























Lumbar Microdiscectomy: Sequestrectomy vs. Formal Discectomy

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Intervertebral Disc Herniation

RADICULOPATHY

- Mechanical compression
- Inflammation

MICRODISCECTOMY

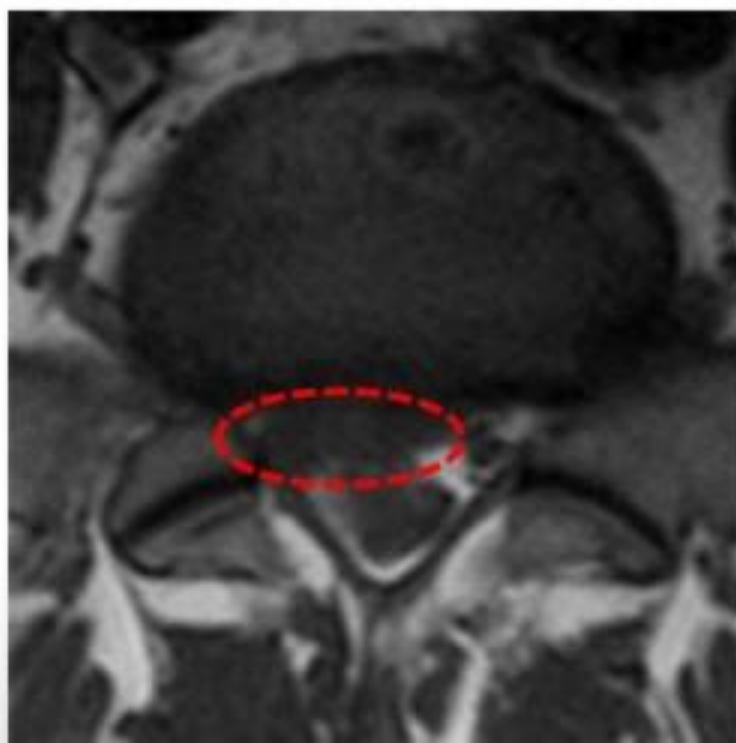
- Excellent clinical results
- Minimal Risk



OPTIMAL TECHNIQUE?

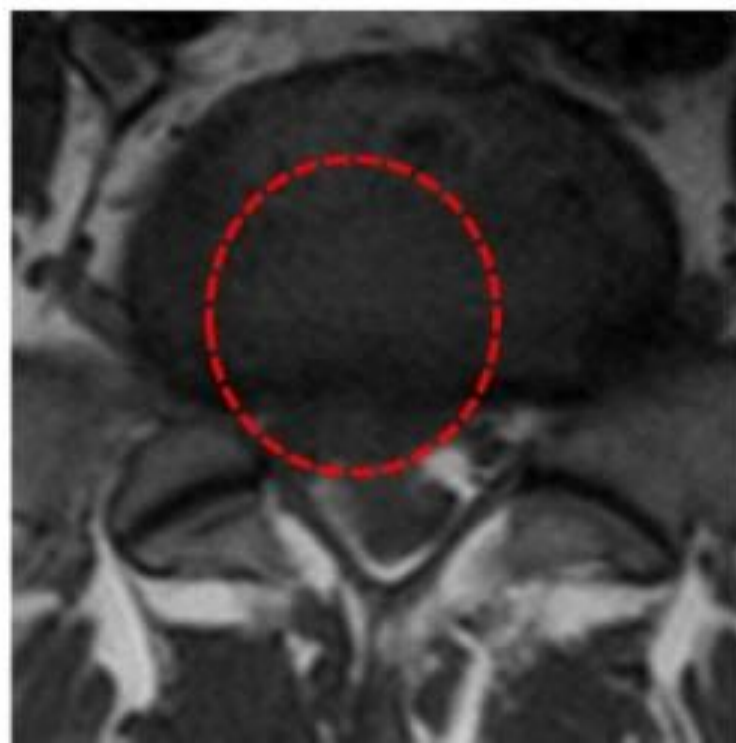
Sequestrectomy?

- Removal of herniated material only



Formal Discectomy?

