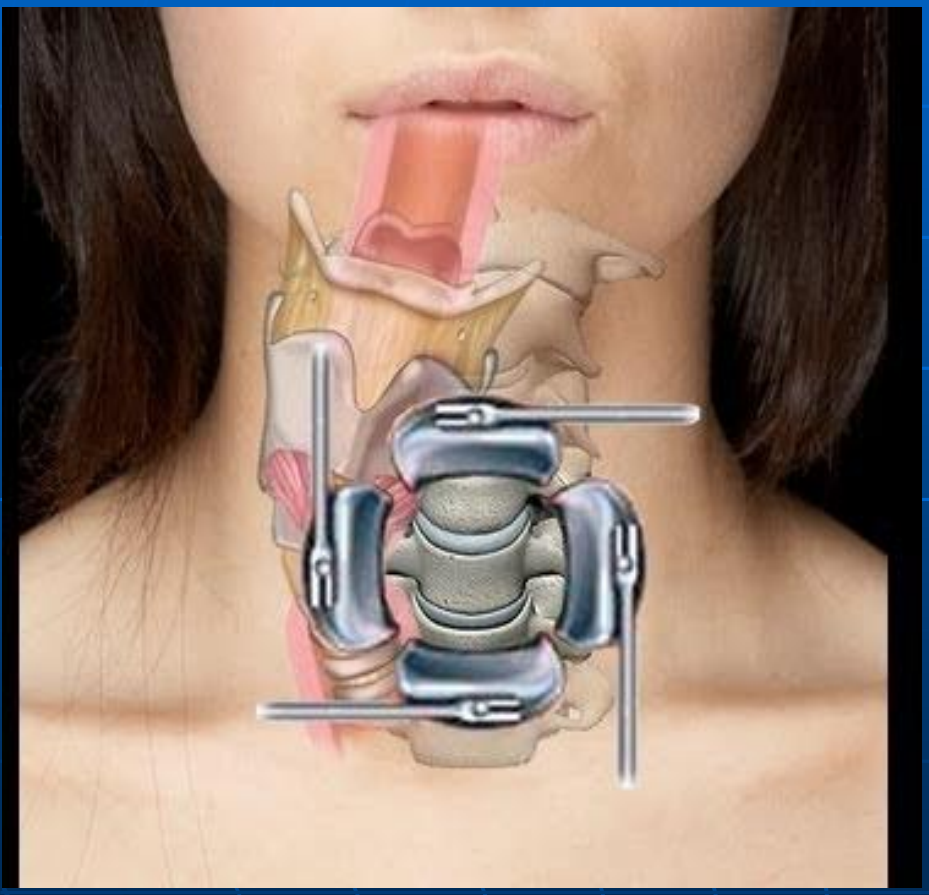
Anterior Cervical Discectomy & Fusion (ACDF)

