

Epidural timing and interventional birth across the obesity spectrum

Do associations differ by WHO obesity class?

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Introduction

Current guidelines recommend early epidurals for parturients with Class 3 obesity (BMI ≥ 40 kg/m²)¹. However, whether epidural timing associates with interventional birth rates differentially across obesity classes, and through what pathways obesity affects intervention, remains unknown.

Methods

We examined all non-elective, term, singleton births in NHS Lothian (2022–2024), excluding births indicated for labour dystocia. The primary outcome was interventional birth (caesarean or mid-cavity forceps).

Poisson regression, adjusted for deprivation, parity, labour onset, age, gestational age, membrane rupture duration and birth weight examined associations between epidural timing (early ≤ 5 cm vs late > 5 cm) and intervention.

Mediation analysis examined whether epidural use and timing explained any of the higher intervention rates in obese vs non-obese parturients.

What is mediation analysis

Mediation analysis asks how much of an exposure's effect on an outcome is carried through a third variable (the mediator). Here, we asked how much of obesity's effect on interventional birth operates *through* epidural timing.

References

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- Kearns RJ, Kyzayeva A, Halliday LOE, et al. Epidural analgesia during labour and severe maternal morbidity: population based study. BMJ 2024:e077190.

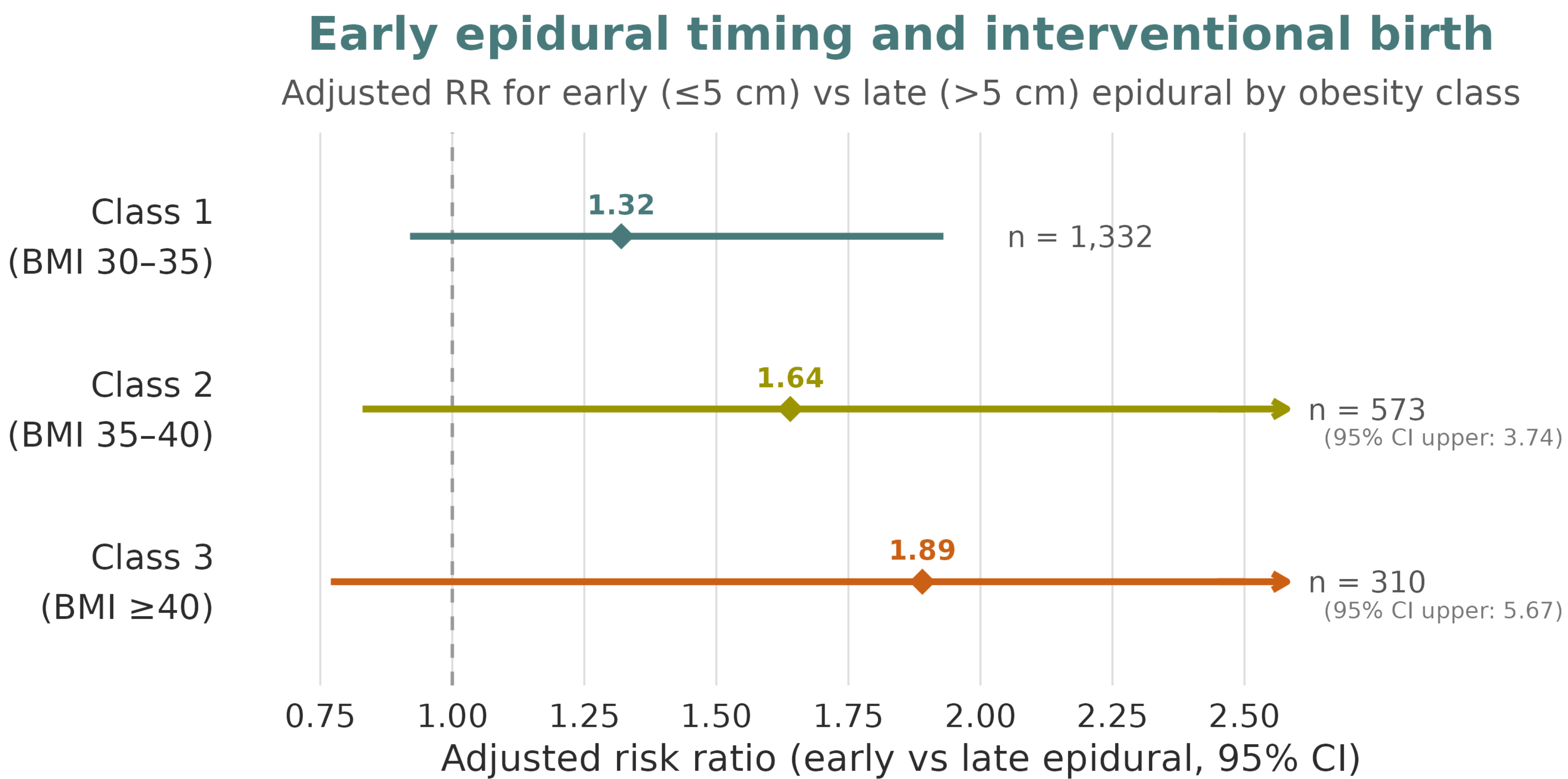


Figure 1: Adjusted risk ratio for early (≤ 5 cm) vs late (> 5 cm) epidural timing and interventional birth by obesity class. CIs truncated where indicated.

