

Comparative Clinical Outcomes of Minimally Invasive Transforaminal Lumbar Interbody Fusion Patients Treated with Expandable versus Static Spacers

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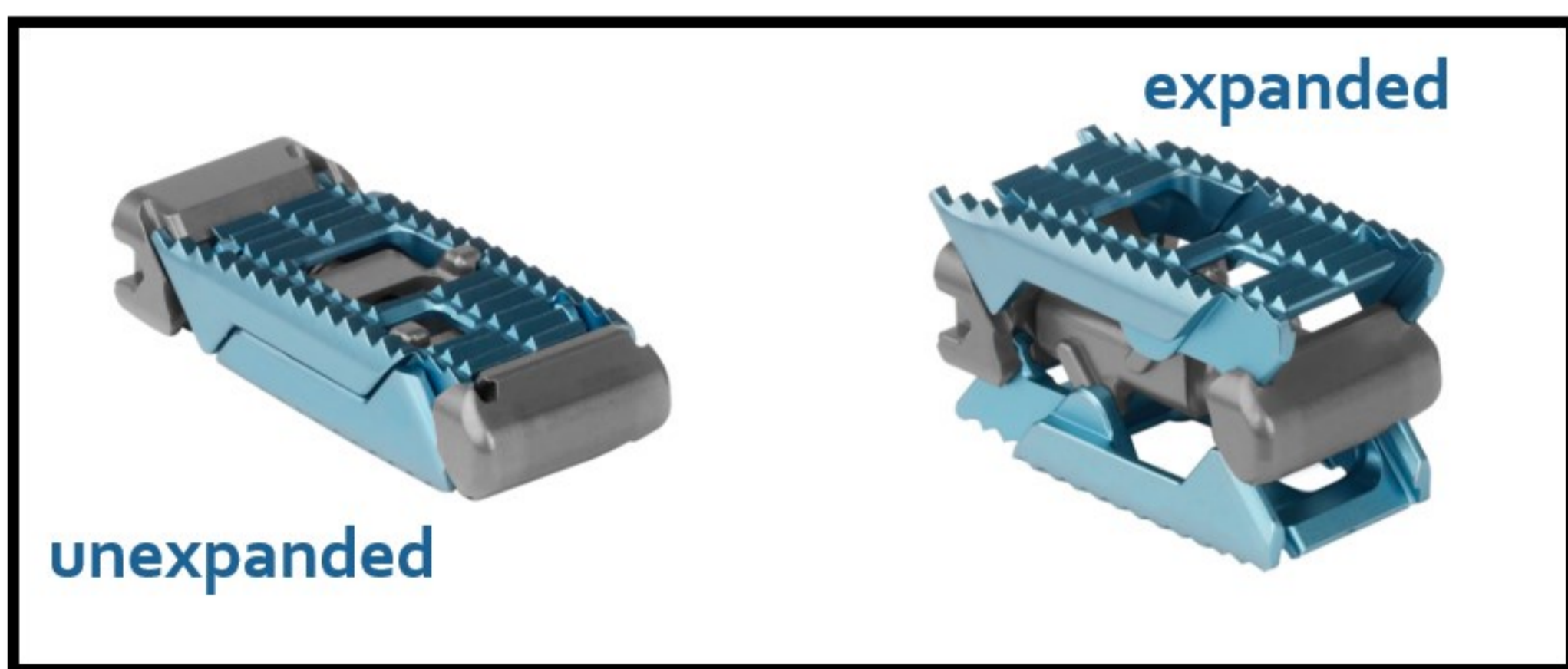


Introduction

Interbody spacers for transforaminal lumbar interbody fusion (TLIF) offer favorable clinical results. Expandable devices allow in situ expansion to optimize fit and mitigate iatrogenic endplate damage occurring during trialing/impaction seen in static devices.

Objective

This study compared clinical/radiographic outcomes between static and expandable spacers following TLIF.



Materials and Methods

Retrospective chart review at a single site

- 99 patients - TLIF using one of two interbody spacers
- 48 patients received a static peek interbody spacer
- 51 received an expandable titanium interbody spacer
- In this study site, by standard of care, only patients reporting recurrence of low back pain were recommended for x-rays past 3-6 months or if medically necessary

Data Collected

- Surgical data
- Oswestry Disability Index (ODI)
- Visual Analog Scale (VAS)
- Radiographs
- Complications

Statistical Analysis

- Complication rates were compared using Fisher's exact test
- Patient reported outcomes compared with paired samples t test

Perioperative Results

Patients treated with expandable interbody spacers had significantly ($p < 0.05$)

- lower blood loss
- shorter hospital stays
- Operating room time was 20 minutes lower for patients treated with expandable interbody spacers versus static spacer patients
- difference was not significant ($p = 0.07$)

	Static	Expandable
Blood loss	81.7cc	36.2cc
Hospital stays	2.2 days	1.4 days
OR time	149.5 min	130.6 min

Radiographic Measurement Results

Disc/neuroforaminal height increased significantly ($p < 0.05$) from baseline at 3-month follow-up for both groups

- although the expandable group had significantly greater neuroforaminal height
- (22.3 vs. 20.1 mm)

Patient Reported Outcomes Results

At 3-month and final follow-up ODI scores

- expandable implant patients (14.4)
- static implant patients (22.6)
- significantly lower for expandable group ($p < 0.05$)

