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**AxialLIF<sup>(r)</sup> Complications in 285 Consecutive Cases**

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**Introduction:** The minimally invasive, pre-sacral AxialLIF 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 AxialLIF cases, namely outlining complications encountered.

**Methods:** 285 patients underwent the AxialLIF 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:**

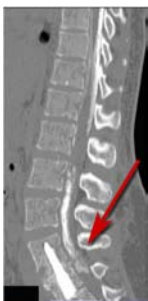
**Wound Complications: Healing 6 cases (2.1%); Deep wound infection 4 cases (1.4%)** We observed no bowel injuries and attribute these cases to normal healing complications in comparable distributions seen in other surgical procedures.

**Retroperitoneal 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 retroperitoneal hematomas. Of these, only two required re-exploration to drain (figure 1).



[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).



[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.