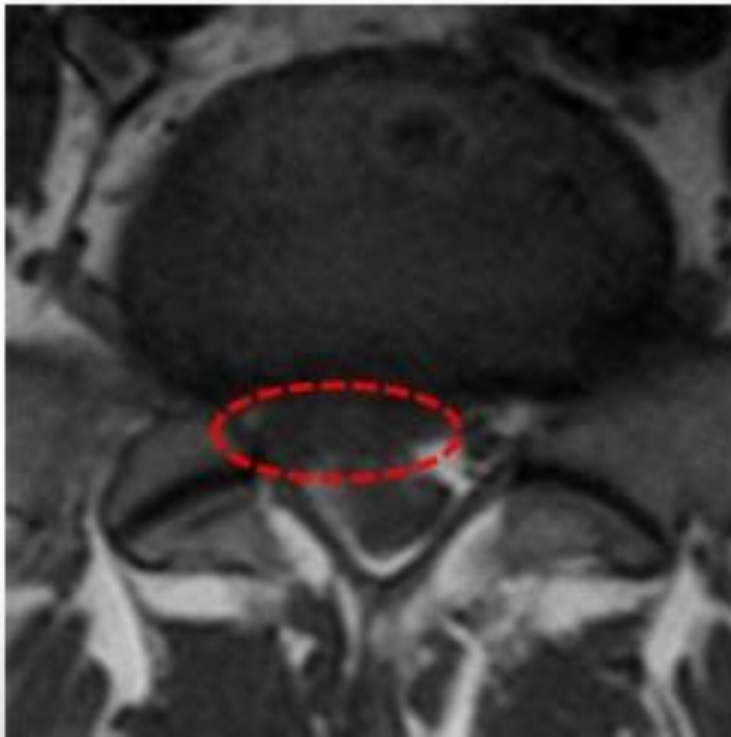
- Annular incision, endplate curettage



OPTIMAL TECHNIQUE?

