ANTERIOR CERVICAL DISCECTOMY AND FUSION

Anterior – In the human anatomy, referring to the front surface of the body or position of one structure relative to another

Cervical – Relating to the neck, in the spine relating to the first seven vertebrae

Discectomy – Surgical removal of part or all of an intervertebral disc material placing pressure on neural elements

Fusion – Surgically induced union or healing of bone (Arthrodesis)

Basic Anatomical Landmarks:
Anterior Cervical Spine

Anterior View
Bone Structure of the Cervical Spine
(C1/Atlas–C7)

Anterior Anatomy
Covering the Cervical Spine
Cervical Discs

In the cervical spine there are intervertebral discs from C2-C7. There is no disc between C1 and C2. In the illustration, the Discs appear as the white substance between each vertebrae.
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Approach/Patient Position
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Approach/Patient Position

The patient is placed in the supine position with the head in slight extension. The surgeon must then choose a right or left sided approach, usually through the left. The laryngeal nerve that controls the voice box runs on the right side of the neck, so the incision is usually left sided to avoid post-op speech problems. After choosing an operative side, the head may be rotated to allow for adequate exposure of the cervical spine.

Typically, a transverse skin incision is made. An avascular dissection plane is developed between the esophagus/trachea, medially, and the sternocleidomastoid/carotid sheath, laterally. Hand held retractors might be utilized to provide initial exposure of the anterior vertebral column and the adjacent longus colli muscles.
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Techniques

1. Cloward Technique
2. Smith Robinson Technique
3. Bailey/Badgley Technique/Threaded Cervical Cage Technique

Cloward Technique – With the patient prepped in the supine position, the previously described exposure is created (see page 4). The disc is excised and canal decompressed. A dowel graft is then inserted into the intradiscal space.
Techniques

Smith Robinson Technique – With the patient prepped in the supine position, the previously described exposure is created (see page 4). The disc is then excised with no decompression of the canal and a horseshoe graft is placed in the intradiscal space.

![Diagram of Pear-shaped Burr and Decorticated Endplate]
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Techniques

**Threaded Cervical Cages** – Discectomy is completed at the indicated level. Pituitaries, curettes and kerrisons may be used to remove the disc material and cartilage to expose the posterior longitudinal ligament.

A threaded cage is inserted following the discectomy.
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Technique: Cervical Plating

“Anterior cervical internal fixation is increasingly utilized in spinal surgery. The application of an anterior cervical plate has become widely accepted when anterior spinal fusion is performed to stabilize the spine for tumor, trauma, deformity, degenerative disc disease and other forms of cervical instability. The addition of anterior plate fixation offers many benefits such as: resistance to graft displacement, a reduced incidence of pseudarthrosis related to micro motion at the graft-vertebral body interface, maintaining anterior cervical alignment when multi-level discectomies or corpectomies are performed, and a decreased reliance on prolonged external bracing.” (ATLANTIS® Anterior Cervical Plate Surgical Technique as described by: Dr. Volker Sonntag, Dr. Regis Haid, and Dr. Stephen Papadopoulos)

A variety of plate designs currently exist to stabilize the cervical spine and promote fusion. The available options for cervical plating are listed below.

**Non-constrained** – Bicortical non-locked bone screw

**Semi-constrained** – Locked bone screw with possible construct motion

**Constrained** – Locked bone screw with no construct motion

**Rotational Load Sharing** – Screw rotates about a pivot point

**Translational Load Sharing** – Screw translates along a slot in the plate