

## **Background**

Transforaminal lumbar interbody fusion (TLIF) can provide enhanced lordosis and arthrodesis in degenerative lumbar scoliosis (DLS). Potential long-term improvements in clinical outcomes, sagittal alignment, and the need for revision surgery may be enhanced by increasing the number of TLIF's.

## **Purpose**

Compare consecutive DLS patients long-term after posterior instrumented arthrodesis using 0, 1, 2, and 3 TLIFs at the base of the construct.

## **Study Design**

Prospective nonrandomized consecutive multi-surgeon outcomes from longitudinal database.

### **Patient Sample:**

81 consecutive patients with DLS who underwent posterior column (Ponte) osteotomies and posterior instrumented fusion (PSF) to S1, from 2004-2014.

## **Outcome measures**

Clinical data: complications, pre-op and long-term Oswestry (ODI), visual analog pain scores (VAS-back, VAS-leg), pain medication requirements. Radiographic data: pelvic incidence (PI), pre-op and long-term lordosis (T12-S1 and L2-S1), sagittal vertebral axis (SVA), and number and level of TLIF disc angles L2-S1. Statistical methods: paired t test, Welch 2 sample t-test, unpaired blot, Fisher's exact test, and linear regression.

## Methods

Prospective clinical and radiographic data were collected on all patients undergoing surgery in a multi-surgeon longitudinal database, with ongoing continual data updates. Inclusion criteria: Adult DLS with stenosis and listhesis, with or without sagittal imbalance, fused at least 6 motion segments to the sacrum, with a minimum 2 year follow-up. Surgery included laminectomy, posterior column osteotomies through the deformity, TLIF at 0 – 3 levels with a single cage, PSF and instrumentation stabilized distally with iliac fixation. Excluded: 3-column osteotomies, anterior or lateral interbody fusions. The cohort was divided into groups for analysis based on the number of TLIF levels: 0, 1, 2, and 3.

## Results

Follow-up averaged 58 months (24-121 months) for 81 patients; age 68 years (50-85 years); 19 patients (23%) had prior lumbar surgery; smokers-10. PSF averaged 8.4 levels (6-16 levels). TLIF Groups: 0 TLIF- 14, 1 TLIF- 23, 2 TLIF- 28, 3 TLIF- 26. There was no difference between groups for PI (55°), pre-op lordosis (T12-S1: 36°, L2-S1: 39°), sagittal balance (+5.7cm; 81pts), or disc angles L2-S1. All TLIF groups achieved similar long-term lordosis (T12-S1: 49°; L2-S1: 46°) and sagittal balance (+4.6cm; 11pts) (p=0.09), without difference in infection (2), nonunion (11), or revision surgery (18). Individual disc spaces L3-S1 maintained similar long-term angles in the 0-TLIF and 3 TLIF groups: L3-4 (-3°), L4-5 (-10°), L5-S1 (-13°). VAS, ODI, pain med use were similar pre-op and improved with surgery for all TLIF groups (p