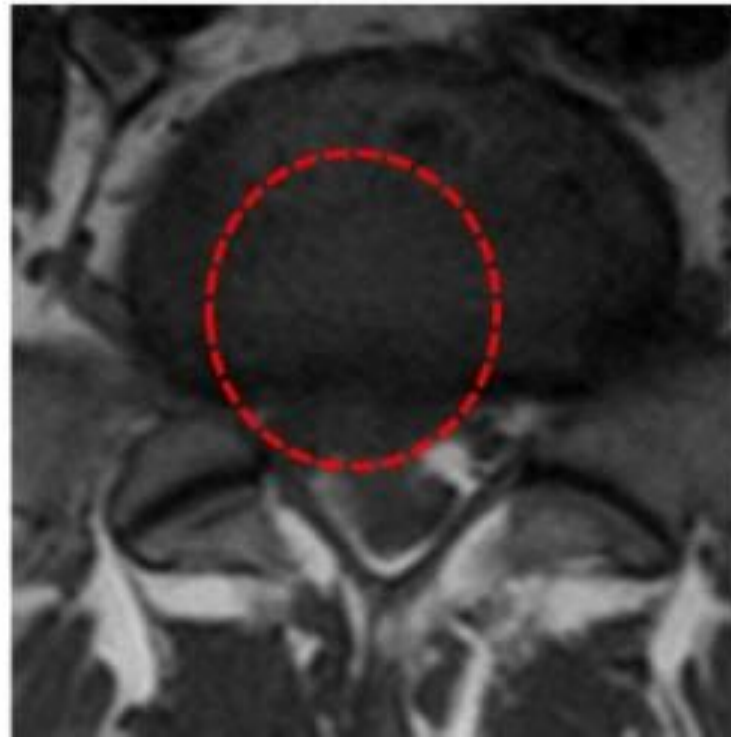
BENEFIT

- Less post-op pain
- Preserved architecture

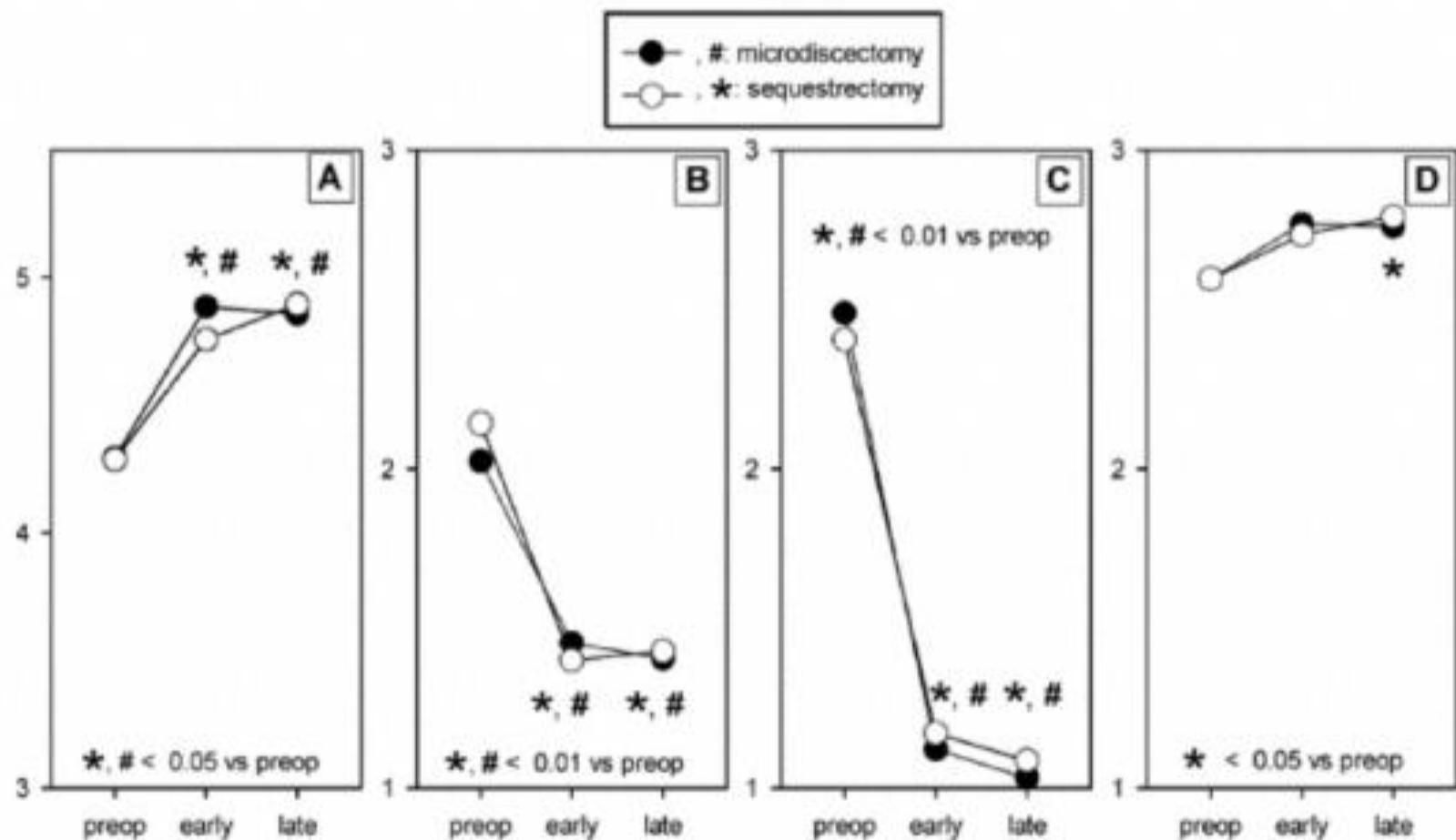


BENEFIT

- Less recurrence



Background



1. Results of standardized clinical investigation. A, Motor grades ranging from 0 to 5; B, sensory index; C, SLR test; D, reflex ir

Objective

To evaluate the differences between conventional discectomy and sequestrectomy to manage herniated lumbar IVD causing radiculopathy

Perioperative findings

Clinical outcome

Need for repeated operation





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Methods

Retrospective analysis of consecutively treated patients undergoing surgery for LDH with radiculopathy

