Rapid versus stepwise negative pressure application for vacuum extraction-assisted vaginal delivery

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RHL Summary

Rapid negative pressure application for vacuum extraction reduces the duration of delivery, without posing any health risks for the mother or infant. Although traditionally a stepwise increase in negative pressure has been recommended for vacuum extraction, the evidence appears to support a change in practice.

Cochrane review

Citation: Suwannachat B, Lumbiganon P, Laopaiboon M. Rapid versus stepwise negative pressure application for vacuum extraction assisted vaginal delivery. Cochrane Database of Systematic Reviews 2012, Issue 8. Art. No.: CD006636. DOI:10.1002/14651858.CD006636.pub3.

Abstract

Vacuum extraction is a common technique of assisted vaginal delivery. Traditionally, it has been recommended that the pressure is increased slowly in a stepwise procedure; some have advocated rapid increases in pressure.

To assess the efficacy and safety of rapid versus stepwise negative pressure application for assisted vaginal delivery by vacuum extraction.

We searched the Cochrane Pregnancy and Childbirth Group's Trials Register (4 April 2012).

Randomized controlled trials and quasi-randomized controlled trials of rapid (within two minutes) versus stepwise (as defined by trialists) increases in negative pressure application for vacuum extraction assisted vaginal delivery.

Two review authors independently assessed trials for inclusion and trial quality. The same two review authors extracted data. We entered data into Review Manager software and checked for accuracy. Data extraction and 'Risk of bias' assessment of the contact person's own study were also carried out by three independent assessors who were not involved in the new study.

We included two trials involving 754 participants.
One new trial of 660 participants showed the same success rate of vacuum procedure of 98.2% by both methods (risk ratio (RR) 1.00, 95% confidence interval (CI) 0.98 to 1.02).

The two included trials showed significant reductions in the time between applying the vacuum cup and delivery, (one trial (74 women): mean difference (MD) -6.10 minutes, 95% CI -8.83 to -3.37 and the other trial (660 women): with median difference -4.4 minutes, 95% CI -4.8 to -4.0). The two included trials showed no significant difference in detachment rate (RR 0.85, 95% CI 0.38 to 1.86, 2 studies, 754 women), no significant difference in Apgar score below seven at one minute (RR 1.04, 95% CI 0.51 to 2.09) and five minutes (RR 1.00, 95% CI 0.29 to 3.42), no significant differences in scalp abrasions or lacerations, cephalhematoma, subgaleal hemorrhage and hyperbilirubinemia. There were no significant differences between the two methods in all secondary outcomes.

The rapid negative pressure application for vacuum assisted vaginal birth reduces duration of the procedure whilst there is no evidence of differences in maternal and neonatal outcomes. Rapid method of negative application should be recommended for vacuum extraction assisted vaginal delivery.