Multi-level Lumbar Revision with Nanotechnology-Enhanced Pelvic Fixation

Case Presentation – L2-Pelvis Decompression and Lateral Mass Fusion L2-L3 TLIF and Spondy Reduction

Case Highlights

- Revision Surgery
- 5-Level Lateral Mass Fusion with 1-Level TLIF
- Dynamic spondylolisthesis, foraminal stenosis, degenerative disc disease and pseudoarthrosis
- Nanotechnology enhanced fusion devices for bone growth in posterior column

Surgeon Profile

Dr. Alan McGee, Jr.

Fort Wayne, Indiana

Clinical Presentation

A 68-year-old female presented in office with a 6-month history of chronic back pain, prior L4-L5 posterior interbody fusion and L5-S1 decompression complicated by MRSA, which resulted in the removal of hardware. Imaging demonstrated L2-L3 retrolisthesis with stenosis, persistent L4-L5 spondylolisthesis with interbody pseudoarthrosis and L5-S1 spondylolisthesis. Patient failed multiple conservative treatments including physical therapy, activity modification, oral medicines as well as epidural steroid injections.

PRE-OP LATERAL AND A/P X-RAYS

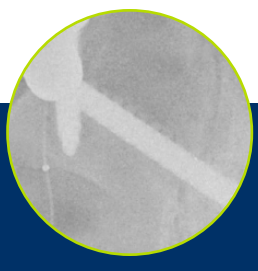
PRE-OP SAGITTAL AND AXIAL MRI

Surgical Procedure

Patient consented and underwent an L2 to pelvis lateral mass fusion, L2-L5 laminectomy, and L2-L3 TLIF. Autograft aspirated from the iliac crest was acquired for stimulated bone growth. Nano pedicle screws were placed bilateral from L2 to pelvis with the use of navigation. Larger nano pedicle screws (8.5mm x 80mm) were placed in the pelvis to enhance pull out strength at the anchor of the construct.

Clinical Outcome

Hardware demonstrates evidence of interbody fusion and robust posterolateral fusion mass. Early evidence of bone formation on and around the screw construct improved the previous instability which was a significant contributing factor to her pain and inactivity given her history of pseudoarthrosis. Also, at 3 months post-operative, patient reported to have no pain or radicular symptoms. Patient is now one-year post-op and pain free since her index operation by another surgeon. She is back to normal activities with only personal limitations.



Discussion

Working up and managing a patient with prior surgery and pseudoarthrosis, as well as infection, can be a daunting task. Patients will have to deal with the comorbidities associated with multiple surgeries as well as persistent pain and disability to address these issues. Given the complication profile as well as additional levels of instability, ensuring a high-quality surgical plan is a must.

Having the ability to incorporate Nanovis' bone growth nanotechnology to ensure rapid bone growth and solid osseous fusion has been extremely beneficial to my practice as well as my patient's outcomes. By utilizing the nano pedicle screws' large diameter and length to bridge the SI joints, I am confident I will obtain a solid SI join arthrodesis as well as a solid base for my long construct fusions. From a radiographic standpoint I can closely monitor the patient's rapid progression of fusion with noting the new bone tissue around the implants.

For challenging cases that are more at risk for pseudoarthrosis, such as revisions, infections, multiple comorbidities, as well as long construct fusions, I feel confident using Nanovis nanotechnology to ensure the best outcomes for my patients.

POST-OP LATERAL & A/P X-RAYS AT 9 MONTHS

NOTED LARGER NANO PEDICLE SCREWS ANCHORED IN THE PELVIS

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