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Efficacy and safety of neuroaxial blockade in obstetric patients undergoing cesarean section: A prospective observational study

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Abstract
Introduction: Neuroaxial blockade is the preferred anesthetic technique for cesarean sections due to its safety profile and efficacy in pain control. Its implementation requires assessing potential maternal complications arising from physiological changes during pregnancy.
Objective: To determine the safety and efficacy of neuroaxial blockade in obstetric patients undergoing cesarean section.
Methods: Observational, analytical-descriptive, longitudinal, and prospective study in a secondary-level hospital (IMSS, Puebla). One hundred and fifty adult patients undergoing cesarean section with neuroaxial anesthesia were included. Sociodemographic, clinical, and anesthetic variables were collected. Statistical analysis included descriptive statistics, chi-square tests, and linear regression.
Results: 94.7% received mixed neuroaxial blockade and 5.3% epidural blockade. Motor blockade was achieved in 100% and sensory blockade in 99.3%. Hypotension was the only reported complication (25.3%). There were no cases of toxicity, dural puncture, neurological syndrome, or massive spinal cord injury.
Conclusions: Neuroaxial blockade is safe and effective in obstetric patients, with a low incidence of complications and adequate clinical effectiveness.

Keywords: Neuroaxial blockade, obstetric anesthesia, cesarean section, anesthetic safety, hypotension

1. Introduction
Anesthetic management in obstetrics presents multiple challenges stemming from the physiological and anatomical changes of pregnancy. Neuroaxial blockade (subarachnoid, epidural, or mixed) is widely used due to its analgesic efficacy and safety profile, establishing itself as the standard technique for both scheduled and emergency cesarean sections. Proper evaluation of its efficacy and adverse effects allows for the reinforcement of its routine use in hospital settings.

2. Materials and Methods
Design: Observational, analytical-descriptive, longitudinal, single-center, prospective study. Setting: General Hospital of Zone No. 20 “La Margarita”, IMSS Puebla. Participants: 150 adult obstetric patients undergoing cesarean section with neuraxial anesthetic technique. Inclusion/exclusion criteria: Patients with severe comorbidities, contraindications for regional anesthesia, or incomplete medical records were excluded. Main variables: type of block, presence of motor and sensory block, occurrence of complications, comorbidities, age, number of pregnancies. Statistical analysis: SPSS v.25. Descriptive statistics, Chi-square, linear regression, with a significance level of $p<0.05$.

3. Results
Mean age: 28.13±4.79 years. 51.3% were primiparous. 94.7% received mixed neuraxial block; 5.3%, epidural block. Anesthetic efficacy: 100% motor block; 99.3% sensory block. The only complication recorded was hypotension in 25.3% of cases. No major adverse events were recorded.

4. Discussion: Our findings are consistent with international literature that positions neuraxial blockade as an effective and safe technique in obstetrics. Hypotension was the most frequent complication, but it was clinically manageable. No major adverse effects were reported, which reinforces its systematic implementation in similar settings. Limitations include the single-center design and the lack of analysis in populations with comorbidities.

5. Figures

Below are some of the key graphs from the statistical analysis.