- Age over 18
- No previous spine operations
- No acute trauma, neoplasm, spinal infection

Chart Review

- Demographic – age, gender, smoking status, BMI
- Radiographic – level of disease
- Outcomes – clinical resolution, need for reoperation

Surgical technique as factor ($\alpha = 0.05$)

- Continuous (ANOVA)
- Categorical (Pearson likelihood ratio)

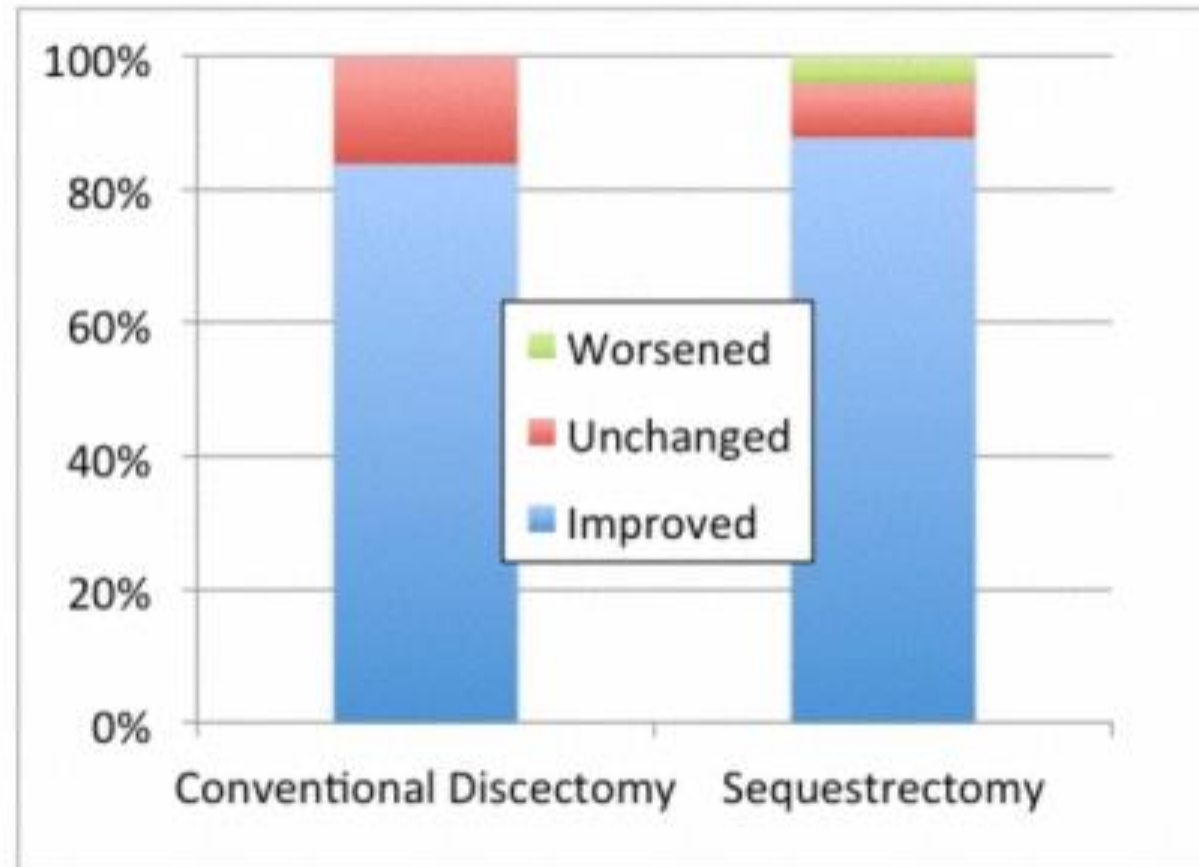
Results - Demographics

	<i>Conventional Discectomy</i>	<i>Sequestrectomy</i>	<i>p-value</i>
Number	98	74	
Age (yrs)	44.1 ± 1.7	44.4 ± 1.4	0.90
Gender (% male)	63%	64%	0.86
Body Mass Index	28.0 ± 0.9	28.8 ± 0.7	0.44
Smoking Status	34%	20%	0.04
Operative Level (n)			
L2/3	1	0	
L3/4	7	4	
L4/5	41	35	0.64
L5/S1	49	35	

