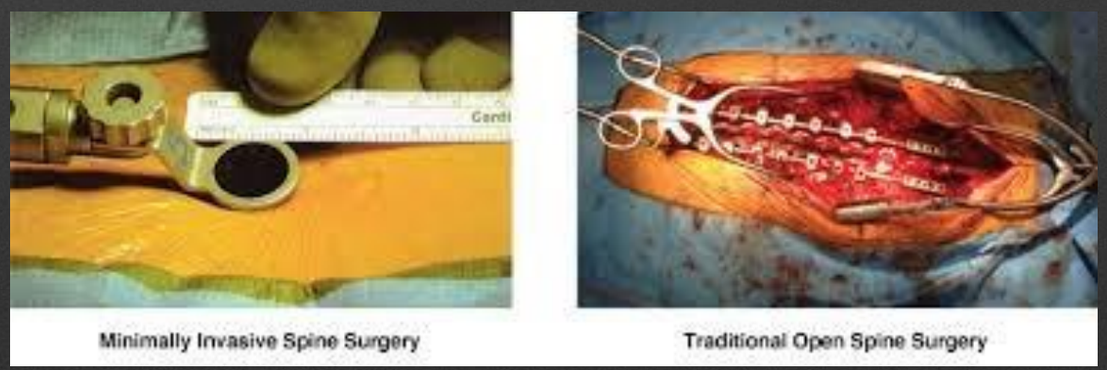
Why MIS?

- Today's patients want less postop pain, to recover quickly and remain active

- It is getting harder for surgeons to sign up patients for conventional spine surgery because recovery is associated with a lot of postop pain and has an uninspiring success rate. -Spine surgery horror stories.

- Hospitals want short hospital stays, less blood loss and fewer returns to the ER/OR





Why MIS?

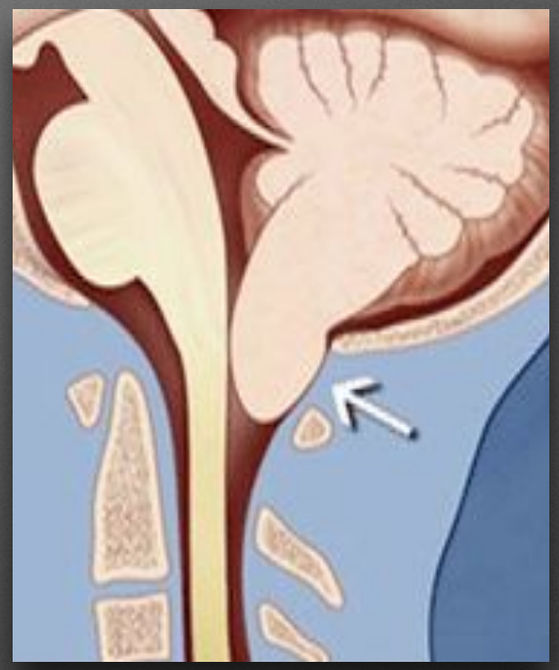
- Insurance companies want surgeons who treat patients cautiously and conservatively before considering surgical intervention

- Insurance companies would rather not pay for an expensive surgery at all; but if they have to, they want cheaper surgical procedures with more predictable costs.

- Employers paying insurance companies want their sick employees to get back to productive work sooner