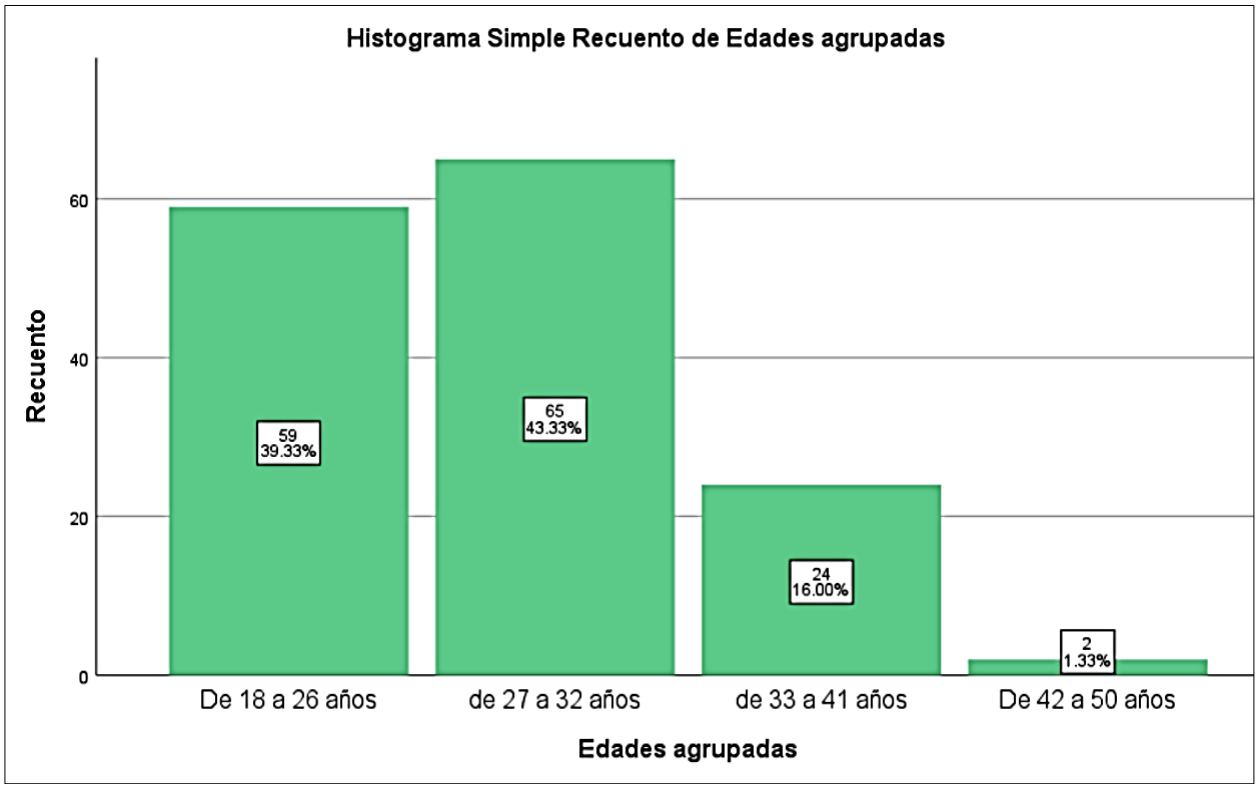

Fig 1: Age distribution of patients.

