Neuraxial analgesia to increase the success rate of external cephalic version: a systematic review and meta-analysis of randomized controlled trials

Elena Rita Magro-Malosso, MD; Gabriele Saccone, MD; Mariarosaria Di Tommaso, MD; Michele Mele, MD; Vincenzo Berghella, MD

BACKGROUND: External cephalic version is a medical procedure in which the fetus is externally manipulated to assume the cephalic presentation. The use of neuraxial analgesia for facilitating the version has been evaluated in several randomized clinical trials, but its potential effects are still controversial.

OBJECTIVE: The objective of the study was to evaluate the effectiveness of neuraxial analgesia as an intervention to increase the success rate of external cephalic version.

DATA SOURCES: Searches were performed in electronic databases with the use of a combination of text words related to external cephalic version and neuraxial analgesia from the inception of each database to January 2016.

STUDY ELIGIBILITY CRITERIA: We included all randomized clinical trials of women, with a gestational age ≥36 weeks and breech or transverse fetal presentation, undergoing external cephalic version who were randomized to neuraxial analgesia, including spinal, epidural, or combined spinal-epidural techniques (ie, intervention group) or to a control group (either intravenous analgesia or no treatment).

STUDY APPRAISAL AND SYNTHESIS METHODS: The primary outcome was the successful external cephalic version. The summary measures were reported as relative risk or as mean differences with a 95% confidence interval.

TABULATION, INTEGRATION, AND RESULTS: Nine randomized clinical trials (934 women) were included in this review. Women who received neuraxial analgesia had a significantly higher incidence of successful external cephalic version (58.4% vs 43.1%; relative risk, 1.44, 95% confidence interval, 1.27–1.64), cephalic presentation in labor (55.1% vs 40.2%; relative risk, 1.37, 95% confidence interval, 1.08–1.73), and vaginal delivery (54.0% vs 44.6%; relative risk, 1.21, 95% confidence interval, 1.04–1.41) compared with those who did not. Women who were randomized to the intervention group also had a significantly lower incidence of cesarean delivery (46.0% vs 55.3%; relative risk, 0.83, 95% confidence interval, 0.71–0.97), maternal discomfort (1.2% vs 9.3%; relative risk, 0.12, 95% confidence interval, 0.02–0.99), and lower pain, assessed by the visual analog scale pain score (mean difference, −4.52 points, 95% confidence interval, −5.35 to 3.69) compared with the control group. The incidences of emergency cesarean delivery (1.6% vs 2.5%; relative risk, 0.63, 95% confidence interval, 0.24–1.70), transient bradycardia (11.8% vs 8.3%; relative risk, 1.42, 95% confidence interval, 0.72–2.80), nonreassuring fetal testing, excluding transient bradycardia, after external cephalic version (6.9% vs 7.4%; relative risk, 0.93, 95% confidence interval, 0.53–1.64), and abruption placentae (0.4% vs 0.4%; relative risk, 1.01, 95% confidence interval, 0.06–16.1) were similar.

CONCLUSION: Administration of neuraxial analgesia significantly increases the success rate of external cephalic version among women with malpresentation at term or late preterm, which then significantly increases the incidence of vaginal delivery.

Key words: anesthesia, breech, cesarean delivery, delivery, version, vertex

The management of a woman with term malpresentation has undergone major changes during the last few years, with planned cesarean delivery being recommended,[1] based on randomized clinical trial data.[2] Such changes have made breech presentation one of the most common causes of the rise in cesarean delivery rates.[1]

External cephalic version is a medical procedure in which the fetus with malpresentation, breech or transverse, is externally manipulated to assume the cephalic presentation. External cephalic version has been associated with a significant reduction in breech presentation at delivery and consequently the rate of cesarean deliveries.[3]

From the Department of Health Science, Division of Pediatrics, Obstetrics, and Gynecology, Careggi Hospital University of Florence, Florence, Italy (Drs Magro-Malosso and Di Tommaso); Department of Neuroscience, Reproductive Sciences, and Dentistry, School of Medicine, University of Naples Federico II, Naples, Italy (Dr Saccone); and Department of Anesthesiology (Dr Mele) and Division of Maternal-Fetal Medicine (Dr Berghella), Department of Obstetrics and Gynecology, Sidney Kimmel Medical College of Thomas Jefferson University, Philadelphia, PA.

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Corresponding author: Vincenzo Berghella, MD. vincenzo.berghella@jefferson.edu

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Several interventions have been evaluated to try to increase the success of external cephalic version. Among these, for example, tocolysis has been associated with a significant increase in cephalic presentation in labor and decrease in cesarean delivery.[4-6] The use of neuraxial analgesia has also been evaluated in several published randomized clinical trials[7-15] to try to increase the success of external cephalic version, but its potential benefits are still controversial.