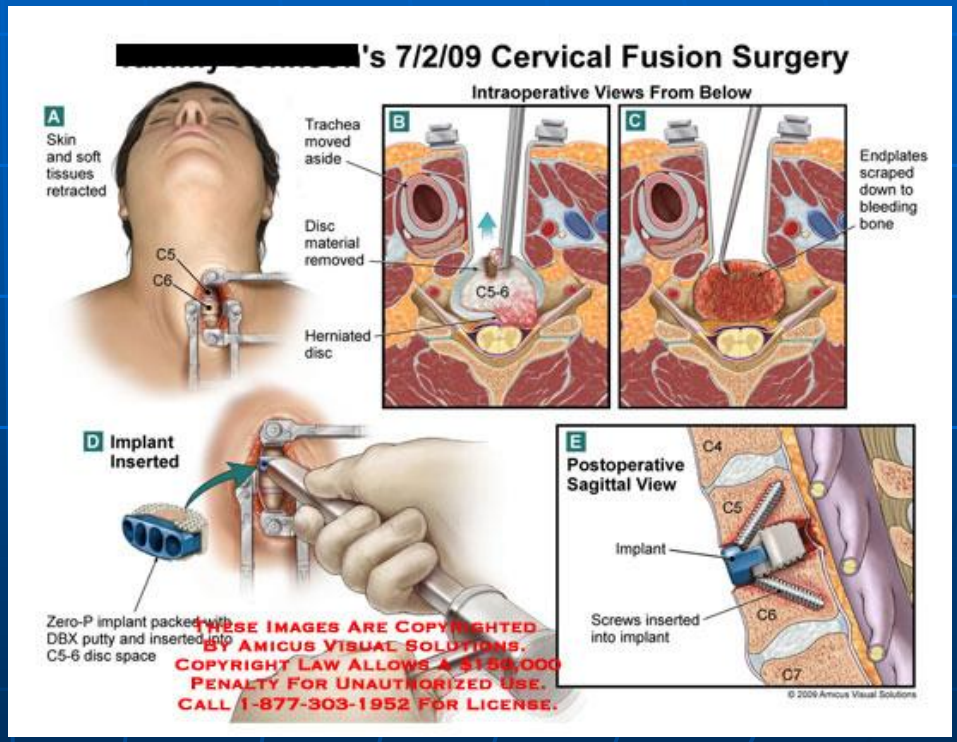
- Surgery from anterior approach is more accessible than from the back.
  - The disc can be reached without disturbing the spinal cord, spinal nerves, and the strong neck muscles.
- After the disc is removed, to prevent the vertebrae from collapsing and rubbing together, a spacer bone graft is inserted to fill the open disc space.
- After 3 to 6 months, the bone graft should join the two vertebrae and form one solid piece of bone.

Bone graft

- Autograft bone
  - The surgeon takes your own bone cells from the hip (iliac crest).
  - Higher rate of fusion because it has bone-growing cells and proteins.
  - The disadvantage is the pain in your hipbone after surgery.
  - Harvesting a bone graft from your hip is done at the same time as the spine surgery. The harvested bone is about a half inch thick – the entire thickness of bone is not removed, just the top half layer.
- Allograft bone
  - Comes from a donor (cadaver).
  - Bone-bank bone is collected from people who have agreed to donate their organs after they die.
  - This graft does not have bone-growing cells or proteins, yet it is readily available and eliminates the need to harvest bone from your hip.
  - Allograft is shaped like a doughnut and the center is packed with shavings of living bone tissue taken from your spine during surgery.
- Bone graft substitute
  - Comes from man-made plastic, ceramic, or bioresorbable compounds.
  - Often called cages, this graft material is packed with shavings of living bone tissue taken from your spine during surgery.

