The Effect of Neuraxial Anesthesia on Urinary Catheter Removal After Caesarean Delivery – A Comparison Between Spinal and Epidural Anesthesia
A Systematic Review

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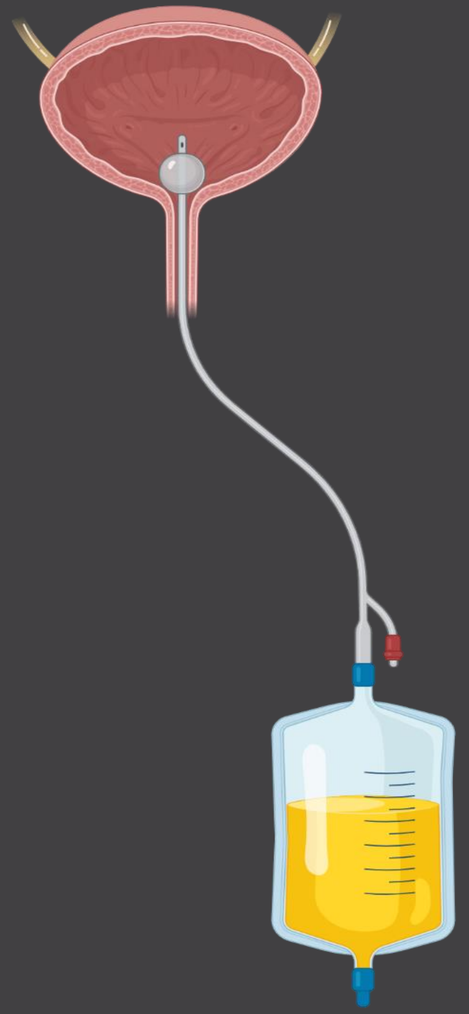
Background

Enhanced Recovery Protocols

- ERAC guidelines recommend immediate catheter removal after cesarean delivery.
- Limited evidence supports this practice.

Clinical Dilemma

- Prolonged catheterization increases UTI risk.
- Premature removal can cause urinary retention.



Hypothesis

- Epidural anesthesia causes higher urinary retention rates than spinal anesthesia.
- This leads to longer catheterization duration.

Study Design: Systematic Review

Methods

Search Strategy

- Followed Cochrane Collaboration and PRISMA guidelines.
- Searched PubMed/Ovid Medline, EMBASE, Scopus from 2010-2024.

