

# Subsidence After Lateral Lumbar Interbody Fusion Using Titanium Interbody Cages

Mauro C. M. Tavares Junior, MD

Jacob Birlingmair, MD

Joshua T. Bunch, MD

Brandon B. Carlson, MD, MPH

**SMISS Annual Forum**

**September 29-2022 | Las Vegas, NV**

**ePoster #67**

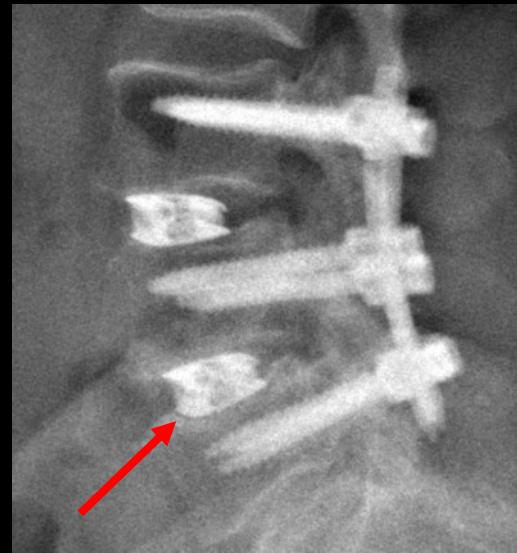
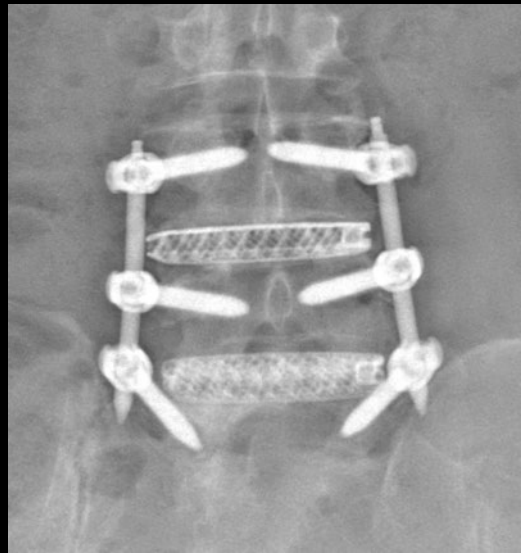
**No disclosures relevant to this study**

# Background

- LLIF is a powerful technique achieving indirect neural decompression, high fusion rates, deformity correction, and lordosis restoration.
- Implant subsidence may result from patient factors/biology, implant material, implant size and/or surgical technique.
- LLIF implant subsidence is reported between 10-20%.

# Objective

Determine cage subsidence rates after LLIF with titanium cages and analyze patient and surgical factors that may correlate with subsidence.



# Methods

- Retrospective review, consecutive case series
- Single academic center ; two fellowship-trained spine surgeons
- November 2019 to May 2022

Inclusion: All LLIF cases, titanium cages

Exclusion: Spondylodiskitis, compression fracture(s), PEEK cages

## Demographics:

-age / gender / BMI

## History:

- diabetes
- corticosteroid use
- nicotine
- alcohol
- preop osteoporosis meds

## Surgical:

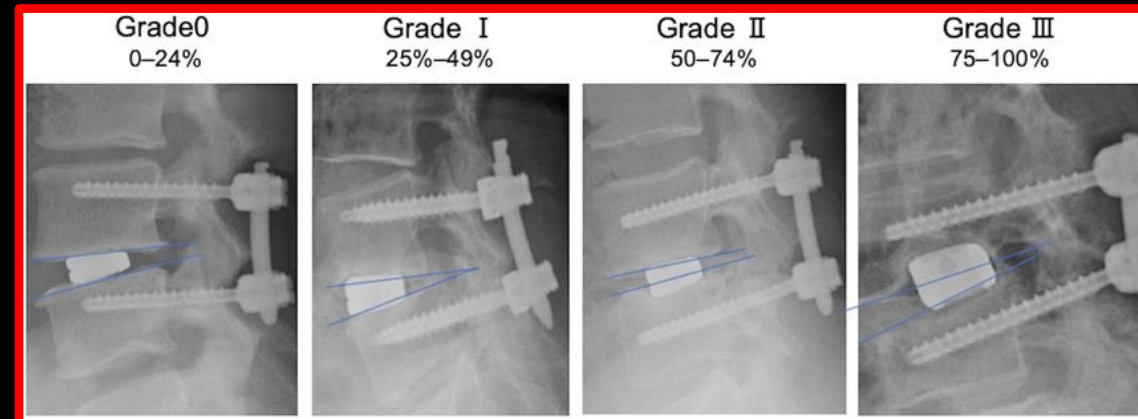
- Op time / EBL / LOS
- use of endplate protective blades (shims) during cage insertion

## Radiographic:

- L1 bone attenuation on CT (Hounsfield Units)
- Subsidence & **Marchi Grade**

## Implants:

- cage dimensions
- cage material
- presence of posterior fixation



# Results

- 148 (83F; 65M) consecutive cases

## 192 LLIFs

- All 3D-printed porous titanium
- Cage Depths:
  - 16mm (1)
  - 18mm (177)
  - 22mm (14)

## 4.7% (9) cage subsidence rate

- Grade 0 (7 cages)
- Grade I (2 cages)
- No reoperations for subsidence.

Demographics	
Age	65.6 ± 10yrs (37-89)
BMI	29.6 ± 4.8 (19-52)
L1 bone density (HU)	151 ± 52 HU (70-317)
Patient Factors: n (%)	
Diabetes, n (%)	25 (16.9%)
Corticosteroid use	14 (9.5%)
Nicotine use	11 (7.4%)
Alcohol use	91 (62%)
Preop osteoporosis Rx	3 (2%)

# Results

No statistical correlations between subsidence and:

- Use of endplate protective shims (96.6% of cases)
- Gender, diabetes, corticosteroid use, nicotine/EtOH use
- Preoperative osteoporosis medications
- Cage depths (16mm, 18mm 22mm)

All  $P > 0.05$

# Discussion & Conclusions

In 192 LLIFs performed in 148 pts, we observed a **4.7% subsidence rate (Grade 0 or I)** and there with **no reoperations**.

- Lower than published studies using titanium LLIF cages

Low (4.7%) subsidence rates are achievable using porous titanium cages, regardless of patient factors, surgical techniques or cage size/dimensions.

Future, large-series, prospective studies should aim to define the primary factors associated LLIF cage subsidence.

Thank you for your attention.



Email Questions to: [BCARLSON@KUMC.EDU](mailto:BCARLSON@KUMC.EDU)