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What is it:

Cervical laminoplasty is a surgery performed in order to decompress, or remove the pressure, from a spinal cord that is compressed by the buildup of bone spurs, discs, or ligaments in the cervical spine. It is most commonly performed for patients who have cervical myelopathy (the condition in which a compressed spinal cord can lead to various symptoms, including clumsiness of the arms, imbalance walking, numbness or weakness, etc.). It is usually done in patients who have spinal cord compression arising from multiple different spinal levels.

What are the alternative surgical procedures?

Alternatives to laminoplasty include anterior cervical fusion, laminectomy, or laminectomy with fusion. All of these alternative procedures can accomplish the same goal of relieving compression on the spinal cord. When performed in the appropriate circumstance, studies have shown that each alternative has similar outcomes with respect to neurologic improvement. However, each procedure has its set of advantages and disadvantages, and no one procedure is right for every patient.

The main advantage of laminoplasty over fusion-based operations like anterior cervical fusion or laminectomy with fusion is that a fusion does not need to be performed, and thus patients retain more motion in their necks after surgery. In addition, when fusions are performed at multiple levels, the potential for one or more of the fusions to not heal properly and thus lead to potential problems such as pain is higher. Because laminoplasty does not involve a fusion, all fusion related complications are avoided. The major advantage of laminoplasty over other non-fusion alternatives like laminectomy alone is that laminoplasty better preserves the normal alignment of the neck, which may have additional benefits over time in terms of preventing recurrent compression on the spinal cord or the development of abnormal neck curvature.

The main disadvantage of laminoplasty is that in some patients, any axial neck pain (i.e., pain down the middle of the neck) that the patient has before surgery usually will not improve and in some cases may worsen. This disadvantage is not unique to laminoplasty, but is also shared with laminectomy and, to some extent, with all operative procedures on the cervical spine, fusion based or otherwise, as the primary goal of any operation on a patient with spinal cord compression is relief of compression, not

necessarily neck pain. Although relief of all symptoms is obviously desired by the patient and attempted by the surgeon, it may not be possible in all circumstances.

For these reasons, laminoplasty is best reserved for patients with cervical myelopathy who have mild to no axial neck pain, and whose spinal cord compression arises from multiple segments (usually three or more). In those who have a significant amount of axial neck pain, or whose neck is improperly aligned to begin with, alternatives involving a spinal fusion may be more appropriate.

How is it done:

An incision is made posteriorly (i.e., on the back of the neck), which runs the length of the levels that need decompression. The muscles are then mobilized to allow your surgeon access to the spine. At each of the levels needing surgery, an “opening” is created on one side of the lamina using a fine motorized drill to drill through the entire lamina. On the other side of the lamina, a “hinge” is created with the drill by thinning the bone but not removing it completely. This then allows the surgeon to “open” the lamina by lifting up on the open side and hinging it on the hinge side. By doing so, the space available for the spinal cord will increase, thereby relieving pressure on the spinal cord. In essence, it is as if the lamina is a door that is being opened, which is why the procedure is called an “open door laminoplasty.” In order to keep the door open and not simply shut back down, various forms of “door stops” are used, including titanium miniplates with screws, pieces of bone, or sutures. This procedure is repeated at each level where the spinal cord is compressed. The wound is then closed. In most cases, the hospital stay is from 1-2 days. Most patients can begin early range of motion exercises after surgery, which is also different than what is generally prescribed after fusion based operations.

What to expect:

The primary goal of any surgery for cervical myelopathy is to prevent any worsening in nerve function, which is what usually occurs if myelopathy is left untreated without surgery. In most cases, some degree of improvement in symptoms such as hand clumsiness, walking imbalance, numbness, weakness, or arm pain which radiates down the arm will occur after surgery. Improvement may be complete, or, more commonly, partial with any type of surgery done for this condition. It may take up to 1-2 years to see the full extent of improvement after surgery, and there may be little immediate improvement in symptoms. Furthermore, depending on whether or not permanent nerve injury has already occurred prior to surgery, it is possible that some patients may not experience any major improvement. However, when laminoplasty is performed in the appropriate patient, the vast majority of patients do well and feel that the surgery benefitted them greatly.