Cervical spine surgery
General information/Risks

A. FRONT NECK surgeries: Cervical anterior decompression / discectomy / corpectomy and reconstruction with plate / cage +/- bone graft
B. FRONT NECK surgeries: Anterior cervical discectomy with motion preserving technologies like total disk replacement and mobility devices
C. BACK NECK surgeries: Cervical posterior decompression / Fusion

Different Patient Diagnosis in cervical disorders: Terminology used to describe cervical-Neck diseases

Cervical -Neck region of vertebra

Cervical Disc Disease (wear and tear of the disc(s) which has been accumulated over the years)

Cervical Joint (Facet) Disease (wear and tear of the joint which has been accumulated over the years)

Cervical Disc Herniation (rupture of the disc)

Cervical Spondylosis (bony spurs)

Cervical Radiculopathy (pressure on the nerves from the discs and/or spurs causing neck, should, arm, or hand symptoms-UPPER LIMB SYMPTOMS ONLY)

Cervical Myelopathy (damage to the spinal cord from spurs, discs, or stenosis which causes the arms, legs, bowel, and/or bladder to malfunction-UPPER LIMB AND LOWER LIMB BOTH SYMPTOMS)

Cervicalgia (neck pain)
Brachialgia (upper limb pain)

Cervical Central Canal Stenosis (narrowing of the channel for the spinal cord, causing pressure on or indenting the spinal cord)

Cervical Foraminal Stenosis (narrowing of the openings on the sides of the spine where the nerves exit the spine and go to the shoulders and arms, causing pressure on the nerves)

Cervical Spondylolisthesis (weakness of the spinal joints and ligaments causing the spinal bones to slide abnormally or become malpositioned)

Cervical Vertebral Instability-Loss of stability: listhesis

Usual causes:

- Congenital/developmental/degenerative
- OPLL (Ossified posterior longitudinal ligament) / OLF – Ossified ligamentum flavum (Calcium depositing diseases)
- Tumour of bone or of the spinal cord
- Infection

- ➢ Trauma / Fracture
- ➢ Metabolic/inflammatory disorders
- ➢ Wear & tear or disc/facet leading to Stenosis of canal

These all diseases can be staged by different classifications for the surgeon or physicians. The disability and pain because of it can as well be objectively and subjectively measured by different scoring systems with its own inter and intra-observer variabilities. Different scores are NDI, VAS, mJOA score, Nurick Grade, ASIA grades which gives numerical or alphabetical grade for severity.

Nonoperative Treatment

Aim is to stabilize current status of cervical spine, avoid disease progression and make condition better with medicines and discipline. Doctors always prefer this first and only suggest surgery at last resort. Mostly conservative treatment includes physiotherapy, lifestyle modification, medicines, exercise, heat/cold massage and nerve block and steroid injections and general care including fall prevention, avoidance of excess and sudden neck turning/bending/twisting. It is useful in case of mild disease with no functional impairment and in patients who are poor candidates for surgery.

Alternative possible non-operative treatments:

Homeopathy / Ayurvedic / Unani/Acupuncture/Chiropractic treatments/Mind-body medicine//Hypnosis/Nutritional modification/supplements/Cervical-Traction Therapy/Interactive guided imagery

Risks of non-surgical options:

- Continued pain that worsens and is not relieved with medications or other treatments
- Possible worsening of the numbness/weakness/tingling which can become permanent
- Nerve damage, spinal cord damage, or paralysis from the continued pressure on the nerves.
- Possible shrinkage of the muscles which may become permanent
- Difficulty/in coordination while walking as a result of untreated pressure on the spinal cord/nerves
- Allergic or other adverse reactions to the steroid injections or other continued medications
- Bowel/bladder sexual dysfunction as a result of untreated pressure on the spinal cord/nerves
- Nerve or spinal cord damage as a result of an accident, because of the preexisting narrowing of the nerve channel. Usually the nerve channel has a margin to tolerate any further space reduction in normal people and saves them during normal life course in spite of degeneration.

Operative Treatment
Future Perspective If remained Untreated: -

- 70% of cervical myelopathy cases deteriorate in 5 years especially when moderate to severe stenosis

- Progressive Radicular pain (The pain going into limbs) resolution with only residuals.
- Surgery in presence of symptoms (weakness, Pain, Imbalance). Surgery is required to attempt to improve those symptoms and prevent progression.

