



## ACDF vs. Artificial Disc Replacement for Neck Pain Conditions: Video Transcript

Dr. Wissam Asfahani (00:00):

So basically this is a model of the spine and in the neck there are seven bones. C1 is the first bone, c2, c3, c4, C five, C six, and C seven. As part of the spine, you have the vertebral body, which is in the front. Between every vertebral body there is a disc, and these are what we call the posterior elements in the spine. So you have the lamina right here. The spine is processes and the facet joints. Typically, when we talk about a laminectomy or a spinal decompression, we take out the posterior part of the spine, and what this does is create enough room for the spinal cord which runs under these structures. Typically, this is used if you have multi-level disease and you want to try to decompress the spine quickly and it provides a pretty wide decompression of the spine because you're basically unroof the spine in a sense. Occasionally we also supplement a decompression with a fusion by putting in rods and screws into the bone itself and adding in bone graft. So anterior cervical discectomy and fusion, also called a acdf, is probably the most commonly used approach to treat spinal pathology.

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It's an anterior approach, so we expose the spine from the front of the neck. Typically, we make a small incision about an inch in length go down to the front of the spine. Once we have the front of the spine exposed, we expose the discs, we take out the disc. And as you can see on this model, once the disc is removed, you use a little graft piece of bone graft and then supplement it with a titanium plate. With time, the patient's bone will grow into that bone graft, and typically those two bones essentially become one bone. This procedure allows decompression of the spinal cord. It allows decompression of the nerves that are coming out of the spinal cord and that are by a relieving neck pain, as well as what we call radiculopathy, which is the pain that is caused by a pinched nerve in the neck. And it also with the graft and with the titanium plate, it helps to stabilize the spine and thereby reducing neck pain. So when it comes to anterior cervical fusion, as I mentioned, it is probably the most commonly used procedure for treatment of neck pain and radiculopathy. It's actually the gold standard modality, however it is not without its issues. When you fuse a segment of the spine, you put a lot of stress on the

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Levels above and below that fusion, which speeds up the degenerative process at those other levels requiring further surgery down the road of those levels that have not been fused, but that are adjacent to that fused segment. And it is reported to be in the rate of approximately 25% over a 10 year period. So if you've had a neck fusion, chances are within the next 10 years, you have 25% risk that you might need further surgery at the levels above or below that fusion. Also, when you put a bone graft in, not all

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patients fuse, so there's always a risk of failure of that fusion, and that's where disc replacement surgery becomes more exciting because one, you are avoiding doing a fusion, so you do not have the risk of a failed fusion because you're not doing a fusion and because you're not fusing that segment and you're still maintaining motion there is less risk of adjacent segment disease and requiring further surgery in the future.

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And as a matter of fact, there have been several studies that have shown that after approximately four to seven years, when you compare disc replacement surgery versus a cervical fusion, patients are less likely to require more surgery four to seven years down the line if they have had disc replacement surgery versus if they have had a cervical fusion. The approach is exactly the same for both procedures, so we're still going from the front of the spine, but instead of putting in a graft and then a titanium plate, you're putting an artificial disc in between the bone.

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The reason why not everybody is a candidate for disc replacement surgery is because typically it is used for problem involving the disc itself. So if you have a herniated disc that is causing pressure on the spine or on the exiting nerve causing radiculopathy typically that's a good candidate for disc replacement surgery. However, if a patient has neck pains, again, injury, two problems with the joints themselves then that patient is not a good candidate for disc replacement surgery. Also, the FDA has approved a disc replacement surgery for one to two levels, at least at this point in time. So if a patient has more levels of the spine that are involved, they're typically not a candidate for disc replacement surgery.