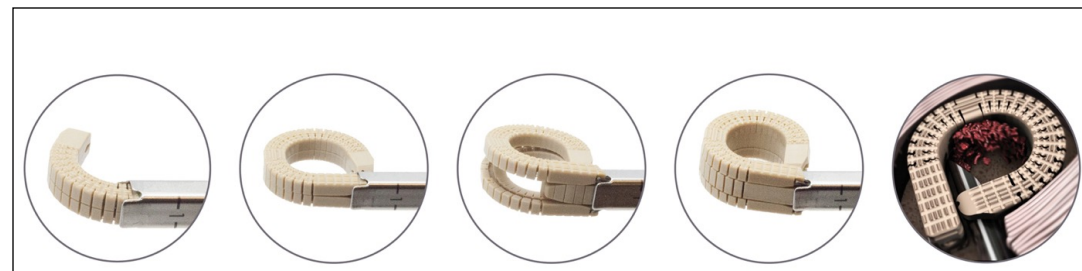


Introduction

Anterior and lateral approaches to the lumbar disc-space facilitate the placement of large interbody grafts, but have the potential for approach-related complications. Posterior approaches (PLIF/TLIF) have relatively little approach-related morbidity, but disc-space access and interbody device size is limited. This limitation has led to the development of many vertically-expandable interbody devices. In this study, we evaluate the safety and efficacy of implanting a lumbar interbody device that expands in both the axial and sagittal planes, thus enlarging the axial footprint achievable from a traditional posterior approach.



Learning Objectives

To evaluate the safety and efficacy of implanting a lumbar interbody device with a large circular footprint through a narrow posterior surgical corridor using novel multi-directional expanding interbody technology.

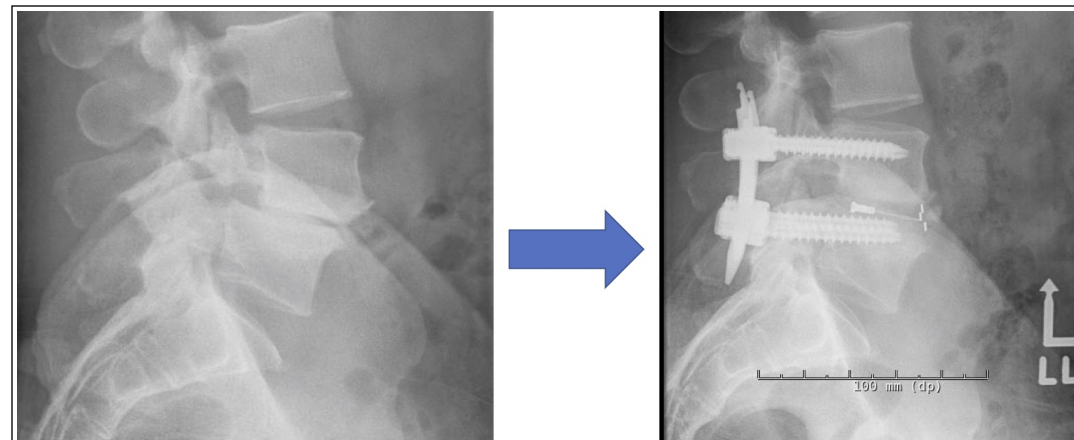
Methods

A retrospective review was completed evaluating MIS-TLIFs performed by the senior author (RF) using a multi-directional expandable interbody device shown above (Luna 3D Interbody, Benvenue Medical).

Radiographic measurements were based on pre-/post- operative upright X-rays with flexion/extension views. Patient reported outcome measures were also collected.

Results

Forty-five consecutive patients were treated over 16 months. Analysis was limited to patients (n=31) with at least 6 month post-operative follow up (mean follow up 309 days, 52% women, mean age 61). All but one patient experienced improvement in pain scores (VAS pre-op mean 7.0, post-op mean 2.8, $p < 0.001$). Disability scores improved for all patients (ODI pre-op mean 40.2, post-op mean 17.3, $p < 0.001$). All patients with follow up >12 months (n=25)



Results (cont.)

had evidence of successful arthrodesis on dynamic flexion-extension radiographs. When present, spondylolisthesis was reduced by a mean 69.5% (4 mm). On average, disc height increased by 4.5mm and lordosis at the operative level increased by 3.3°. No instances of graft subsidence or hardware failure occurred. Complications occurred in two separate instances (1 durotomy, 1 graft migration).

| LUNA 3D Cohort | Pre Op | Post Op | Change |
|-----------------------------|--------|---------|-----------|
| Pain (NRPS) | 7.0 | 2.8 | 4.2 |
| Disability (ODI) | 40.2 | 17.3 | 23.0 |
| Lordosis at level (degrees) | 11.2 | 14.4 | 3.3 |
| Lumbar lordosis (degrees) | 48.9 | 52.6 | 3.7 |
| Spondylolisthesis (mm) | 7.2 | 3.2 | 4 (69.5%) |

Conclusion

In this case series, placement of a multi-expandable interbody cage via a MIS TLIF was safe and effective. This study is ongoing with the intent of better understanding the clinical and radiographic outcomes that can be reliably achieved with multi-expandable technology.

Disclosure: Richard Fessler is a consultant for Benvenue Medical, Inc.