NOTE: Function / Symptoms are a more important determinant for surgery than physical examination findings

Aim

Surgery is for prevention of disease progression & is not Curative. It is an attempt to give pain relief and improve function for better quality of life. It is does not guarantee relief from all symptoms in all cases, but it is next logical choice after conservative treatment to treat diseased cervical spine.

The Procedure

Anterior (FRONT NECK) Cervical Surgeries:

Discs are small mass of rubbery tissue that act as natural shock absorbers between the individual bones of the spine. The pressure on the nerve/spinal cord may be caused when a disc ruptures (herniates), causing the softer substance in the centre of the disc to bulge through its tough, fibrous outer ring. Bone spurs (overgrowths of bone), which sometimes develop around the degenerated discs and may be the culprit. Depending upon the clinical presentation and need, adequate removal of culprit compressive tissue is done. The anterior FRONT approach to the cervical spine provides direct access to disc space and vertebral body. If a disc is removed completely, the space between the vertebrae will need to be fused with a piece of bone to maintain your neck's normal shape; sometimes the fusion requires the use of plates and screws. Without fusion only discectomy has also been reported in literature. Bone graft for the procedure can be obtained from patient's body or processed and procured from bone bank. This is **Anterior Cervical Discectomy or Anterior Cervical Discectomy and fusion. Anterior Cervical Corpectomy** means removal of two discs and one vertebral body bone. One or multiple vertebral bodies needs to be removed which is to be reconstructed with bone graft +/- cage and plate. **Artificial total disc replacement or mobility devices:** Here after discectomy the functionality of the mobile disc is tried to be preserved by using implantable mechanical devices which has got variable intrinsic mobility.

The Procedure

Posterior (BACK NECK) Cervical Surgeries:

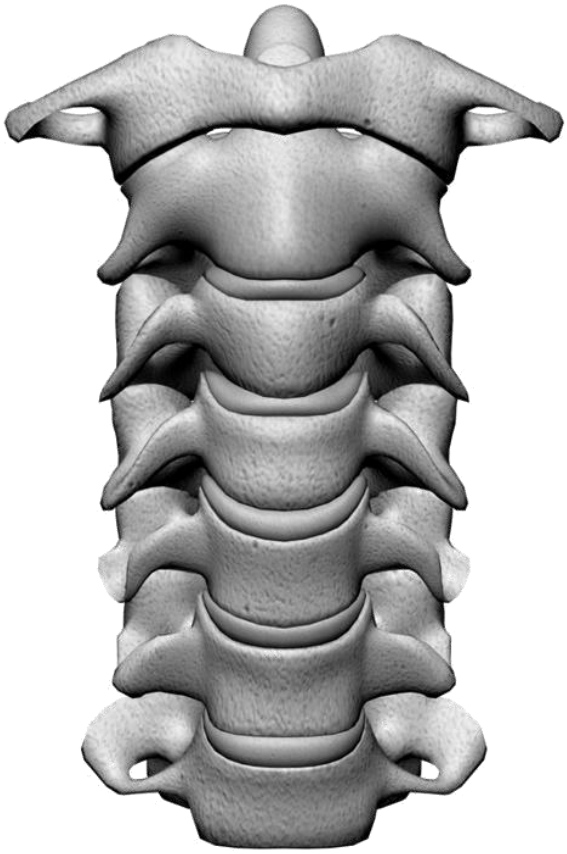
- **Cervical posterior decompression/ Fusion:** A posterior approach is used when additionally with anterior front surgery or alone when more space is needed, for example to alleviate pressure on the spinal cord or nerves. Examples of posterior cervical surgeries include: **Foraminotomies** (creating a small space over the nerve root)• **Laminectomies /laminotomy**(removing the entire/part of lamina)• **Laminoplasty** (expanding the existing lamina without fusing one level to the next)• Depending on what surgery is recommended to alleviate your symptoms, sometimes **fusion** the bones of different levels of vertebra is required to maintain spine alignment. Fusing of one level to the next with screws or rod/plate devices or wires.