ACDF




[redacted]'s 7/2/09 Cervical Fusion Surgery
Intraoperative Views From Below
A
Skin and soft tissues retracted
C5
C6
Trachea moved aside
Disc material removed
Herniated disc
B
C5-6
C
Endplates scraped down to bleeding bone
D Implant Inserted
Zero-P implant packed with DBX putty and inserted into C5-6 disc space
E
Postoperative Sagittal View
C4
C5
Implant
Screws inserted into implant
C6
C7
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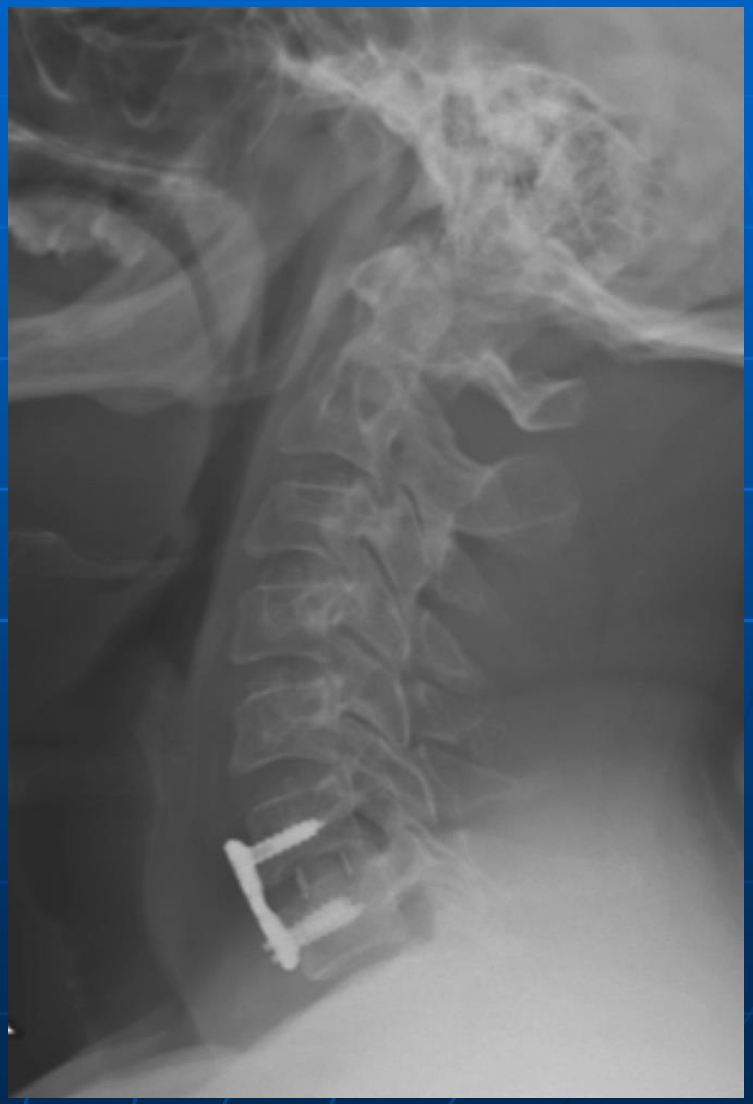
PEEK

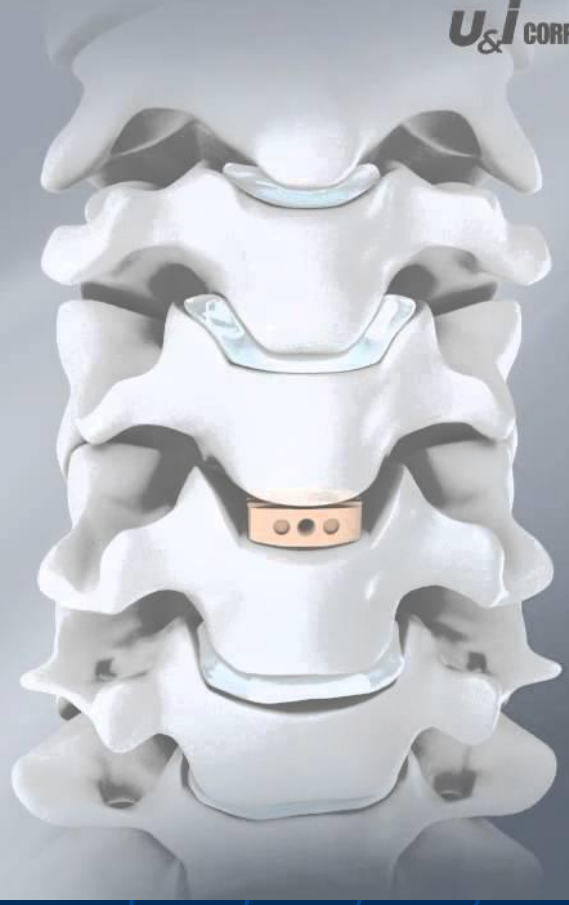
- Polyetheretherketone (PEEK) Spacers for Anterior Cervical Fusion
- PEEK cages are radiotransparent, they are produced with embedded titanium pins, in order to enable radiological examination of the cage position.