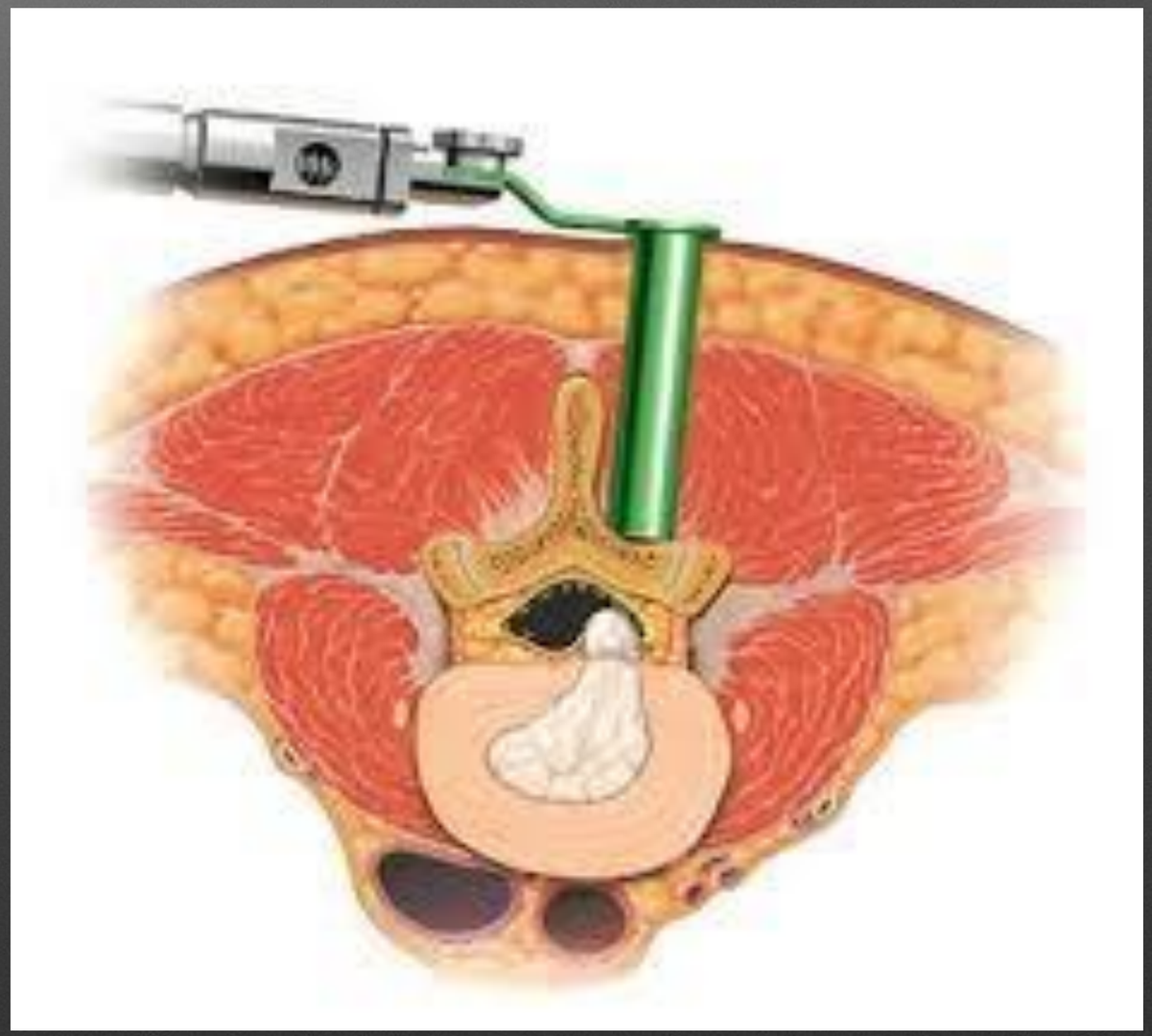
MIS Cervical

- Suboccipital decompression for Chiari I malformation
  - rarely dura cutting / grafting
- tubular retractor(s) Foraminotomy
  - Dorsal decompression of cord & nerve on 1 side without fusion
- Artificial cervical disc placement
  - motion preservation
  - 1 or 2 levels FDA approved