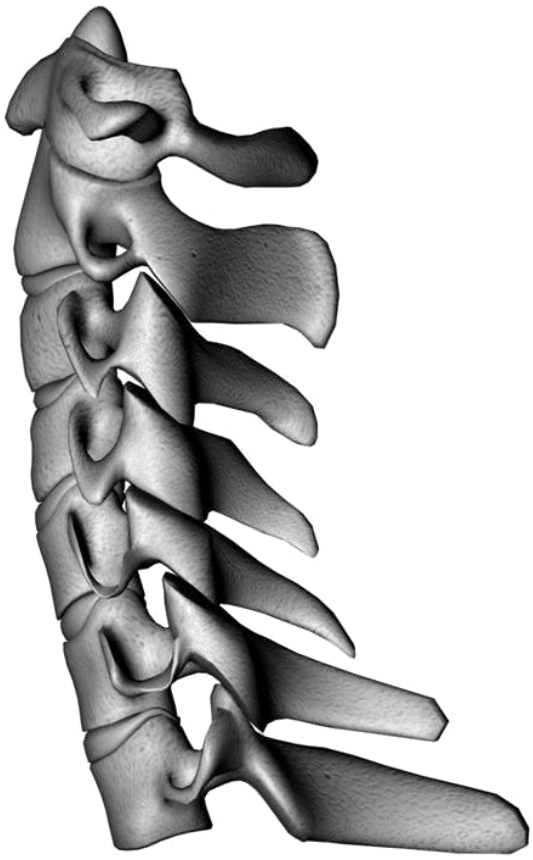
Particular risks associated with cervical surgery

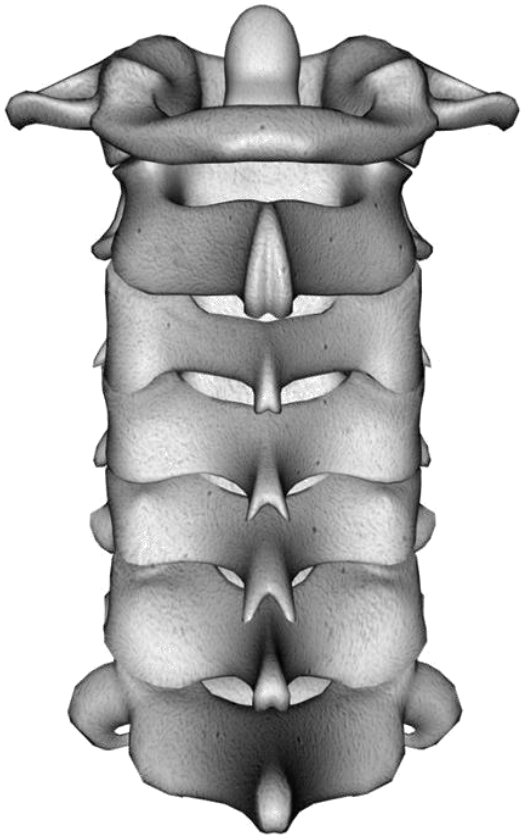
- The patient may have less motion or more stiffness in the neck after surgery.
- There is a small risk of injury to the laryngeal nerves, which may cause temporary or permanent hoarseness of the voice, alteration in your voice tone, quality, or singing ability. Injury to the phrenic nerve could cause paralysis of the diaphragm.
- There is a very rare complication of this surgery which may result in temporary or permanent paralysis of the patient's arms and legs that is complete or partial, temporary or permanent.
- There is the possibility that arm/neck pain or other symptoms could recur, requiring additional surgery.
- There is a possibility that patient can develop problems in swallowing fluids or solids, it's usually short term, if prolonged difficulties then further investigations are required.
- Though unlikely, there is a possibility that a stroke-brain paralysis could occur during the procedure or in the recovery period, which could result from retraction and injury to the carotid artery.
- Breathing difficulties (which are usually temporary) or post-operative pneumonia may occur as a result of surgery. Pulmonary embolus (blockage of an artery in the lungs) could occur from the blood clotting in the veins of the legs or abdomen.