U&i CORPORATION

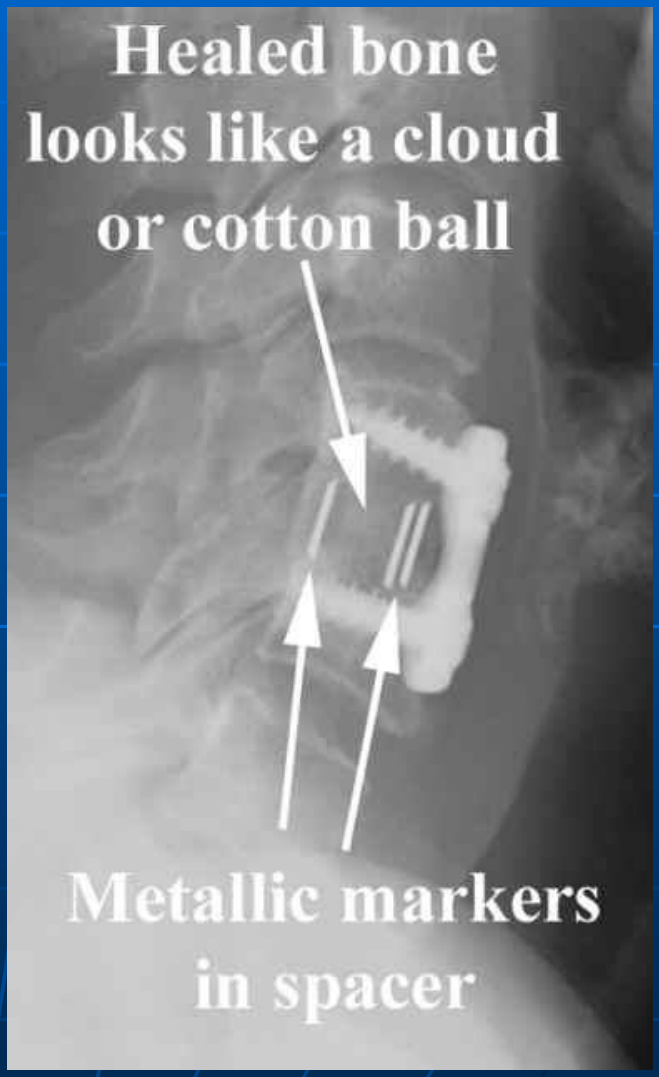
Velofix™ PEEK Cervical Cage

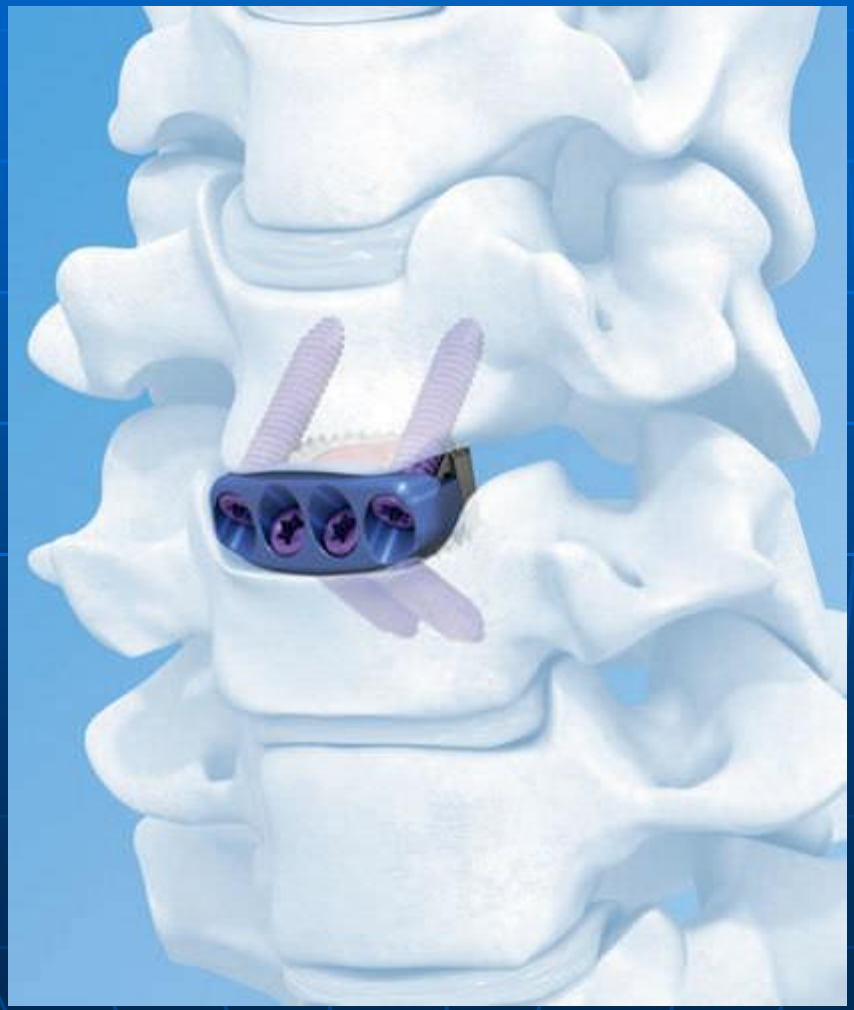
- Rounded edges for easier insertion
- Large central window
- Three radiographic tantalum rod markers
- Threading inserter



