Instrumented Spinal fusion surgery

Indications

In carefully selected patients, spinal fusion has shown good results as a method of management in the treatment of degenerative spinal conditions [1) 2) 3)]

Spinal fusion is frequently performed for a variety of indications. It is performed to treat instability due to trauma, infection, or neoplasm. It may be used to treat regional or global spinal deformity. There are even occasions when it is appropriate as a treatment of low back pain without overt instability or deformity. One common indication for fusion is as an adjunct to decompression for patients with neurogenic claudication or radiculopathy caused by stenosis associated with spondylolisthesis. There have been a number of high-quality publications in high-quality journals that have reported conflicting results regarding the utility of fusion in this patient population. The existence of conflicting data from seemingly similarly designed trials has resulted in some confusion as to when a fusion should be used. The SLIP II study is an ongoing randomized, controlled trial designed to help clarify the situation [4)].

Spinal fusion surgery is used to correct problems with the vertebrae. It is essentially a “welding” process. The basic idea is to fuse together the painful vertebrae so that they heal into a single, solid bone.

Due to the lack of appropriate implants, the initial fusions were performed via decortication of the dorsal and lateral structures of the spine, followed by placement of an autograft.

Once a patient has met the criteria to be a candidate for spinal fusion, there are many procedure options to employ [5)] and include either open or minimally invasive exposures (i.e., mini-open, endoscopic, tubular, and percutaneous) for anterior [direct anterior (ALIF), lateral anterior lumbar interbody fusion (LLIF)] or posterior approaches [posterior (PLIF) or transforaminal (TLIF)]. Regardless of surgical approach or procedure chosen, the goals of spinal fusion surgery remain the same: decompression of the neural elements, maximization of final construct stiffness through the placement of a large intervertebral implant and/or rigid fixation in order to promote fusion over as large a fusion area as possible while preserving or restoring segmental alignment and overall spinal balance.

These different procedures vary in their inherent ability to fulfill each surgical goal. Patient and pathologic considerations largely guide which procedures are possible and surgeon preference drives which of the viable procedures is selected for use. With the proliferation of a variety of minimally invasive surgical (MIS) approaches, particularly ones that use direct visualization (mini-open), there is a need for updated criteria for patient and procedural selection for the modern surgeon

[6) 7)]

Procedure

see fusion procedure

Lumbar spinal fusion

see Lumbar spinal fusion.

Thoracic spinal fusion

Thoracic spinal fusion.

Cervical Spine Fusion Surgery

see Cervical Spine Fusion Surgery

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