Results - Intraoperative Data

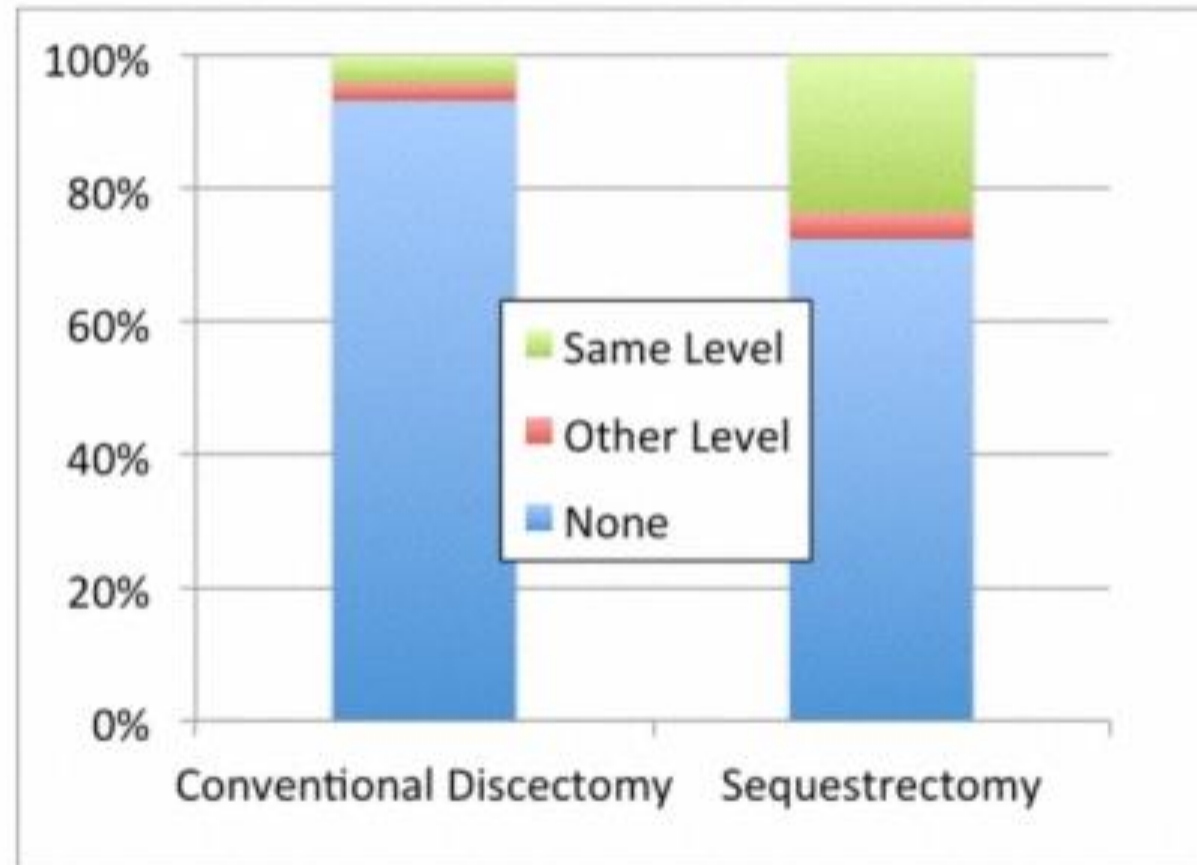
	<i>Conventional Discectomy</i>	<i>Sequestrectomy</i>	<i>p-value</i>
Blood loss (mL)	266 ± 29	261 ± 30	0.90
Surgical time (min)	120 ± 5	117 ± 4	0.67