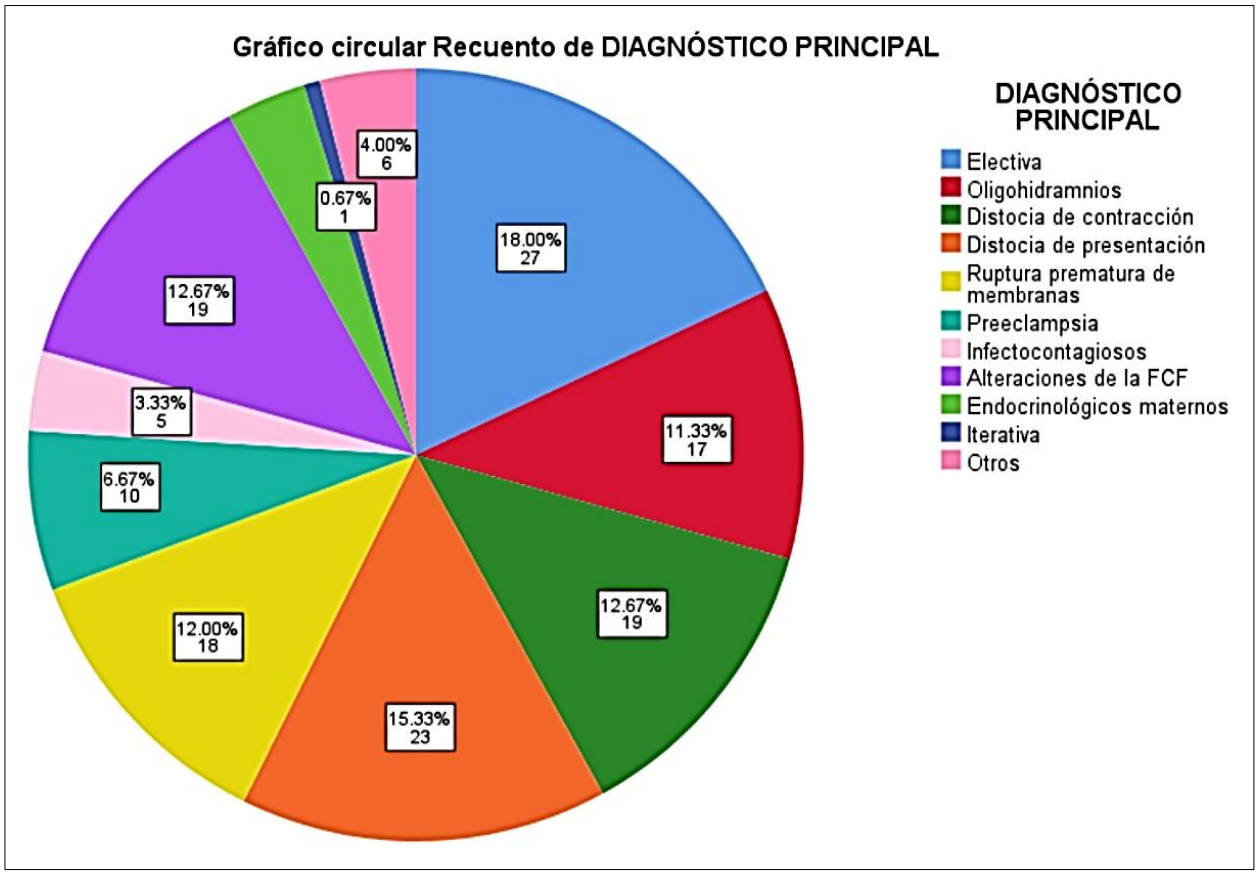

Fig 2: Main diagnoses of patients undergoing cesarean section.

