



Anterior Cervical Discectomy and Fusion (ACDF): Comparison between zero profile implants to an anterior cervical plate and spacer.

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Introduction

Interposition grafts combined with anterior plating currently remain the gold standard for anterior cervical discectomy and fusion. The use of anterior plates increases fusion rates, but may be associated with higher rates of postoperative dysphagia. The goal of the current study was to determine the clinical and radiological outcomes following anterior cervical discectomy and fusion (ACDF) using zero-profile anchored spacers versus standard interposition grafts with anterior plating.

Methods

In a retrospective cohort study, A total of 53 male and 51 female consecutive patients (164 total operated levels) who underwent ACDF between 2007 and 2011 were included in the current study. The mean clinical follow-up was 15.7 ± 1.2 (SEM) months for patient with zero-profile implants and 14.8 ± 2.1 months for patients with conventional ACDF with anterior plating. Patient demographics, operative details, clinical outcome, complications and radiographic imaging were reviewed. Dysphagia was determined using Bazaz criteria.

Results

Clinical outcome scores were similar between both groups as measured by the modified JOA and Nurick scores. Zero-profile constructs gave rise to significantly less prevertebral soft tissue swelling compared to constructs with anterior plates postoperatively (15.74 ± 0.52 as compared to 20.48 ± 0.85 mm, $p < 0.001$) and at the time of last follow-up (10.88 ± 0.39 mm vs. 13.72 ± 0.67 mm, $p < 0.001$). There was a significant difference in the incidence of dysphagia at latest follow-up between cohorts as well (1.5% vs. 20%, $p=0.001$, zero-profile vs. anterior plate respectively).

Dysphagia (comparison between groups)

Dysphagia (comparison between groups)	All cases (104 pts)	ROI-C & Zero-P (69 pts)	Anterior Plate (35 pts)	P value (Intergroup difference)
Immediate post-operative Dysphagia Score	0.70 ± 0.09	0.85 ± 0.12	0.40 ± 0.08	0.018 *
Latest Follow-up Dysphagia Score	0.14 ± 0.03	0.10 ± 0.04	0.20 ± 0.06	0.211
Dysphagia Score improvement	0.56 ± 0.08	0.75 ± 0.11	0.20 ± 0.69	0.002 *
Immediate post-operative Dysphagia incidence	33 (31.7%)	19 (27.9%)	14 (40.0%)	0.214
Latest Follow-up Dysphagia incidence	8 (7.7%)	1 (1.5%)	7 (20.0%)	0.001 *
Dysphagia incidence improvement	25 (24%)	18 (26.1%)	7 (20.0%)	0.468

Pre-vertebral soft tissue thickness (comparison between groups)

Pre-vertebral soft tissue thickness (comparison between groups)	All cases (104 pts)	ROI-C & Zero-P (69 pts)	Anterior Plate (35 pts)	P value (Intergroup difference)
Immediate post-operative tissue thickness	17.30 ± 0.50	15.74 ± 0.52	20.48 ± 0.85	<0.0001 *
Latest follow-up tissue thickness	11.81 ± 0.36	10.88 ± 0.39	13.72 ± 0.67	<0.0001 *
Tissue thickness reduction	5.41 ± 0.42	4.90 ± 0.47	6.52 ± 0.84	0.073

Conclusions

Zero-profile implants lead to functional outcomes similar to standard anterior plate constructs. Omission of an anterior locking plate may decrease the risk of postoperative dysphagia. Further studies are required to delineate the pathophysiological mechanisms underlying postoperative dysphagia after ACDF.

Learning Objectives

To learn about dysphagia associated with different interbody devices used in ACDF

References

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