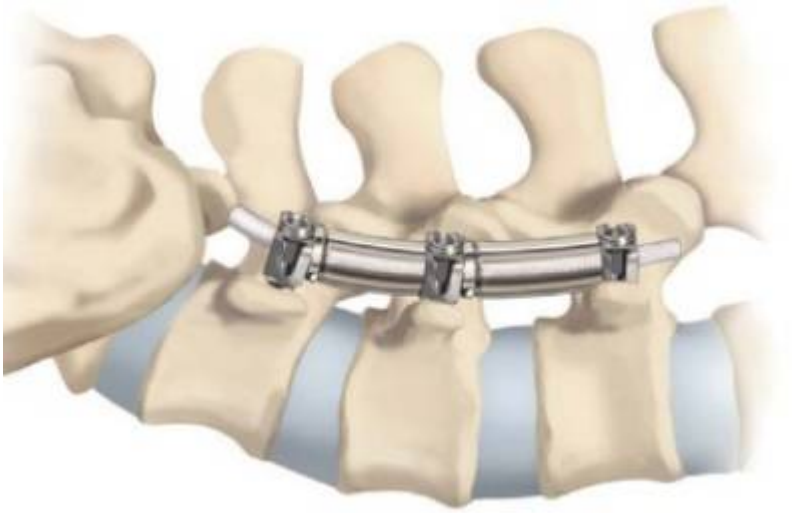
Dynesys



- Immediate chest tube removal at the completion of anterior vertebral tethering is well-tolerated without an increased risk of pulmonary complication
- Outcomes in patients with tether rupture after anterior vertebral tethering for adolescent idiopathic scoliosis: the good, the bad, and the ugly
- Risk factors for screw loosening in patients with lumbar degenerative spondylolisthesis treated with Dynesys dynamic stabilization
- Index-level fusion and adjacent segment disease following dynamic stabilization for lumbar degenerative disc disease: illustrative case
- COMPARISON OF DYNESYS AND HYBRID SYSTEM FOR MULTI-SEGMENTAL LDD
- Anterior vertebral tethering for adolescent idiopathic scoliosis: our initial ten year clinical experience
- Innovative technologies in thoracolumbar and lumbar spine surgery failing to reach standard of care: state-of-art review
- Is The Modular Dynamic System as Effective as Classical Dynamic Systems in Long Segment Dynamic Thoracolumbar Stabilization?

The Dynesys system uses flexible materials to stabilize the affected lumbar region while preserving the natural anatomy of the spine. The procedure allows some motion in the spine and is easy to implant using a familiar surgical approach. The intent of the Dynesys system is to provide spine surgeons with an alternative to the rigid fixation provided by today's systems for spinal fusion. The system is constructed of flexible materials that stabilize the affected vertebral segments. The Dynesys system consists of external spacers made of surgical polyurethane tubing surrounding a polyethylene cord. The dynamic push/pull relationship between the spacers and the cord stabilizes the affected vertebrae. The system is designed to permit careful controlled bending, straightening and twisting movement in the affected joints.

This unique system has several potential advantages over current fusion techniques. The most important is the preservation of the intervertebral discs and anatomy of the affected vertebrae. Also, the Dynesys system is installed Posteriorly. The procedure should also reduce the number of days patients need for recovery.

The non-fusion fixation system Dynesys is safe and effective regarding short-term curative effects for the treatment of ms-LDH [1].

A total of 26 patients (mean age 71 years) with lumbar spinal stenosis and degenerative spondylolisthesis underwent interlaminar decompression and dynamic stabilization with the Dynesys system. Minimum follow-up was 2 years. Operative data, clinical outcome, and plain and flexion/extension radiographs were obtained and compared to preoperative and postoperative data.

Mean leg pain decreased significantly ($P < 0.01$), and mean walking distance improved significantly to more than 1000 m ($P < 0.01$). There were 5 patients (21%) who still had some claudication. A total of 21 patients (87.5%) would undergo the same procedure again. Radiographically, no significant progression of spondylolisthesis could be detected. The implant failure rate was 17%, and none of them were clinically symptomatic.

In elderly patients with spinal stenosis with degenerative spondylolisthesis, dynamic stabilization with the Dynesys system in addition to decompression leads to similar clinical results as seen in established protocols using decompression and fusion with pedicle screws. It maintains enough stability to prevent further progression of spondylolisthesis or instability. With the Dynesys system, no bone grafting is necessary, therefore, donor site morbidity can be avoided [2].

Technique

Technique

Case series

Eligible patients with single-segmental LDH were randomly divided into the discectomy with Dynesys group (group A) and the simple discectomy group (group B). The Oswestry disability index (ODI), visual analog score (VAS), radiological results of intervertebral height and range of motion (ROM) of the treated segment were evaluated pre- and post-operatively in both groups. Operation duration and blood loss were recorded. Complications, reoperation, and mortality were also assessed. All patients received a 2-year follow-up.

Results: 123 (96.1%) participants completed the follow-up. The operation duration and blood loss of group B were significantly lower than those of group A ($p<0.05$). After operation, ODI and VAS were improved significantly in both groups, and there was no significant difference between the two groups immediately after surgery. But a rising trend was found in ODI and VAS of group B, especially after the 1-year follow-up ($p<0.05$). X-rays showed a continuing loss of intervertebral height of the treated segment in group B, while it was preserved in group A ($p<0.05$). ROM of the treated segment was also maintained stable in group A [3]

1)
Wang Q, Liu J, Shi Y, Chen Y, Yu H, Ma J, Ren W, Yang H, Wang H, Xiang L. Short-term effects of a dynamic neutralization system (Dynesys) for multi-segmental lumbar disc herniation. Eur Spine J. 2015 Nov 17. [Epub ahead of print] PubMed PMID: 26577393.
2)

Schnake KJ, Schaeren S, Jeanneret B. Dynamic stabilization in addition to decompression for lumbar spinal stenosis with degenerative spondylolisthesis. Spine (Phila Pa 1976). 2006 Feb 15;31(4):442-9. PubMed PMID: 16481955.
3)
Wei P, Xu Y, Zhang H, Yao Q, Wang L. Evaluation of outcomes of discectomy with a dynamic neutralization system in treatment of lumbar disk herniation. Neurocirugia (Astur : Engl Ed). 2023 Feb 9:S2529-8496(22)00095-8. doi: 10.1016/j.neucie.2022.11.020. Epub ahead of print. PMID: 36774254.