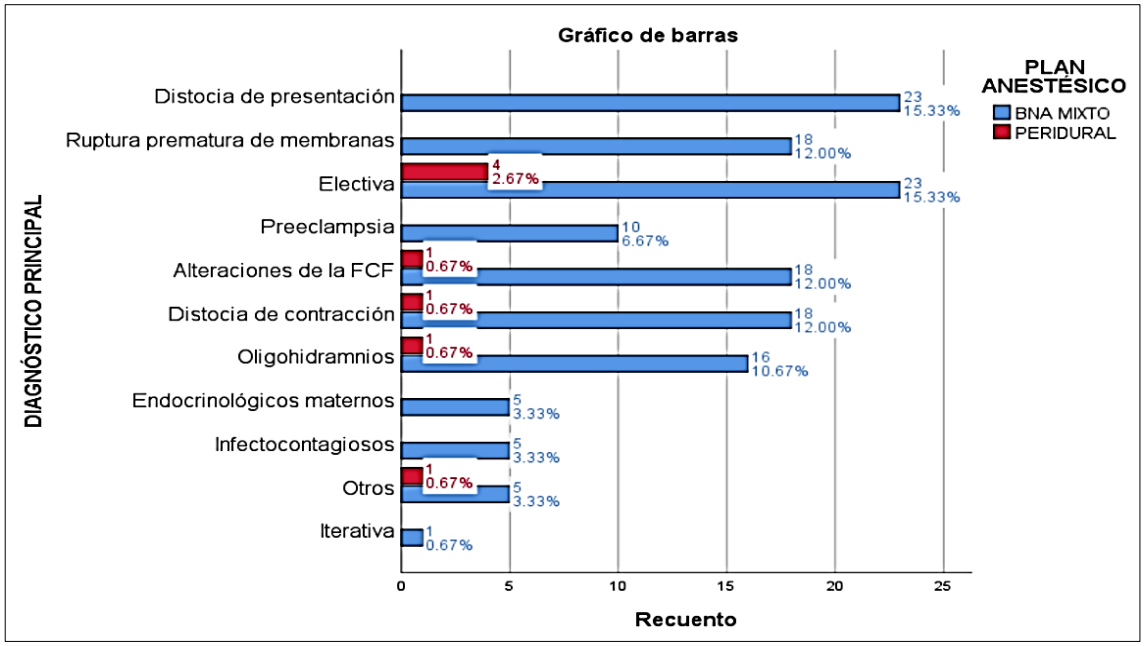

Fig 3: Association between anesthetic plan and clinical diagnosis.

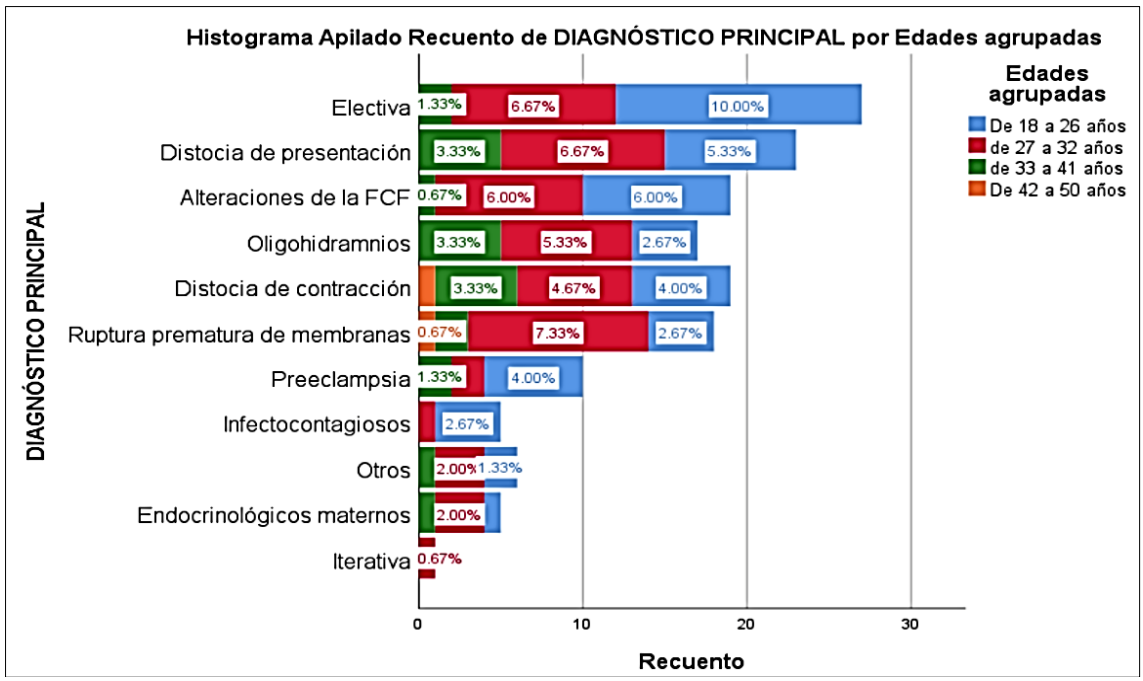

Fig 4: Diagnostic histogram by age groups.

Conclusions

Neuroaxial blockade demonstrates a favorable efficacy and safety profile in obstetric patients undergoing cesarean section. Its implementation should continue, reinforced by monitoring protocols and prevention of hypotension.

- **Conflict of interest:** The authors declare no conflict of interest.
- **Financing:** This study did not receive external funding.

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