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AxiaLIF® Complications in 285 Consecutive Cases
W.D. Smith1, W.B. Rodgers2, J. Patterson2, K. Malone1
1Nevada Neurosciences Institute Research Foundation, Research, Las Vegas, NV, USA, 2Spine Midwest Research, Jefferson City, MO, USA

Introduction: The minimally invasive, pre-sacral AxiaLIF system for L5-S1 discectomy and fusion introduced in 2006 has been used in more than 5000 cases worldwide and long-term follow-up and complication data is emerging. This work focuses on our experience with the procedure in two surgeons' first 285 L5-S1 AxiaLIF cases, namely outlining complications encountered.

Methods: 285 patients underwent the AxiaLIF procedure for L5-S1 discectomy and fusion by one neurosurgeon and one orthopedic surgeon working independently. Results were tabulated by chart review.

Results: The patients studied were 51% female, with an average age of 56 years old. 33% were smokers, and 19% had undergone a prior lumbar fusion surgery. The primary indications for L5-S1 treatment were HNP (24%), Post-laminectomy syndrome (21%), and DDD (16%). Posterior fixation included unilateral or bilateral pedicle screws (73%), 25% had bilateral facet screws, and 2% were stand-alone.

Complications:

Wound Complications: Healing 6 cases (2.1%); Deep wound infection 4 cases (1.4%) We observed no bowel injuries and attribute these cases to normal healing complications in comparable distributions seen in other surgical procedures.

Retropertitoneal Hematoma: 5 cases (1.8%) These instances were observed more frequently in the early patient population (4/5 in first 100 cases) where dissection of the pre-sacral fat was not performed as precisely as in the later cases, often resulting in the disruption of small vasculature leading to post-operative retropertitoneal hematomas. Of these, only two required re-exploration to drain (figure 1).

Graft Complications: 4 cases (1.4%) We observed four cases of graft extrusion through the annulus on post-operative CT. One required revision due to extrusion into the dura at L4-5 (Figure 2).

The other three were asymptomatic and required no revision.
Vertebral Body Fracture: 2 patients (< 1%) The two cases of S1 body fracture were due to placement of the AxiaLIF screw in the extreme anterior body which were both revised.

Posterior Hardware Failure: Painful Hardware: 4 patients (1.4%); Fractured Facet Screws: 2 cases (< 1%) Painful bilateral pedicle screws were revised and the facet screws fractured after falls in each of the patients, with revision unnecessary.

Pseudoarthrosis: 11 cases (3.9%); Of those that developed pseudoarthroses, most presented early (within 6-months) with schmorl’s nodes or radiolucencies surrounding the AxiaLIF implants, and 10/11 were smokers.

Death: 2 cases (< 1%) Due to post-operative PE and MI related to pre-existing comorbidities.

Conclusions: The rates of these complications are comparable and to complications published on other minimally invasive and open techniques for L5-S1 discectomy and fusion (namely ALIF). Long-term outcome results will be needed for full comparisons of these procedures.