

# **Efecto de diferentes dosis de Etilefrina sobre la estabilidad hemodinámica materna y la seguridad neonatal durante la anestesia raquídea para cesárea**

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## RESUMEN

La hipotensión materna por anestesia raquídea sigue siendo una complicación frecuente y clínicamente relevante en la cesárea, con riesgo de comprometer la perfusión útero-placentaria y el equilibrio ácido-base neonatal. Aunque la etilefrina es un vasopresor ampliamente utilizado en Latinoamérica por su acción alfa-beta, persiste incertidumbre sobre cómo diferentes dosis influyen en la estabilidad hemodinámica materna y la seguridad neonatal, dado que la evidencia comparativa aún es limitada.

**Objetivo:** Evaluar el impacto de diferentes dosis de Etilefrina sobre la estabilidad hemodinámica materna y la seguridad neonatal inmediata en pacientes con hipotensión durante la anestesia raquídea para cesárea en una clínica Barranquilla (Atl, CO) durante el 2024-2 y 2025-1.

**Metodología:** Se realizó un estudio analítico, comparativo, observacional y retrospectivo en una clínica de Barranquilla (2024-2 a 2025-1), incluyendo gestantes con cesárea bajo anestesia raquídea que desarrollaron hipotensión y recibieron etilefrina como único vasopresor. Las pacientes se clasificaron en tres grupos según la dosis total administrada. Se recopilaron variables hemodinámicas, dosis de bupivacaína y parámetros neonatales (Apgar, pH y gases de cordón). El análisis incluyó ANOVA o Kruskal-Wallis, Chi-cuadrado/Fisher y un Análisis de Componentes Principales para evaluar patrones materno-fetales.

**Resultados:** Las gestantes presentan perfiles demográficos comparables entre grupos y una distribución heterogénea en las indicaciones de cesárea. Se observaron diferencias tensionales asociadas a la dosis administrada, especialmente en la presión arterial sistólica y media, aunque sin traducción en desenlaces neonatales adversos. El pH de cordón, los gases umbilicales y los puntajes de Apgar permanecieron dentro de los rangos fisiológicos en los tres grupos. El análisis multivariado evidenció que las variaciones tensionales maternas no modificaron significativamente el equilibrio ácido-base neonatal, y que los patrones fisiológicos fueron más dependientes de la estabilidad hemodinámica alcanzada que de la magnitud absoluta de la dosis de etilefrina utilizada.

**Conclusión:** Las distintas dosis de etilefrina lograron estabilizar la hemodinamia materna sin afectar los parámetros neonatales inmediatos. No se evidenció una relación dosis-dependiente con alteraciones del estado ácido-base, lo que respalda su uso titulado según la respuesta clínica. Estos hallazgos contribuyen a optimizar el manejo de la hipotensión raquídea en centros que emplean etilefrina como vasopresor principal.

**Palabras clave:** hipotensión; anestesia raquídea; etilefrina; cesárea; estabilidad hemodinámica; seguridad neonatal; pH de cordón; vasopresores.

## ABSTRACT

Maternal hypotension induced by spinal anesthesia remains a frequent and clinically significant complication during cesarean delivery, posing a risk to uteroplacental perfusion and neonatal acid–base balance. Although etilefrine is widely used in Latin America as a vasopressor due to its combined alpha–beta adrenergic activity, uncertainty persists regarding how different dosing ranges influence maternal hemodynamic stability and immediate neonatal safety, as comparative evidence remains limited.

**Objective:** Evaluate the impact of different doses of etilefrine on maternal hemodynamic stability and immediate neonatal safety in patients with hypotension during spinal anesthesia for cesarean section at a clinic in Barranquilla (Atlántico, CO) during 2024-2 and 2025-1.

**Methods:** An analytical, comparative, observational, and retrospective study was conducted in a clinic in Barranquilla (2024–2 to 2025–1), including pregnant women undergoing cesarean delivery under spinal anesthesia who developed hypotension and received etilefrine as the sole vasopressor. Patients were classified into three groups according to the total dose administered. Hemodynamic variables, bupivacaine dose, and neonatal parameters (Apgar scores, pH, and cord blood gases) were collected. Statistical analysis included ANOVA or Kruskal–Wallis tests, Chi-square or Fisher’s exact test, and Principal Component Analysis to evaluate integrated maternal–fetal patterns.

**Results:** The obstetric patients showed comparable demographic profiles across groups and a heterogeneous distribution of indications for cesarean delivery. Dose-related differences were observed in blood pressure values, particularly systolic and mean arterial pressure, although these did not translate into adverse neonatal outcomes. Cord pH, umbilical gases, and Apgar scores remained within physiological ranges in all groups. Multivariate analysis showed that maternal blood pressure variations did not significantly alter neonatal acid–base status, and that physiological patterns were more dependent on the degree of hemodynamic stabilization achieved than on the absolute etilefrine dose administered.

**Conclusion:** The different doses of etilefrine effectively stabilized maternal hemodynamics without affecting immediate neonatal parameters. No dose-dependent relationship was observed regarding alterations in neonatal acid–base balance, supporting its titrated use according to clinical response. These findings contribute to optimizing the management of spinal anesthesia–induced hypotension in centers where etilefrine is the primary vasopressor.

**Keywords:** hypotension; spinal anesthesia; etilefrine; cesarean section; hemodynamic stability; neonatal safety; cord pH; vasopressors.

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