Materials and Methods

Objective

The aim of this systematic review and meta-analysis of randomized clinical trials was to evaluate the effectiveness of neuraxial analgesia as intervention to increase the success rate of external cephalic version.

Search strategy

This metaanalysis was performed according to a protocol recommended for systematic review.[16] The review protocol was designed a priori defining methods for collecting, extracting and analyzing data. The research was conducted using MEDLINE, EMBASE, Web of Sciences, Scopus, ClinicalTrial.gov, OVID, and Cochrane Library as electronic databases. The trials were identified with the use of a combination of the following text words: external cephalic version, anesthesia, analgesia, spinal, epidural, anesthetic interventions, obstetric anesthesia, regional anesthesia, and randomized from the inception of each database to January 2016. No restrictions for language or geographic location were applied.

Study selection

We included all randomized clinical trials of women with breech and/or transverse presentation undergoing external cephalic version who were randomized to neuraxial analgesia, including spinal analgesia, epidural analgesia, or combined spinal-epidural technique (ie, intervention group) or to intravenous analgesia or no anesthetic treatment (control group). We therefore included both studies comparing neuraxial analgesia vs intravenous analgesia and studies comparing neuraxial analgesia vs no anesthetic intervention. Only women with gestational age at or greater than 36 weeks were included. Quasirandomized trials (ie, trials in which allocation was done on the basis of a pseudorandom sequence, eg odd/even hospital number or date of birth, alternation) were excluded.

Data extraction and risk of bias assessment

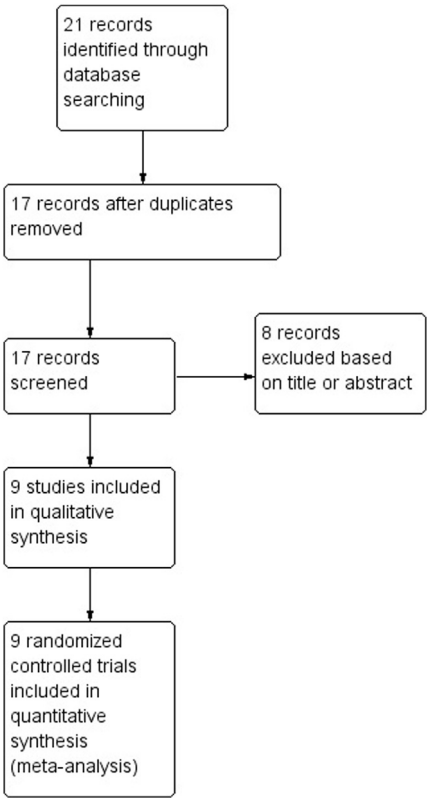
The risk of bias in each included study was assessed by using the criteria outlined in the *Cochrane Handbook for Systematic Reviews of Interventions*.[16] Seven domains related to risk of bias were assessed in each included trial because there is evidence that these issues are associated with biased estimates of treatment effect including the following: (1) random sequence generation; (2) allocation concealment; (3) blinding of participants and personnel; (4) blinding of outcome assessment; (5) incomplete outcome data; (6) selective reporting; and (7) other bias. Review authors' judgments were categorized as low risk, high risk, or unclear risk of bias.[16]

All analyses were done using an intention-to-treat approach, evaluating women according to the treatment group to which they were randomly allocated in the original trials. The primary outcome was successful external cephalic version, defined as the percentage of fetuses that were externally rotated from breech or transverse presentation to a vertex presentation at external cephalic version.

Secondary outcomes were incidence of cesarean delivery, vaginal delivery, vaginal breech delivery, emergency cesarean delivery, fetal morbidity (transient bradycardia and nonreassuring fetal testing after external cephalic version), maternal discomfort, maternal pain score, and incidence of abruption placentae.

Data from each eligible study were extracted without modification of original data onto custom-made data collection forms. Two authors (E.R.M.-M. and G.S.) independently assessed inclusion criteria, risk of bias, and data extraction. Disagreements were resolved by consensus through a discussion with a third reviewer (V.B.).

FIGURE 1
Flow diagram of studies identified in the systematic review



The Prisma template indicates the Preferred Reporting Item for Systematic Reviews and Meta-Analyses.

Magro-Malosso. Effectiveness of neuraxial anesthesia on external cephalic version. Am J Obstet Gynecol 2016.

Data not presented in the original publications were requested from the principal investigators.

We planned to assess the primary outcome (ie, successful external cephalic version) in subgroup analyses according to the type of control (either intravenous analgesia or no anesthetic intervention) and also according to the type of neuraxial technique (spinal vs epidural). We also performed a sensitivity analysis according to the risk of bias of the included trials.

Data analysis

The data analysis was completed independently by 2 authors (E.R.M.-M. and G.S.) using Review Manager 5.3 (The Nordic Cochrane Center,