

## Anterior cervical discectomy and fusion (ACDF)

### *Indications*

Anterior cervical discectomy and fusion (ACDF) is a procedure to remove one or more discs in the cervical spine and stabilize (fuse) the affected levels. Cervical disc disease may result from trauma or from various degenerative conditions of the cervical spine. Disc herniations may be large enough to cause pressure on the spinal cord (causing “myelopathy”) and/or cervical nerve roots (causing “cervical radiculopathy”). Cervical myelopathy is a serious condition of progressive weakness, numbness, imbalance, and (in some cases) bowel and bladder dysfunction. Cervical radiculopathy is associated with neck pain and/or pain, tingling, and/or numbness radiating down from the neck to the shoulder, arm, forearm, and/or hand. The extent of symptoms depends on exactly which nerves are compressed or irritated, how severely, and on which side (may be right, left, or bilateral). Surgical treatment is indicated when cervical myelopathy (spinal cord compression) or cervical radiculopathy (cervical nerve root compression) does not respond to conservative measures such as anti-inflammatory medications and physical therapy (cervical traction and decompression). Progressive numbness and/or weakness is an urgent indication for surgery.

### *Surgery description*

In an anterior cervical discectomy and fusion (ACDF) procedure, the patient is placed under general anesthesia. Neuromonitoring (nerve monitoring) is routinely performed. The patient is positioned supine (on their back) and all pressure points are padded. The cervical area is prepped and draped in a sterile fashion. Next, fluoroscopy (intraoperative X-ray) is used to localize the affected level (or levels in the case of multilevel ACDF). This allows placement of a small (minimally-invasive) incision. The operating microscope is brought in for careful microdissection. A small horizontal incision is made in a skin crease in the front of the neck and the anterior surface of the cervical spine is accessed. Cervical discectomy (disc removal) is then performed at the affected level(s) and great care is taken to decompress the spinal cord and nerves. Bone spurs (“osteophytes”) are removed. Next, an “all-in-one” cervical spacer is placed in the disc space and secured to the vertebrae above and below. Modern “all-in-one” cervical spacers do not require an anterior cervical plate and therefore do not impede the esophagus and cause difficulty swallowing (the esophagus lies right in front of the cervical spine). Finally, X-rays are taken to verify appropriate positioning of the spacer(s), and the incision is closed in layers. Biocompatible glue (Dermabond) is placed over the absorbable skin sutures and a waterproof dressing is applied.

### *Postoperative care and outcome*

Copious local anesthetic is placed around the incision at the end of surgery so that the patient wakes up as “numb” and thus as comfortable as possible. Immediately after surgery, some people will experience temporary difficulty with swallowing (a “lump in the

throat" feeling) and/or hoarseness of the voice. Walking immediately is encouraged. Going up and down stairs is fine. The main thing is to avoid heavy lifting, particularly overhead lifting. For single-level ACDF, a cervical collar (brace) is not required. For multilevel ACDF, a cervical collar (brace) is indicated for approximately 4-6 weeks postoperatively to optimize the healing process.

The outcome from ACDF is generally excellent. The vast majority (80-90%) of patients have relief from the symptoms of spinal cord compression (myelopathy) and/or nerve pain (radiculopathy). The rapidity of improvement depends on the duration and severity of preoperative nerve compression.

While it depends on the nature of the job, most patients can go back to work in approximately one week postoperatively. At the two-week postoperative visit, we inspect the incision, adjust or wean medications, and start physical therapy. It varies among patients, but usually 6-8 weeks of physical therapy are indicated to optimize neuromuscular and functional outcome. We see patients again at 3 months postoperatively to reassess outcome and need for further medications or therapy.