PEEK


7mm

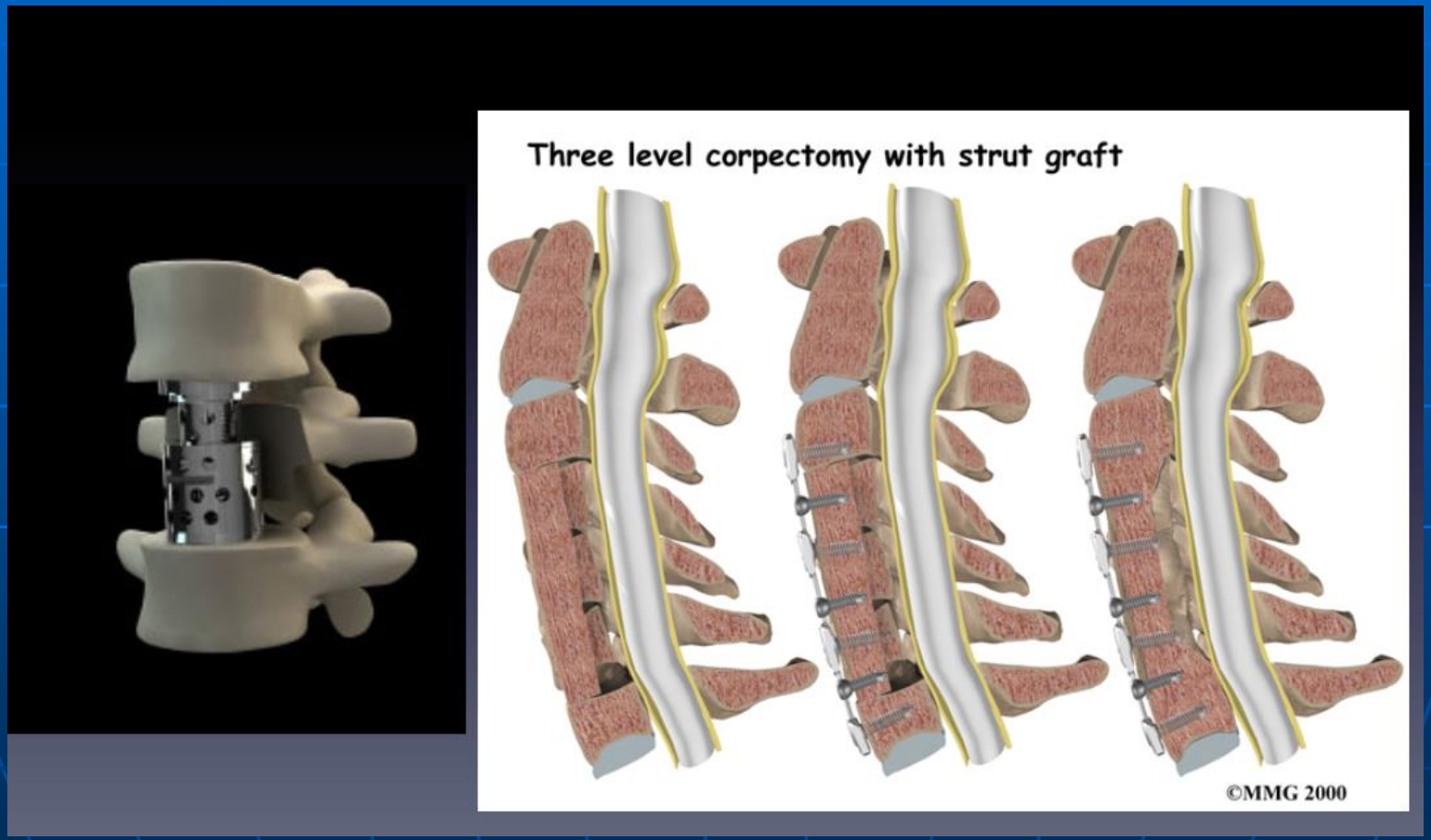

Healed bone
looks like a cloud
or cotton ball
Metallic markers
in spacer



Corpectomy

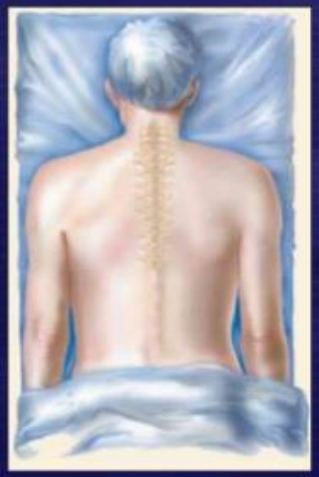
- Remove the body" (in this case the body of the vertebra).
- Corpus" means body and "ectomy" means remove.
- A strut graft can either be an
  - "autograft" that is taken from the small bone in your leg,
  - or it can be an allograft, which is bone taken from someone else.