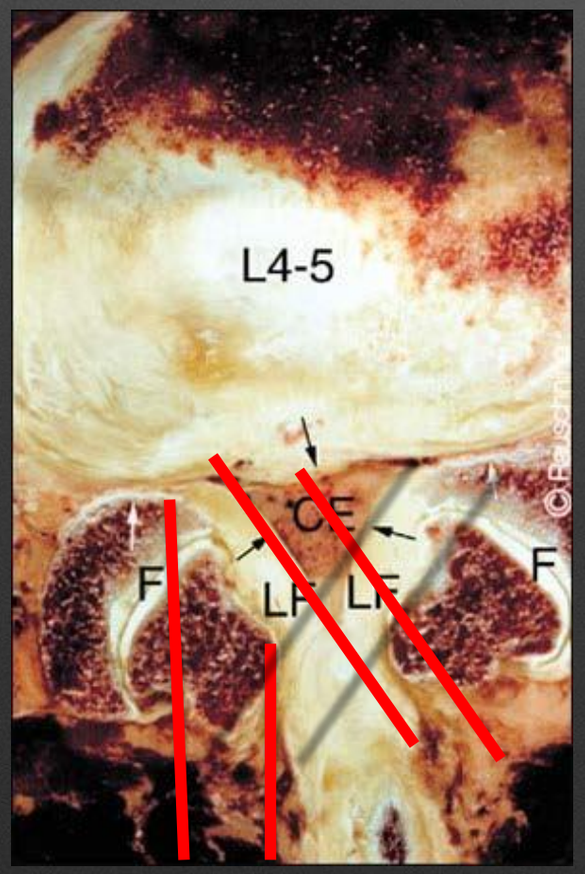
MIS Thoracic

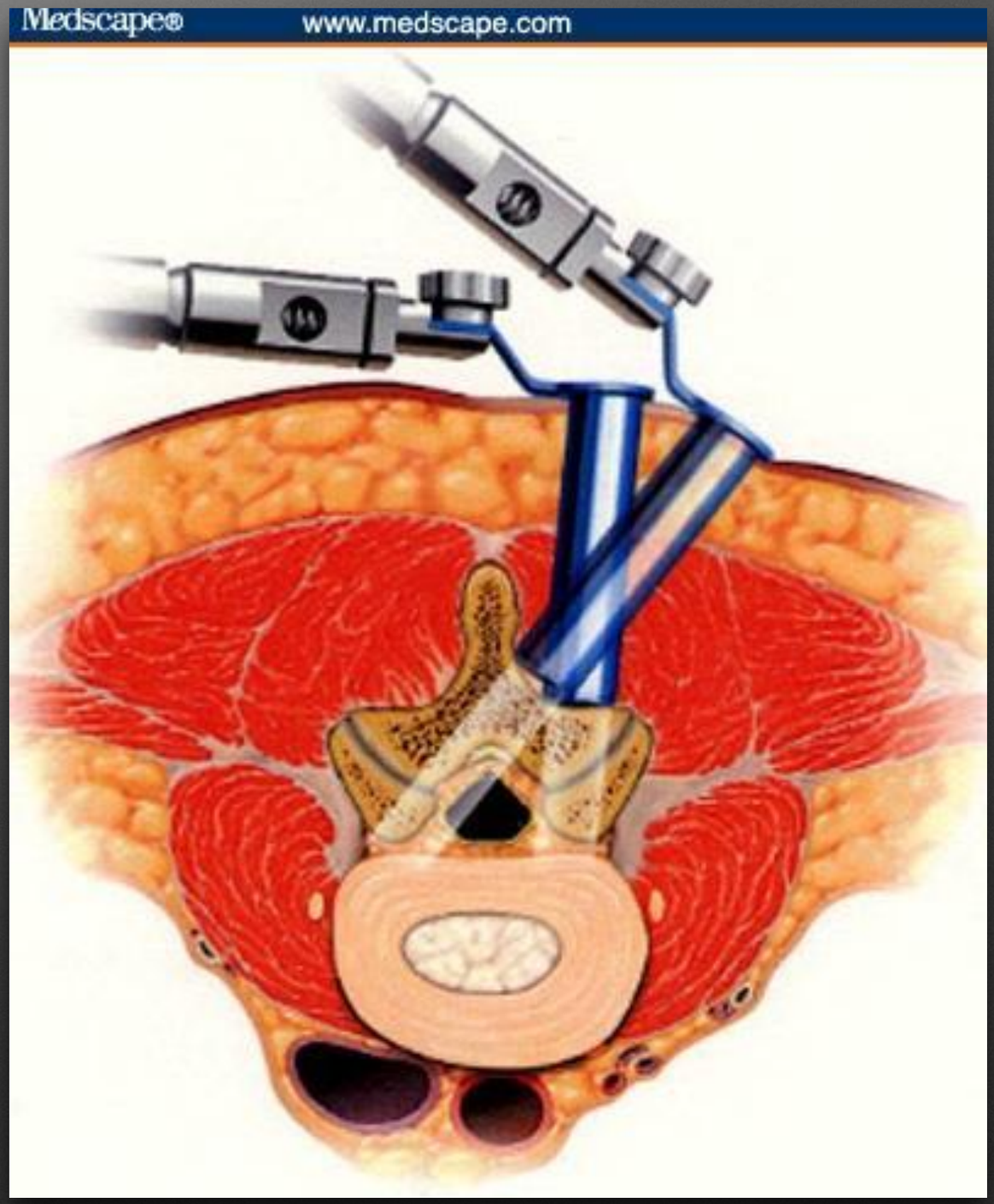
- Thoracic tubular retractor(s) discectomy / foraminotomy / transforaminal fusion
  - cannot retract against spinal cord, so smaller 16 & 18mm tubes are warranted
  - many thoracic discs are midline location and not treatable with MIS