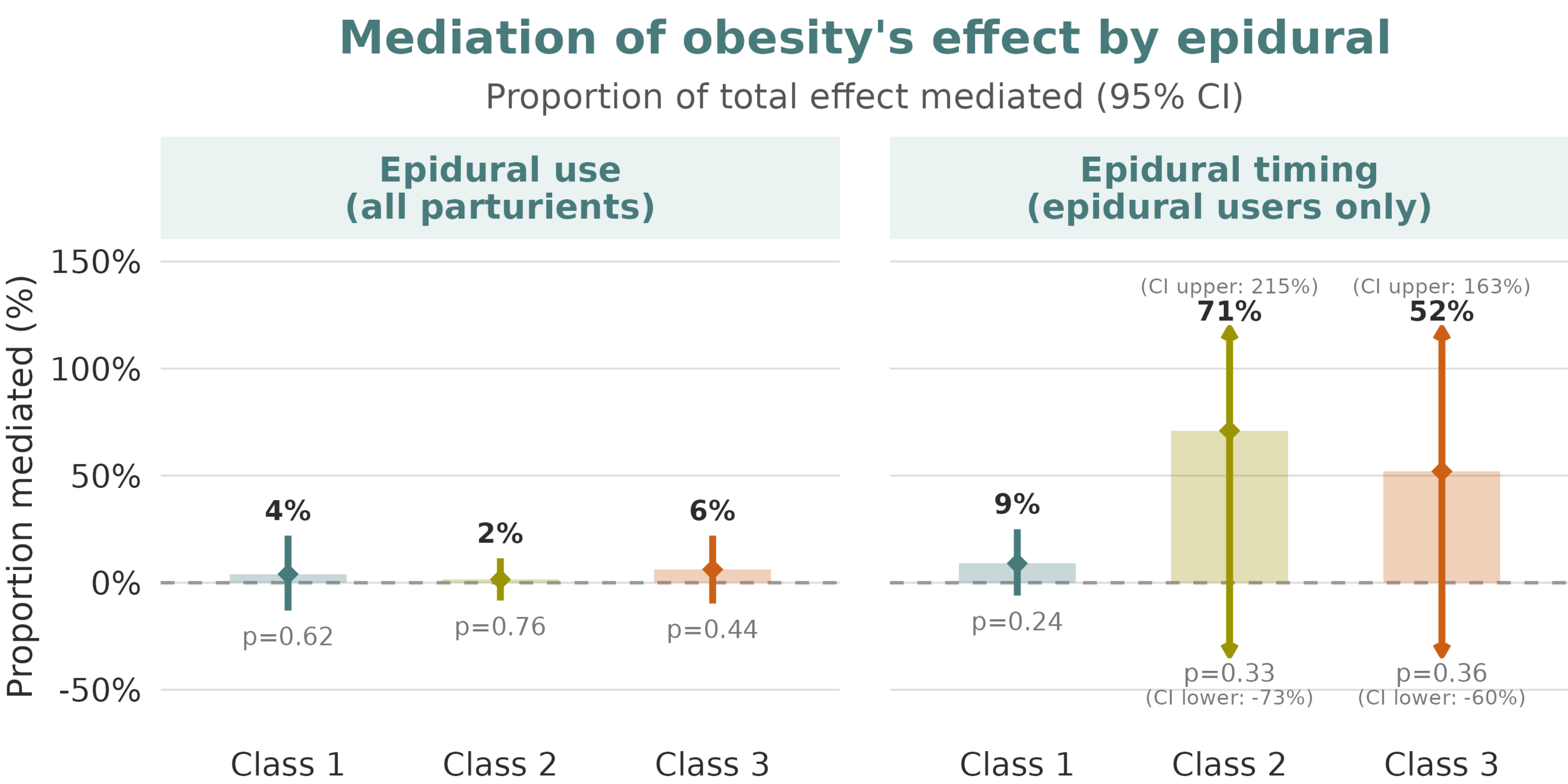


Figure 2: Proportion of obesity's excess intervention risk mediated by epidural use and timing, by obesity class. Bars show point estimates; lines 95% CI (truncated where indicated).

Results

9,058 parturients (Class 1 n=1,332, Class 2 n=573, Class 3 n=310, non-obese n=6,843).

Early epidural timing was associated with higher intervention rates across all obesity classes (Figure 1)

Having an epidural did not explain the excess intervention risk in obese parturients.

Among epidural users, timing explained a larger proportion of excess risk with increasing obesity class. All indirect effects were non-significant (Figure 2).

Discussion

Early epidural timing is consistently associated with interventional birth across the obesity spectrum, with no evidence of interaction by class.

Among epidural users, timing may explain increasing proportions of excess risk in higher obesity classes, but confidence intervals are extremely wide and all indirect effects non-significant.

These findings support patient-centred shared decision-making without detracting from proven benefits of epidurals².

A multicentre study is underway to provide the sample sizes needed to answer this question definitively.

Acknowledgements

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