Results – Clinical Outcome



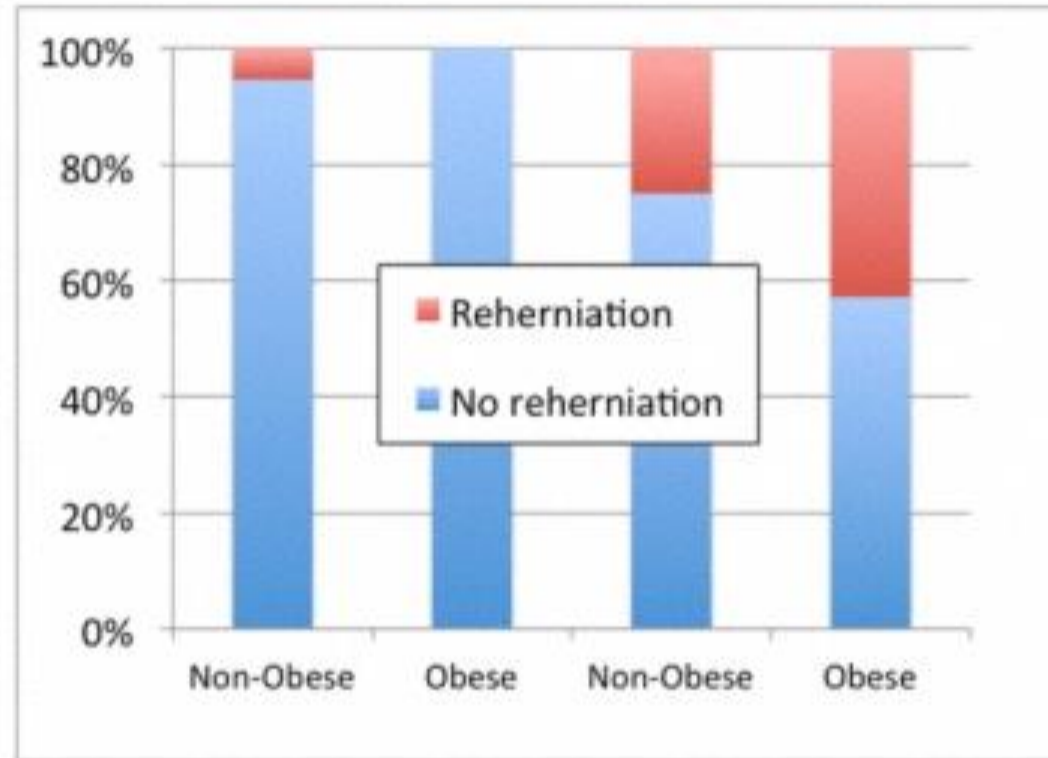
Similar clinical outcome for management of lumbar radiculopathy by surgical treatment ($p = 0.07$).

Results – Repeat Surgery



Greater need for same-level reoperation among patients managed with sequestrectomy ($p < 0.001$).

Results – Impact of Lifestyle



Suggestion of more frequent same-level reherniation among sequestrectomy patients with lifestyle factors

Smoking ($p = 0.35$)

Obesity ($p = 0.17$)

Discussion

Overall reoperation rate of 14% at median 6 year follow-up

- **Conventional discectomy**
 - 10% reoperation rate (6% same level, 4% adjacent level)
- **Sequestrectomy**
 - 19% reoperation rate (15% same level, 4% adjacent level)

Impact of modifiable lifestyle factors (smoking, obesity) seems to affect patients undergoing sequestrectomy

- **Smoking** – impaired healing of annulus fibrosus because of disrupted collagen organization and cross-linking, and decreased ECM synthesis
- **Obesity** – accidental injuries, heightened mechanical stress on IVD, low-grade systemic inflammation

Study Limitations

Retrospective study limitations

- **Data** – retrospective clinical assessments, incomplete datasets, unidentified covariates
- **Surgeon** – patient selection, preoperative counseling, postoperative management

Sample size

- Underpowered to detect within group differences stratifying surgical technique by demography

Conclusions

- Sequestrectomy is associated with a 2.5X higher incidence of recurrent disc herniation (15%) compared to conventional discectomy (6%)
- Adjacent segment herniation is the same for both techniques (4%)
- Smoking and Obesity may be risk factors for recurrent herniation



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