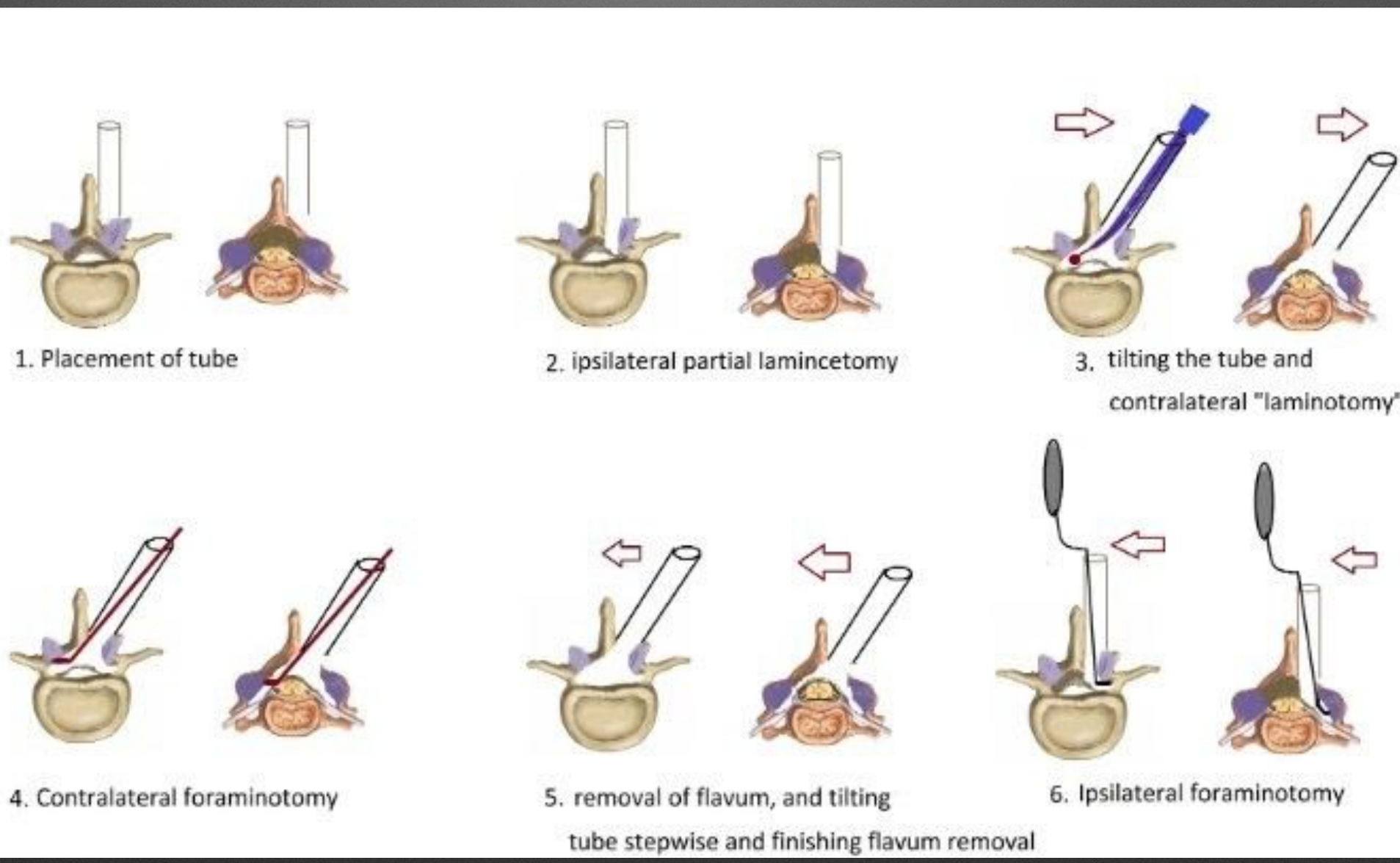
Lumbar MIS

- tubular retractor(s) minimally invasive hemilaminectomy, bilateral laminectomy, foraminotomy, microdiscectomy, facetectomy, TLIF, schwannoma resection, untethering of filum terminale