Screening

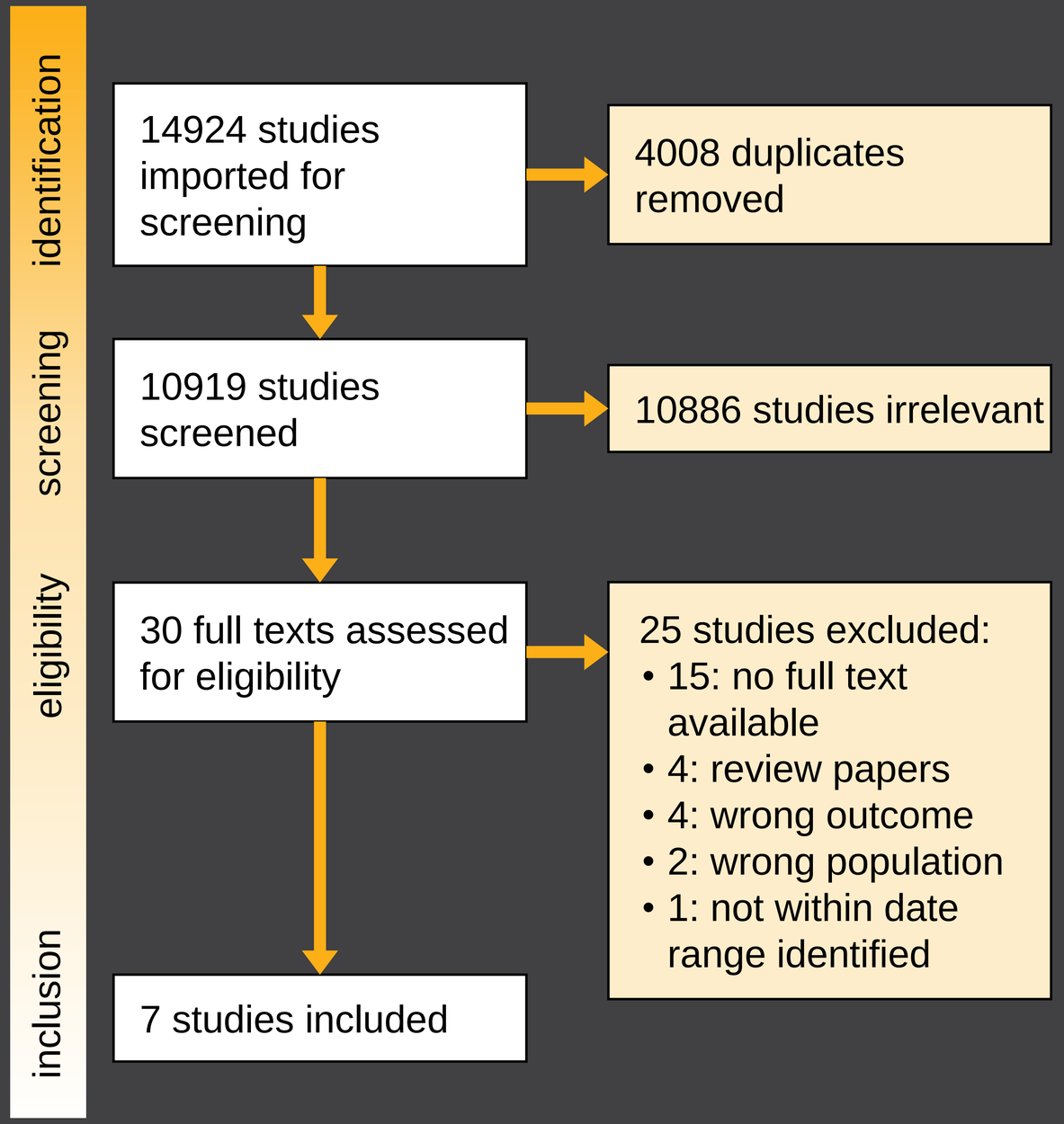
- 10,919 studies screened after removing 4,008 duplicates.

Selection Criteria

- Data extraction covered study characteristics, anesthetic practices, and key outcomes (catheterization duration, urinary retention, UTI).

Data Collection and Analysis

- 7 studies included in final systematic review.



Results

Neuraxial anesthesia & urinary retention

- No direct comparison except one study showing higher urinary retention in epidural (16.7%) vs. spinal (10.5%).
- Epidural anesthesia for C-sections led to higher urinary retention rates and longer catheterization durations.

Meta-analysis limitations

- Data heterogeneity prevented formal meta-analysis.

Data

- Among 1163 patients, urinary retention incidence was 9.1% for spinal vs. 16.7% for epidural.

Study	Sample Size	Neuraxial Anesthesia	Urinary Retention Incidence (%)	Time to the first void (min)	Bacteriuria Incidence (%)
Hoskins C, et al., 2024	854	Spinal	10.5%		
Hoskins C, et al., 2024	438	Epidural	16.7%		
Liang et al., 2015	471	Epidural /Spinal	11.5%		
DiBlasi et all, 2013	150	Spinal	35.1%		
Igbodike et al, 2021	150	Spinal	7.3%	211.34 ± 14.3	
Foon et al., 2010	44	Spinal		374 (31-425)	
Jain et al, 2023	92	Spinal	4.3%		2.2%
Benedict T, et al., 2023	67	Spinal	1.5%		26.3%

Discussion

Key Findings

- Comparison reveals a complex and variable picture between spinal and epidural anesthesia.
- Higher urinary retention rates with epidural versus spinal anesthesia.
- Early catheter removal (<12h) raises retention risk, regardless of anesthesia.
- Higher retention seen with epidural when catheters removed at 6–12h supported by cohort and review data.
- Spinal anesthesia associated with lower retention, especially with delayed removal (>12h).

Limitations: Data consistency limited by labor duration, opioid use, and study design variability

Conclusion

- Further research needed to establish definitive guidelines.
- Clinical judgement remains essential until clearer evidence emerges.