Integrated Interbody Fusion in Multi-level Cervical Constructs in Clinical Practice

E-Poster #1870

The information presented does not meet FDA clearance indications for the STALIF C device and represents an off-label use.
Conflict of Interests/Disclosures

Centinel Spine: Consulting, Royalty
RTI: Royalty
Paradigm Spine: Consulting, Stock
Orthofix: Royalty
St. Jude Medical: Consulting
Medtronic: Neuromodulation Consulting
INTRODUCTION

Clinical Disadvantages of Traditional ACDF

- **Adjacent level disease**
  - 25.9% of cervical fusion patients predicted to have second surgery within 10 years\(^1\)
  - Fusion causes increased compensation at the adjacent segments, which is postulated to accelerate the degenerative process

- **Hardware (plate and screws) may impact adjacent level ossification development (ALOD)**
  - The risk of ALOD range from 41% to 64\%\(^2\)

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\(^{1}\) Hilibrand AS et al. Spine, 1997
INTRODUCTION

**Objective:** The purpose of the study was to retrospectively evaluate patients with symptomatic cervical degenerative disc disease with radiculopathy and/or myelopathy surgically treated from single-to-multiple levels with a cervical integrated interbody fusion device with compressive fixation between the C3-C7 levels.

The STALIF C and STALIF C-Ti devices are cleared for use with autograft or allograft at 1 or 2 contiguous levels from C2-T1.
MATERIALS AND METHODS

- Patients underwent standard anterior cervical discectomy. Fusion was achieved with implantation of either a PEEK, PEEK with titanium coating or 3-D printed titanium spacer and fixation utilizing lag screws with one screw cephalad and two screws caudal.

- 203 consecutive patients (53.4±10.7 years) implanted from 2011 to 2016:
  - 1 level STALIF C: 74 patients (13 previous fusion)
  - 2-level STALIF C: 68 patients (9 previous fusion)
  - 3-level STALIF C: 39 patients (5 previous fusion)
  - 4-level STALIF C: 17 patients (3 previous fusion)
  - 5-level STALIF C: 4 patients (4 previous fusion)
  - 6-level STALIF C: 1 patient (1 previous fusion)

- Patients were assessed pre-operatively and post-operatively at 6 weeks, 3, 6, 12, and 24 months.
Results

• Hospital stay was minimal with 92% of patients being released the following day.

• The revision surgery patients showed better alignment than pre-operatively with static plates. There were no signs of heterotopic ossification of the ligaments or vertebral bodies.

• At 24 months, none of the patients reported chronic dysphagia.

• There were no device failures out to last follow-up. No cases of subsidence or migration.

• 86% of patients were able to return to the same level of work or activity as prior to surgery.
Case Example – 49yo, female, full-time employed

Diagnosis:
- Multi-level cervical spondylosis: C5-C6, C6-C7
- Spinal canal stenosis
- Bilateral severe neuroforaminal narrowing
- Central disc protrusion C5-C6 with cord compression
- Osteopenia

Surgical approach
- Anterior cervical decompression and fusion at C5-C6, C6-C7
Case Example
Presented:
• 64 yo, female
• Failed therapy

Symptoms:
• Absent biceps reflexes
• Weakness deltoid and biceps bilaterally
• Lhermitte phenomenon with extension

Diagnosis:
• Multi-level cervical spondylosis C4-C6 with frank cord compression
• Neural foraminal narrowing C3-C7
• Loss of lordosis

Surgical approach
Anterior column reconstruction with restoration of sagittal balance and lordosis
Summary Points

- Integrated interbody fusion with lag compressive fixation can provide equivalent fixation to traditional cage and plate fixation.

- Advantages to individual fixation by level with no profile include:
  - Less dissection leading to lower incidence of dysphagia
  - Correction on a per level basis allowing for better correction
  - Compressive fixation at each level allowing for better fusion

- Titanium plasma spray or 3-D printed titanium spacers enhances bony on-growth better than traditional PEEK spacer designs reducing biofilm.

- The opportunity to either revise a previous ACDF with ACP or add to a pre-existing ACDF offers greater flexibility to treat the index level pathology rather than global construct approach.

- The benefit of lag-design to provide better fixation and more accurate lordotic curve maintenance of the cervical spine. Open reduction and internal fixation.