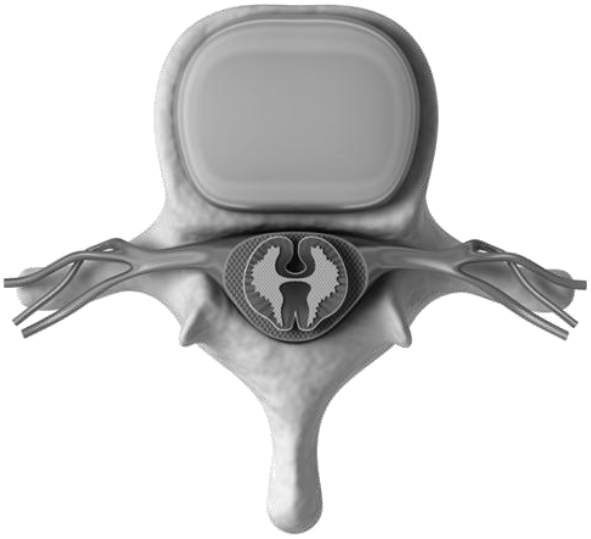
NOTE: For additional general information about complications and risks in spine surgery please refer common topics covered

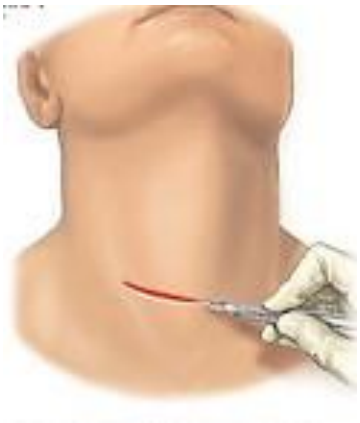
Similar images or bone models can be used for explaining the disease and the treatment methodology.



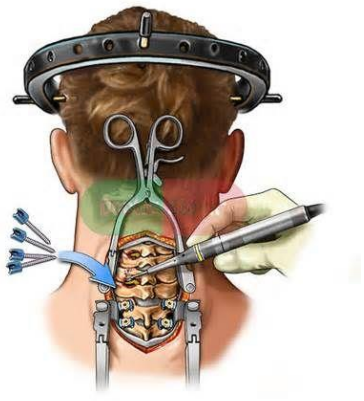




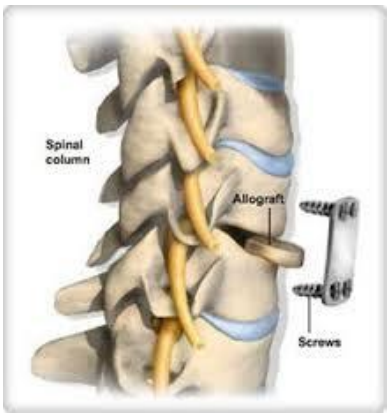




ANTERIOR SURGERY



POSTERIOR SURGERY



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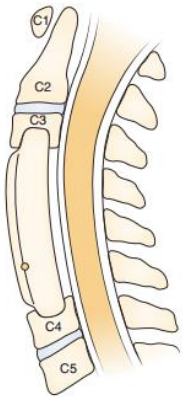
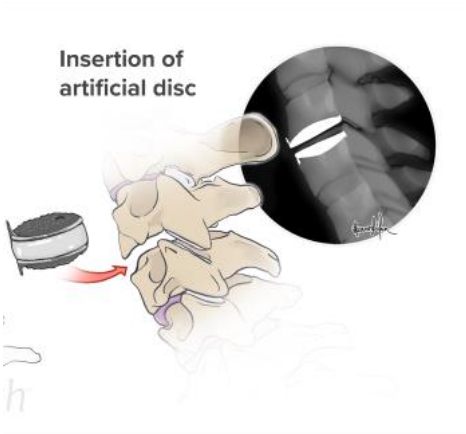
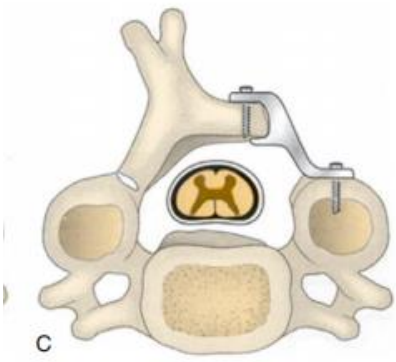