Bilateral Decompression From Unilateral Approach



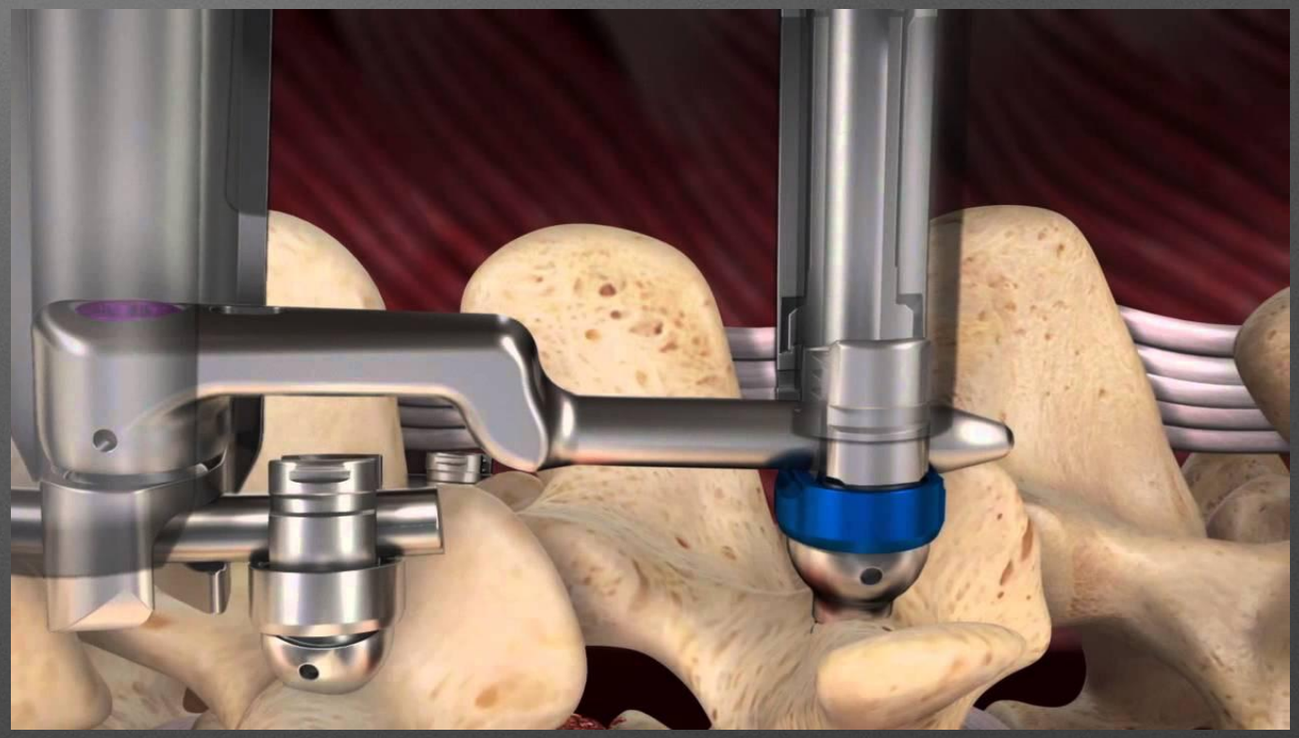
MIS Revision

- adjacent segment breakdown is getting to be more commonly diagnosed

- treatable with less damaging second surgery

- MIS decompression/TLIF/XLIF/DLIF often employed

- cut old rod and use same old pedicle screw from lower level with new pedicle screws at newer level connected with new 5.5mm rod - old fusion must be solid



