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Review

Anaesthetic management in emergency cesarean section: Systematic literature review of anaesthetic techniques for emergency C-section☆

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ABSTRACT

The literature related with the anesthetic management of emergent C section is limited, for which reason we proposed the systematic evaluation of the existing literature on anesthetic management of obstetric patients undergoing emergency cesarean section in order to define the most appropriate interventions based on evidence. A systematic review of the literature was undertaken in MEDLINE, 1966 to December 2010, Cochrane Collaboration registry of clinical trials, Cochrane systematic review database, and LILACS. The study selection process was undertaken independently by two researcher-reviewers, who identified controlled clinical trials and cohort studies of anaesthetic management in emergency C-section. The data were extracted, reviewed and subjected to quality evaluation in duplicate fashion. In total, 2,297, 36, 221 were examined, respectively, and of those 16 potentially relevant papers, 9 clinical trials and 7 observational studies were included in the study. A heterogeneity analysis was done using I^2, with a result of 52%, and for this reason no meta-analysis was conducted. *Conclusions:* The anaesthetist plays a critical part in mother-and-child care, prioritization of the C-section urgency, peridural anaesthesia extension with 2% lidocaine plus adjuvants (fentanyl plus fresh adrenaline), the use of vasopressors (phenylephrine, ephedrine) for the aggressive management of hypotension, the use of oxygen supplementation and the adequate management of general anaesthesia when indicated, contributing to a favourable impact on the outcome for both the mother and the baby. Long-term neonatal outcomes are not influenced by the type of anaesthesia given to the mother.

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Manejo anestésico para operación cesárea urgente: Revisión sistemática la literatura de técnicas anestésicas para cesárea urgente

Palabras clave:
Anestesia obstétrica
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RESUMEN

La literatura relacionada con el manejo anestesico para cesareaurgente es escasa por lo que se propuso evaluar sistemáticamente laliteratura existente del manejo anestésico en pacientes obstétricas, sometidas a cesárea urgente con el fin de definir las intervencionesmás adecuadas basadas en la evidencia. Se realizo una revisión sistemática de la literatura en: MEDLINE, 1966 a Diciembre de 2010; Cochrane Collaboration registro de ensayos clínicos; Cochrane database de revisiones sistemáticas, LILACS. La selección de los estudios se llevo a cabo por dos investigadores-revisores de manera independiente identificaron estudios de ensayos clínicos controlados, estudios de cohorte de manejo anestésico de cesárea urgente. En duplicado, los datos fueron extraídos, revisados y evaluados en calidad. Se obtuvieron 2.297, 36, 221, 16 artículos potencialmente relevantes respectivamente, nueve ensayos clínicos y siete artículos observacionales. Se realizo un análisis de heterogeneidad utilizando I^2, el cual arrojo un resultado del 52% por lo cual no se realizo metaanalisis.

Conclusiones: El anestesiólogo es parte fundamental en el cuidado del binomio madre hijo, la adecuada priorización de la urgencia en operación cesárea, la extensión anestésica peridural con lidocaína al 2% mas coadyuvantes (fentanil mas adrenalina fresca), el uso de vasopresores (fenilefrina, efedrina) para el manejo agresivo de la hipotensión, la utilización de oxigeno suplementario y un adecuado manejo de la anestesia general cuando está indicada permiten impactar favorablemente los desenlaces del binomio madre hijo. Los desenlaces neonatales a largo plazo no están influenciados por el tipo de anestesia suministrada a la madre.

Introduction

It is estimated that 15% of all births occurring in the world are by C-section.[1] World statistics show an increase in C-section rates of up to 60%,[2,3] accounted for by an increase in high-risk pregnancies and cases in which obstetric patients present in life-threatening situations for them or for the foetus; these data indicate clearly that anaesthesia for C-section is a significant part of daily practice.[4,5]

There is little good quality evidence about the ideal anaesthetic technique for patients requiring emergency C-section. Traditionally, general anaesthesia has been advocated when there is immediate threat to the mother or the foetus, whereas the use of neuroaxial techniques is advocated in less pressing situations.

Given this uncertainty, NICE (National Institute For Health and Clinical Excellence) proposed a classification that allows prioritisation of the urgency of the C-section, in order to achieve the highest degree of concordance between obstetricians and anaesthetists. This classification was recently adopted as a good practice guideline by RCOG (Royal college of Obstetricians and Gynaecologists) and RCA (Royal college of Anaesthetists).[6,7–11]

It is important to determine what type of anaesthesia is associated with less adverse outcomes for mother and child. The goal of this paper is to perform a systematic evaluation and analysis of the existing literature on the anaesthetic management of obstetric patients requiring emergency C-section, in order to generate basic guidelines and recommendations that may contribute to a protocol approach to this issue, based on the definition of the most adequate evidence-based interventions. An additional goal is to determine the safety and effectiveness of anaesthetic interventions in terms of maternal and neonatal outcomes.

Methods

Systematic review of randomised clinical trials and observational studies.

Study criteria considered for this review

- *Type of participants*: Pregnant women requiring emergency C-section.
- *Type of measured outcomes*: Primary end points.
- *Maternal complications*: Mortality, airway problems, blood loss and hypotension, intra-operative and postoperative pain, and maternal satisfaction.
- *Neonatal complications*: Mortality, one-minute and five-minute Apgar scores (activity, pulse, grimace, appearance, respiration), acid–base profile, need for Neonatal Intensive Care Unit (NICU), and learning disabilities.
- *Secondary outcomes*: Rate of conversion to another anaesthetic technique and time of establishment of the anesthetic technique.