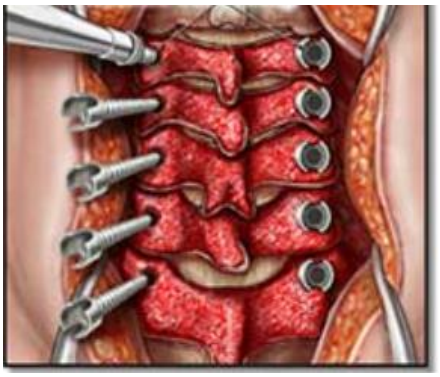
CORPECTOMY AND FUSION



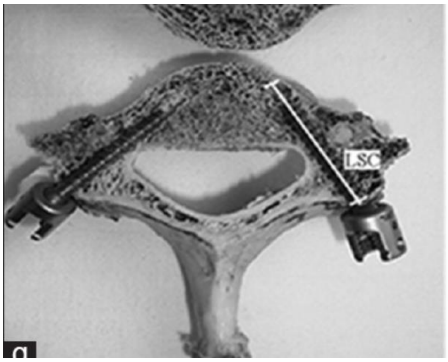
TOTAL DISC REPLACEMENT



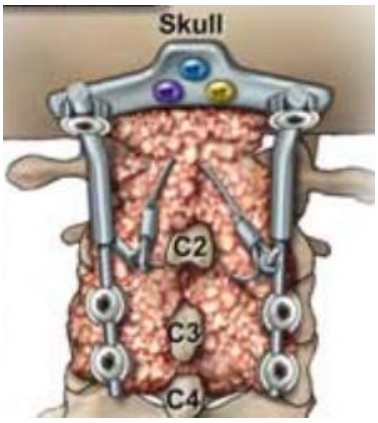
LAMINOPLASTY



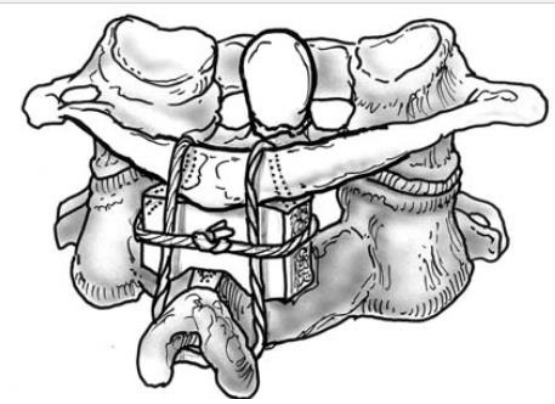
SCREWS Lateral Mass



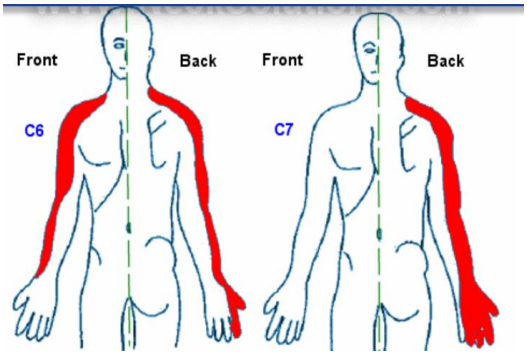
PEDICLE / SCREWS



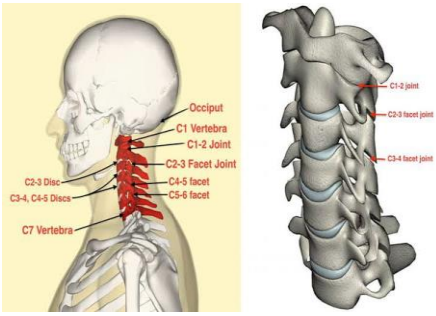