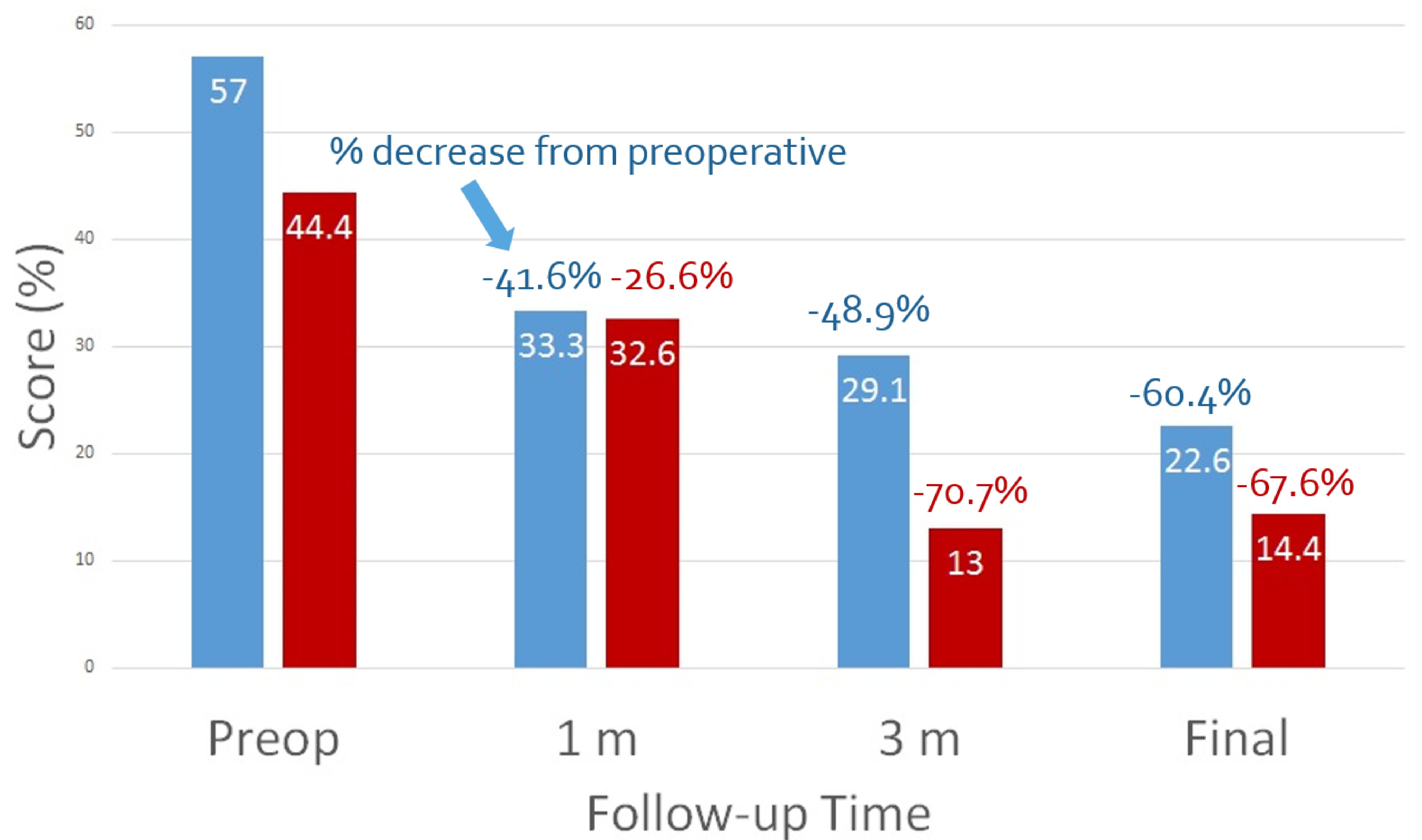
Conclusion

Patients treated with expandable interbody fusion spacers used in a transforaminal approach demonstrated significantly less blood loss, shorter length of stay, lower ODI scores, and significantly fewer complications at final follow-up than patients treated with static spacers.

		Preop	1 m	3 m	Final	Preop to Final p Value
Static	ODI (%)	57±17.4	33.3±16.7	29.1±21	22.6±16.6	<0.001*
	VAS back	6.0±3.2	2.8±2	2.9±2.4	2.2±2	<0.001*
	VAS leg	7.2±2.6	2.9±2.6	2.3±2.5	1.9±1.8	<0.001*
Expandable	ODI (%)	44.4±11.9	32.6±18.8	13±11.7	14.4±13.7	<0.001*
	VAS back	6.2±2.5	3.0±2.3	2.7±2.1	2.3±1.9	<0.001*
	VAS leg	6.2±3	2.3±2.4	1.6±1.8	2.2±2.4	<0.001*

Oswestry Disability Index

■ Static ■ Expandable



Recurrence of Pain Results

There was a significant ($p < 0.05$) difference in complication rates between static and expandable groups

3 of 51 (6%) expandable patients had to follow-up for recurrence of pain, compared to 12 of 48 (25%) static patients

Key words

Expandable interbody spacer • Static interbody spacer • Minimally invasive transforaminal lumbar interbody fusion

Frequency of patient return for recurrence of pain

■ Static ■ Expandable