Corpectomy with Strut graft



Minimally Invasive Posterior Cervical Foraminotomy

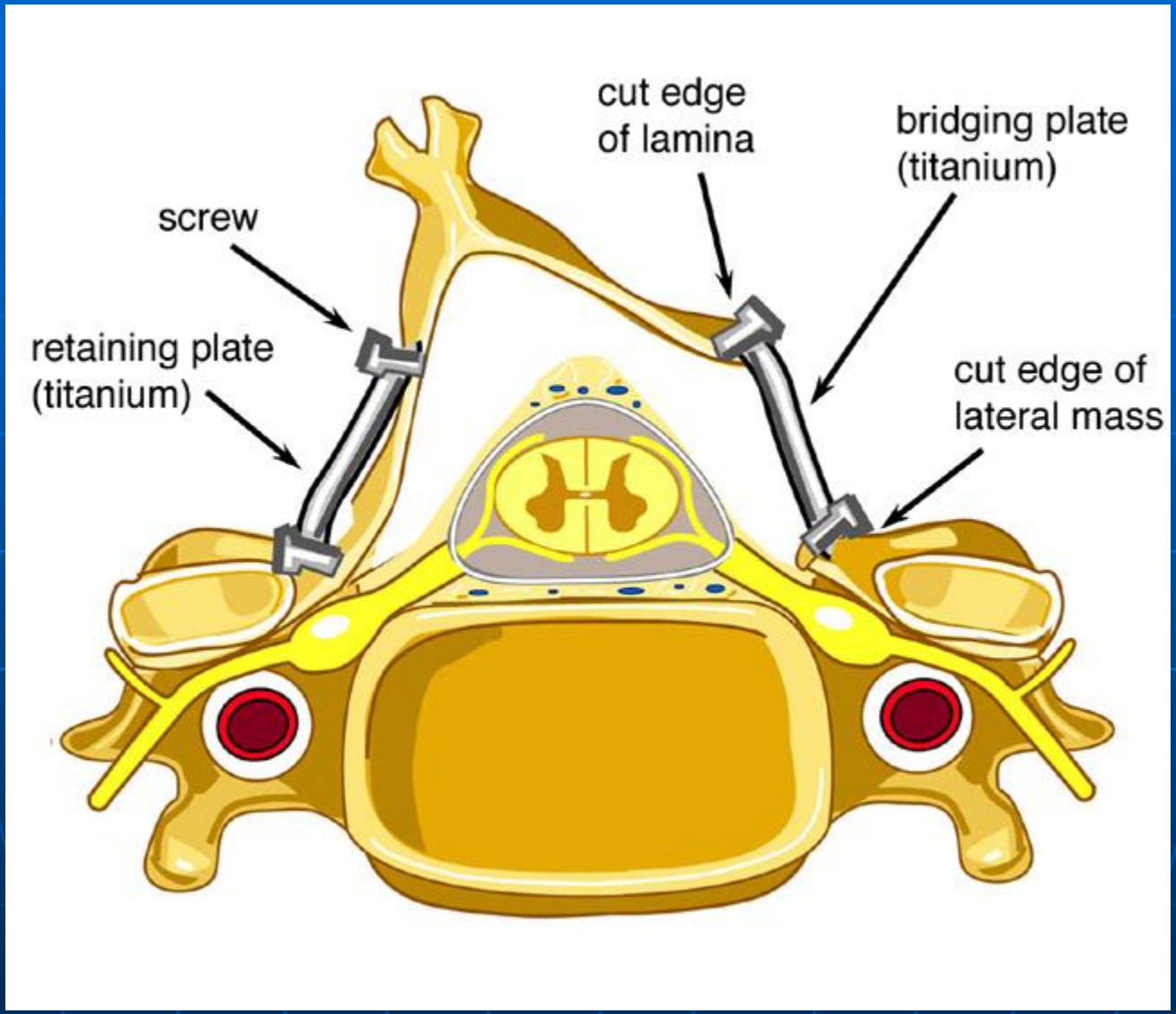
- Cervical foraminotomy is a surgical procedure done to relieve the symptoms of a pinched nerve by enlarging the neural foramen, and it can be performed in a minimally invasive way. The neural foramen is an opening where nerve roots exit the spine and travel throughout the body. It creates a protective passageway for nerves that carry signals between the spinal cord and the rest of the body. A cervical foraminotomy is a surgical procedure that is done to enlarge that passageway.



Cervical Laminoplasty

- A cervical laminoplasty is a spine surgery that involves reshaping/repositioning bone to relieve excess pressure on the spinal nerve(s) in the cervical spine, or neck. A cervical laminoplasty is often performed to relieve the symptoms of spinal stenosis, the narrowing of the spinal canal.

Plasty = Molding, formation" "surgical repair,


cut edge
of lamina
bridging plate
(titanium)
screw
retaining plate
(titanium)
cut edge of
lateral mass

Posterior Cervical Fusion

- The posterior cervical fusion is performed through an incision in the back of the neck. A posterior cervical fusion is used to stop the motion between two or more vertebrae to recreate the normal curve of the cervical spine and keep a spinal deformity from getting worse to stabilize the spine after a fracture or dislocation of the cervical spine.