- hook new rod onto old rod and connect to new percutaneous pedicle screw

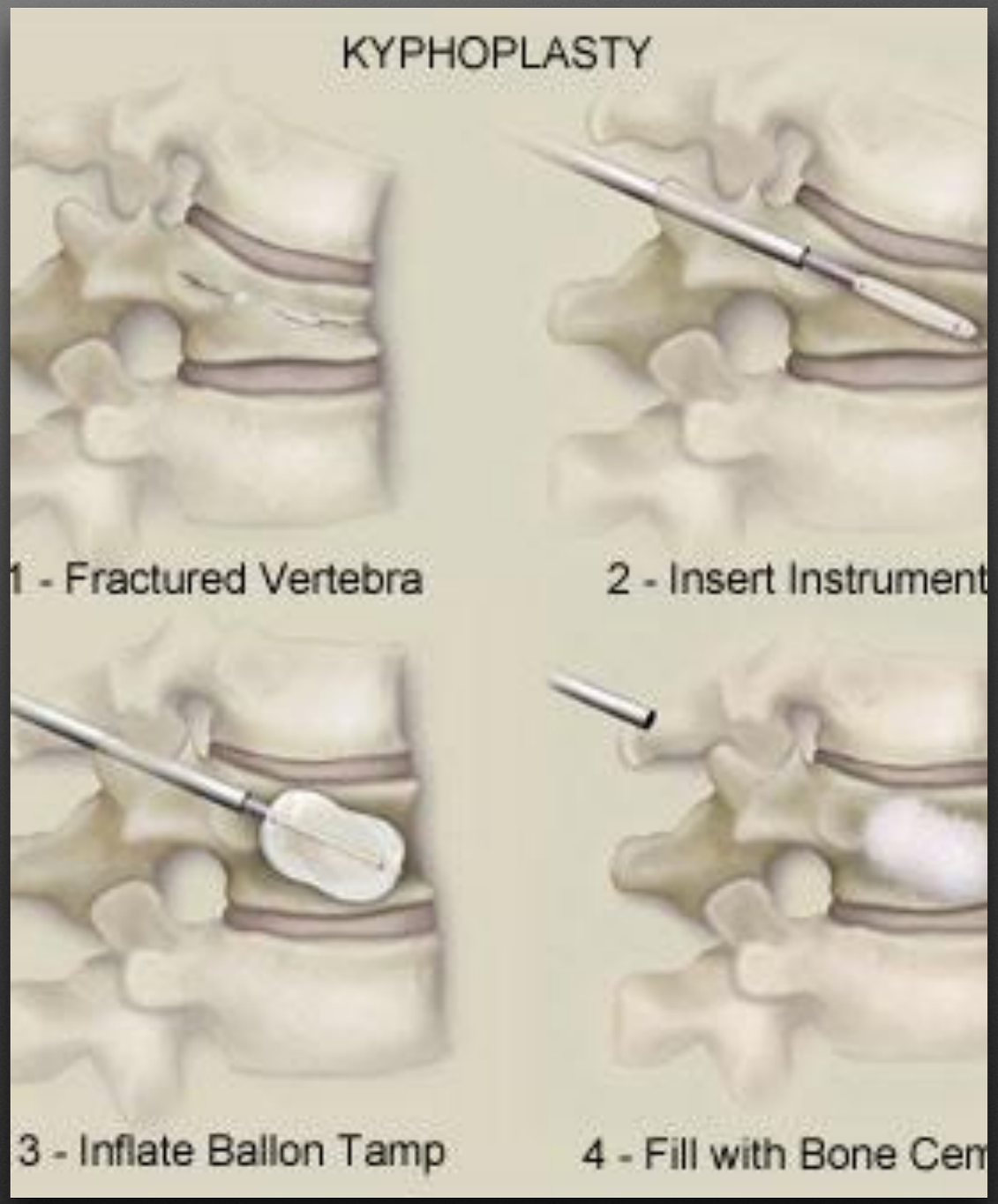
Kyphoplasty/ Vertebroplasty

- place 4mm diameter trocar through thoracic or lumbar pedicles under x ray imaging into vertebral body

- create cavity within vertebral body for placement of cement to firm up bone

- 70% effective, 30% don’t notice difference

- also used to improve pedicle screw pull out strength in osteoporotic bone



Sacroiliac Joint fusion

- must have well defined SI joint pain that is no longer controlled with steroid injections or physical therapy
- diagnosis is key
- common in patients after L 4-5 or L5-S1 fusions (adjacent motion segment)
- 80% helpful, 50% have big improvement

Minimally Invasive Spine

- Minimally invasive spine surgery is a philosophy
- Using different tissue corridors, smaller retractor systems to approach pathology
- This leads to less muscle damage, blood loss, postop pain and shorter hospitalization
- Lower risk of adjacent segment breakdown
- MIS has higher patient satisfaction and is sought out by patients