Results of Lateral Approach to Lumbar Interbody Fusion

When it comes to lumbar spinal fusion, surgeons have more than one choice in how they do this procedure. Interbody fusion has become a commonly used technique that continues to change and improve over time. In this study, results from surgeons' own experience as well as studies available are summarized for extreme lateral interbody fusion (XLIF). It might help if we explain a few terms before bringing you up-to-date on the study outcomes.

An interbody fusion refers to the removal of degenerative disc material from between two vertebrae (spine bones). The empty space is supported with a metal cage filled with bone chips. Long screws placed horizontally on either side of the disc space hold the segment stable until the fusion is complete. In this way, the body of one vertebra is fused to the body of another vertebra next to it (either just above or just below).

As far as lumbar fusions are concerned, the field of spine surgery has changed quite a bit. One of those changes has been the shift from a strictly anterior (from the front of the spine) or posterior (from the back of the spine) approach to a lateral approach.

A lateral approach means the surgeon enters the body and spine from an angle between the front and back. With an extreme lateral approach, the surgeon comes in from the front and side of the spine. A special tube is placed through the lateral abdomen, through the psoas (anterior hip muscle), and to the spine. With this portal (pathway), the surgeon avoids major blood vessels, organs, the spinal cord, and nearby spinal nerve roots.

Many people with chronic, severe low back pain from degenerative spinal conditions have come to depend on a lumbar fusion procedure to reduce pain, restore function, and improve quality of life. As you can imagine, open spine surgery can result in additional pain at the incision site, infections, and delayed or poor wound healing.

Surgeons have worked hard to find alternate ways to do lumbar fusions without using open incisions (e.g., minimally invasive). The studies included in this review involved patients who had lumbar fusion using the interbody technique. Different approaches were used (e.g., XLIF, XLIF and posterior, just posterior, just anterior) making it possible to compare results. All fusions were done using an open incision or minimally invasive technique so these two could be compared as well.

Results were measured by comparing surgical time, rates of complications, length of stay in the hospital, and use of narcotics after surgery. X-rays and CT scans were also used to verify that the fusion was solid. Patient reports of pain and function were compared at the one-year follow-up appointment.

The investigators behind this study found that there were wide ranges for many of the factors. For example, surgical times were as short as 67 minutes up to seven hours. Patients were in the hospital anywhere from one day up to six days. The more complex the procedure (e.g., combined XLIF and posterior fusion), the longer the surgical time.

Complication rates were all over the map from as low as two per cent up to as high as 30 per cent. Of course, it's important to divide those figures between minor and major complications. Problems that are mild or don't last long and go away completely are considered minor. Major problems such as dural tears, blood clots, and heart attacks can present many more long-term health issues.

Dural tears refer to damage of the very thin lining around the spinal cord. This can be a serious complication

resulting in cerebrospinal fluid (CSF) leaking out. Cerebrospinal fluid is the fluid that bathes and protects the brain and spinal cord. Any leakage can lead to much more serious problems. Dural tears were most often reported in association with posterior lumbar fusion.

There were isolated cases of major and minor problems in all groups. The most common complication present with the XLIF approach was muscle weakness of the psoas muscle. The psoas muscle is a hip flexor that the surgeons pass their instruments through when using the XLIF approach. Fortunately, all patients who had this problem recovered fully within the first two months after surgery.

The best news of all were the fusion rates: between 91 and 100 per cent success. Pain and function were significantly improved after fusion with the extreme lateral approach. Outcomes for this new approach continue to improve over time as surgeons' technical skills improve. Complication rates were lowered with the XLIF fusion method. We can expect to see more results reported in the coming years as the lumbar fusion procedure is performed more often using the extreme interbody method.

Reference: Jim A. Youssef, MD, et al. Minimally Invasive Surgery: Lateral Approach Interbody Fusion. In Spine.