

TECHNICAL BRIEF – TRUSS IMPLANT TECHNOLOGY EVALUATION OF SUBSIDENCE

QUICK FACTS

- The 4WEB CSTS implants were evaluated for radiographic evidence of subsidence in a cohort of 30 subjects (58 levels).
- Subsidence was measured as the change in disc height and the change in the functional spinal unit (FSU) relative to the first post-op x-ray.
- There was no treated level where subsidence measured >2mm at 12 months relative to the first post-op visit.
- Average decrease in measured disc height at all levels was 0.5mm through 12 months.

INTRODUCTION

Anterior cervical interbody fusion is a common and generally successful procedure. However, subsidence of the supportive graft or interbody implant remains a well known, even expected occurrence in anterior neck surgery with subsidence frequently described in the literature as >2mm.¹ Interbody fusion spinal device subsidence may result in loss of correction, increased neck pain and recurrence of preoperative symptoms.²

PURPOSE

The purpose of this technical brief is to describe the subsidence outcomes of a single surgeon, retrospective study of patients implanted with a 4WEB® Cervical Spine Truss System interbody fusion device (CSTS, 4WEB Medical, Frisco, TX).

METHODS

- The 4WEB CSTS interbody device was implanted at 58 levels in 30 patients to promote cervical fusion.
- Patients were followed for up to 12 months.
- Subsidence was quantified using previously validated computer-assisted methods (Medical Metrics, Inc, Houston TX) (Figure 1).³
- Subsidence was measured as the change in disc height and change in the functional spinal unit (FSU) relative to the first x-ray.

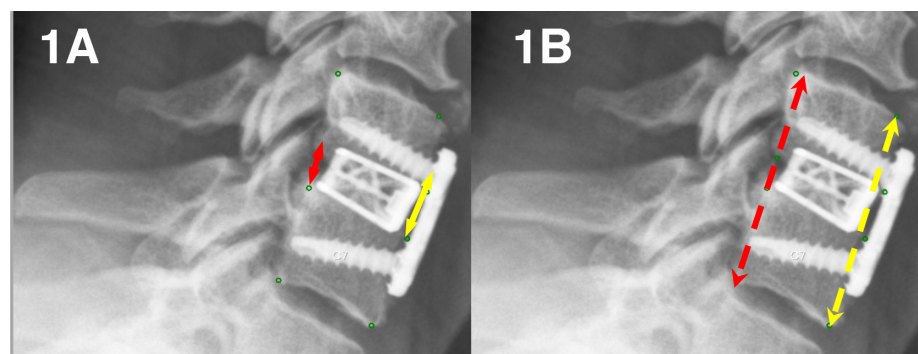


Figure 1A: Disc height was measured at the posterior-most aspect of the disc space (red arrow, left image) and at the anterior-most aspect of the disc space (yellow arrow, left image).

Figure 1B: FSU height was measured at the posterior-most aspect of the treated segment (dashed red arrow, right image) and at the anterior-most aspect of the treated segment (dashed yellow arrow, right image).

RESULTS

- On average, there was a significant decrease in subsidence that was maintained over time.
- There was no level where subsidence measured $>2\text{mm}$ at 12 months relative to the first post-op visit.
- Subsidence was neither dependent on the time post surgery nor the number of levels treated.
- Average decrease in disc height at all levels was 0.5mm at all time points through 12 months post-op.

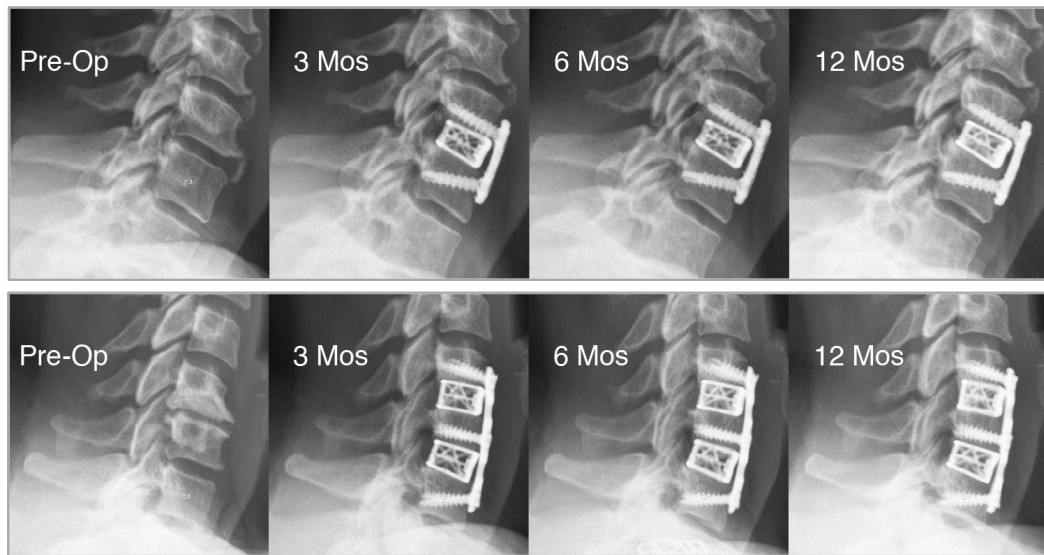


Figure 2: Radiographic examples of one- and two-level cervical fusion cases. The Pre-Op, 3, 6 and 12 month neutral-lateral radiographs show the increase in spacing between vertebral bodies that was achieved at the time of surgery, and the maintenance of this increased spacing over-time. Ingrowth of bone into and around the cage is also radiographically evident.

SUMMARY

Average subsidence at all levels was under 0.5mm at all time points through 12 months when using the 4WEB CSTS. Measured as a collapse in disc space following treatment, subsidence was less than 2mm at all levels in all patients. These results contrast subsidence previously reported in studies of other interbody devices.^{1,4,5} The preliminary results support the potential advantages of a truss-based, modulus matched, titanium implant, for one- and two-level fusions.

REFERENCES:

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