

SURGERY ON CERVICAL SPINE

1. Anterior cervical surgery

a. Land marks

Hyoid	C3
Thyroid	C4-5
Cricoids	C6

b. Requirements

Image Intensifier or X ray
Light source
Table with head rest

Halo traction may be required in some cases

c. Technique

1. Skin incision: Transverse incision from the midline to the posterior border of Sternomastoid.

[When more than 2 levels fusion is required, consider an oblique incision]

2. Approach from right or left: Left recurrent laryngeal nerve is less vulnerable to damage than the right nerve. Approach from left is preferred.

3. Deep dissection

Platysma is divided in the direction of the skin.
Superficial investing layer divided at the medial border of the Sternomastoid muscle.

Blunt dissection of Pretracheal leads to prevertebral layer

The longus colli is undermined subperiosteally but it should not be dissected beyond the vertebral body.
And a self retaining retractor is applied.

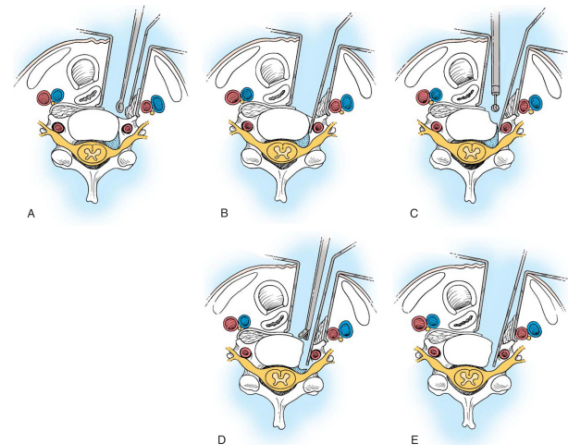
Using, knife and pituitary forceps dissection is performed.
Vertebral bodies were distracted using a laminar spreader

High speed burr to take superior and inferior end plates [Until punctate bleeding]

Uncovertebral joint defines the lateral margin of dissection

If disc herniation is transligamentous: a rent is seen in the Posterior longitudinal ligament

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Tricorical graft [Robinson Smith graft] and fixed with a plate

At risk structure

Thyroid, Oesophagus, Trachea

Contents of carotid sheath

Hypoglossal nerve in the superior part

Superior thyroid artery and vein. Recurrent laryngeal nerve

Sympathetic chain and Stellate ganglion in the lateral dissection of Longus coli

Results: [Anterior Vs Posterior]

Anterior surgery 92%

Posterior laminectomy 66%

Posterior laminoplasty 86%

Factors for successful spinal fusion

1. Autograft Vs Allograft

More pseudarthrosis and more subsidence with allograft

2. Number of level of fusion:

Pseudarthrosis is 25% with multiple level and <5% with single level

3. Instrumentation or not

With no instrumentation non-union is 8% and with instrumentation = 4%

Complications

Early

A. Neurological

1. Neurological injury: 1% nerve root damage

Avoid by using somatosensory evoked potential

2. Sympathetic chain injury [over the lateral aspect of longus coli]

Placement of the self retractor is important

3. Recurrent Laryngeal Nerve Injury:

Right recurrent laryngeal nerve is short course

Usually recover in 6 wks if does not: ENT

B. Vascular injury

Vertebral artery injury

Avoid: lateral to the uncovertebral joints

use: Thrombin soaked gelfoam

C. Infection: <1%

D. Esophageal Perforation: incidence 0.2%

usually retraction by sharp position

Thoracic duct damage

Dysphagia

E. Dural tear

F. Fixation

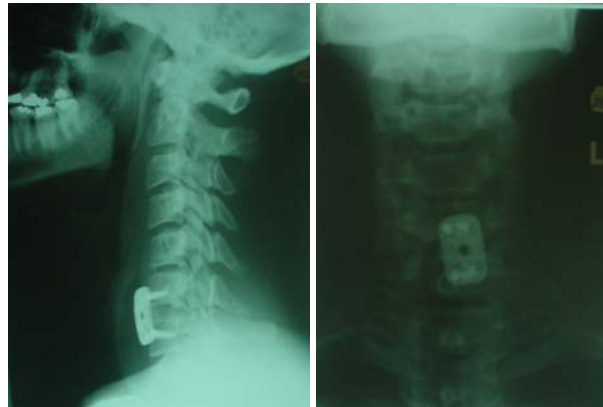
Inadequate

Metalware failure

G. Graft

Pseudarthrosis: More with multilevel

Graft dislodgement: 10 to 25% without anterior plate



Posterior Cervical spine surgery

Indications

1. Multiple level involvement of the cervical spine [posterior is preferred]
2. Radiculopathy
3. Cervical stenosis
4. Myelopathy
5. Unreduced unifacetal dislocation
6. C0-A1 or A1-A2 fusion

Technique

Position of the head is important, Leave face free on a Mayfield rest
Infiltrate local anaesthesia with marcaine

Midline incision

Inter-nervous plane: midline dissection

Divide the Ligamentum flavum

Midline periosteal dissection, laterally up to lateral mass

Overlapping between lamina is not as close as in lumbar region. Avoid entering interlaminar space accidentally

Laminectomy and Lateral mass plate

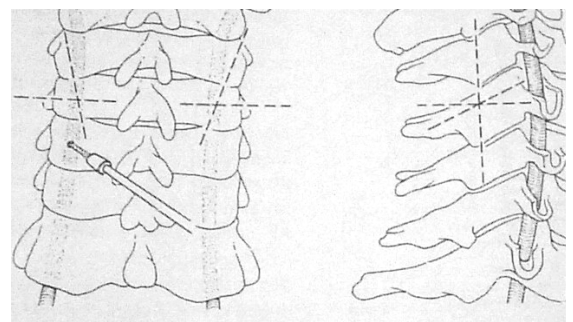
Burr down the lamina at the junction with lateral mass to thin it down. Then remove the residual lamina with the curette and also use the rongeur to complete the laminectomy

The safest position for screw placement

1 mm medial of the center of the lateral mass

Angulate the screw 15° cephalad and 25° lateral

Starting point 1 mm medial to the centre of the facet

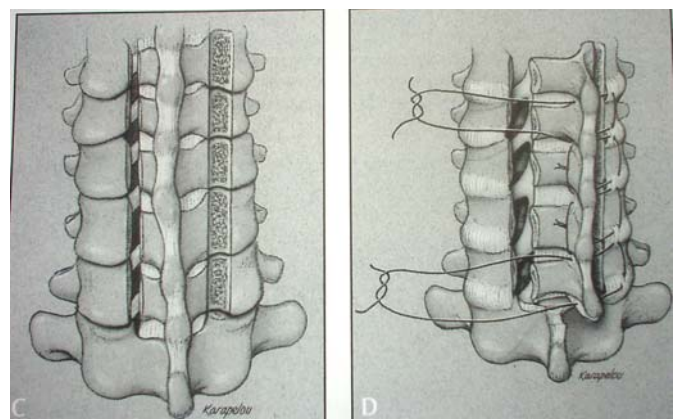


Laminoplasty

Weaken the lamina-lateral mass junction.

Complete the osteotomy on one side and

Elevate the lamina with a hinge on one side



Outcome

Laminoplasty: 85

Laminectomy 65% Good-excellent