OCCIPITO CERVICAL FIXATION



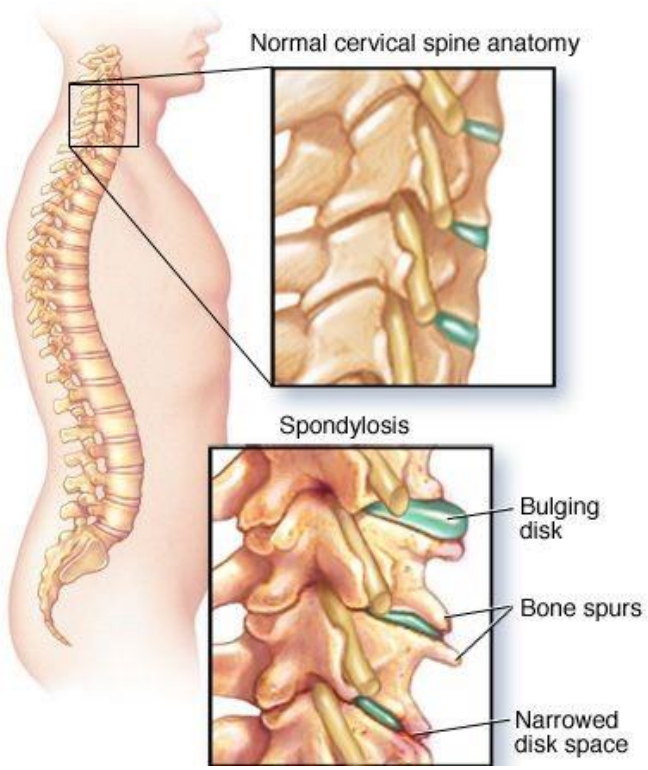
CERVICAL WIRING



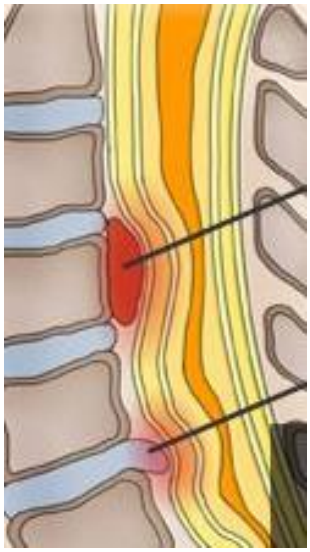
RADICULOPATHY



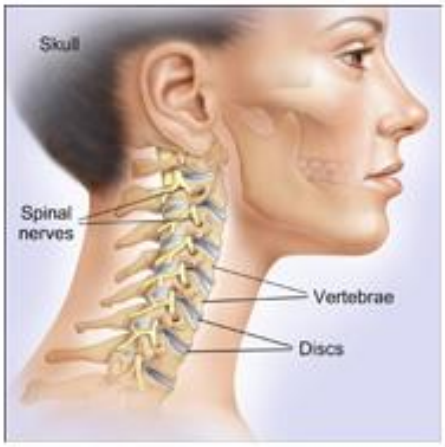
FACET DISEASE

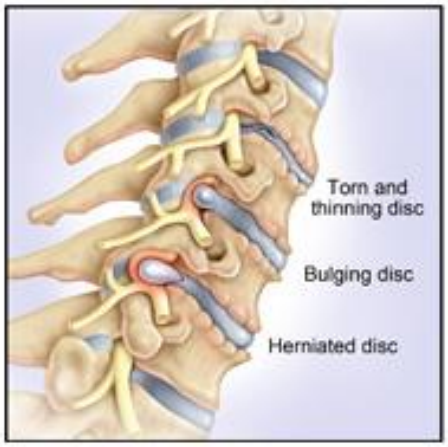


BONY SPUR

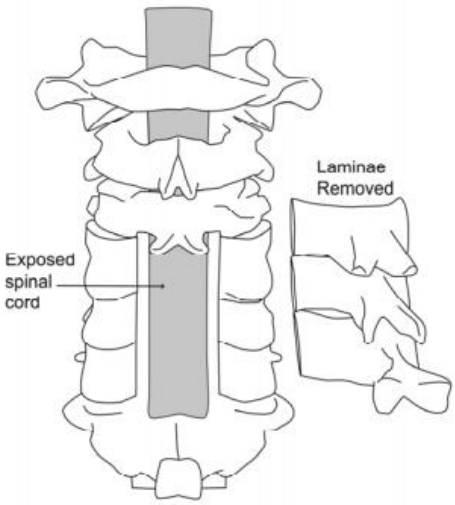


CERVICAL MYELOPATHY





DISC DEGENERATION



POSTERIOR SURGERIES