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Management of Meconium at Birth

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Abstract

Objective: To provide clinician direction that is based on the best evidence available on suctioning at the perineum for infants born with meconium stained amniotic fluid.

Evidence: The Medline database was searched for articles published in English from 2000 to 2008 on the topic of management of meconium at birth.

Values: The recommendation was made according to guidelines developed by the Canadian Task Force on Preventive Health Care.

Recommendation

It is recommended that institutions adopt a policy indicating that non-suctioning is as safe as routine suctioning at the perineum for infants born with meconium-stained amniotic fluid. (IA)

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INTRODUCTION

Meconium aspiration syndrome (MAS) may develop in a small percentage of infants born with meconium-stained amniotic fluid. Intrapartum suctioning of the airway after delivery of the head but before delivery of the shoulders has been advocated as a means of reducing the incidence of MAS. However, the 2005 Neonatal Resuscitation Guidelines published by the American Heart Association/American Academy of Pediatrics[1] and endorsed by the Canadian Neonatal Resuscitation Program Steering Committee[2] no longer recommend routine intrapartum suctioning of the oropharynx and nasopharynx of neonates delivered following labours complicated by meconium.

Key Words: Meconium aspiration syndrome (MAS), intrapartum suctioning, neonatal resuscitation

CURRENT EVIDENCE

A careful review of the recent literature indicates clearly that a policy of non-suctioning is as safe as routine suctioning at the perineum for infants born with meconium-stained amniotic fluid. Risks of intrapartum suctioning include causing the fetus to "gasp," and causing vagal stimulation and postnatal fetal depression and / or bradycardia. Instead, the baby should be transferred quickly to the neonatal team, who will initiate management of the neonatal airways as indicated. The SOGC supports this new policy of not suctioning meconium at the perineum by the obstetric team.

Evidence of the effectiveness of intrapartum suctioning comes from the results of a single retrospective cohort study[3] indicating a non-significant trend towards improved outcomes. The results of that study have been subsequently contradicted by two other studies[4,5] showing equivalent outcomes with no intrapartum suctioning. Suctioning of meconium at the perineum has been long recommended in the USA, but because of the lack of supporting evidence, has never formed part of the Newborn Life Support course run by the Resuscitation Council in the UK.

A 2004 randomized controlled study by Vain et al.[6] included 2514 patients from 12 centres (Argentina 11, USA 1). All patients had meconium-stained amniotic fluid at a gestational age of at least 37 weeks, and cephalic presentation. Patients were randomly assigned to suctioning of the oropharynx and nasopharynx (including the hypopharynx) before delivery of the shoulders (n = 1263) or no suctioning before delivery (n = 1251). The postnatal delivery-room management followed Neonatal Resuscitation Program guidelines[2] which recommend tracheal suction only for non-vigorous infants. The primary outcome was incidence of meconium aspiration syndrome (MAS). Clinicians diagnosing the syndrome and designating other study outcomes were masked to group assignment. A "no informed

Key to evidence statements and grading of recommendations, using the ranking of the Canadian Task Force on Preventive Health Care

Quality of Evidence Assessment*	Classification of Recommendations†
I: Evidence obtained from at least one properly randomized controlled trial	A. There is good evidence to recommend the clinical preventive action
II-1: Evidence from well-designed controlled trials without randomization	B. There is fair evidence to recommend the clinical preventive action
II-2: Evidence from well-designed cohort (prospective or retrospective) or case-control studies, preferably from more than one centre or research group	C. The existing evidence is conflicting and does not allow to make a recommendation for or against use of the clinical preventive action; however, other factors may influence decision-making
II-3: Evidence obtained from comparisons between times or places with or without the intervention. Dramatic results in uncontrolled experiments (such as the results of treatment with penicillin in the 1940s) could also be included in this category	D. There is fair evidence to recommend against the clinical preventive action
III: Opinions of respected authorities, based on clinical experience, descriptive studies, or reports of expert committees	E. There is good evidence to recommend against the clinical preventive action
	L. There is insufficient evidence (in quantity or quality) to make a recommendation; however, other factors may influence decision-making

∗The quality of evidence reported in these guidelines has been adapted from The Evaluation of Evidence criteria described in the Canadian Task Force on Preventive Health Care.[7]
†Recommendations included in these guidelines have been adapted from the Classification of Recommendations criteria described in the The Canadian Task Force on Preventive Health Care.[7]

consent" protocol was used. Analysis was by intent-to-treat. No significant difference between treatment groups was seen in the incidence of MAS (52 [4%] suction vs. 47 [4%] no suction; relative risk 0.9; 95% CI 0.6–1.3), need for mechanical ventilation for MAS (24 [2%] vs. 18 [1%]; RR 0.8; 95% CI 0.4–1.4), mortality (9 [1%] vs. 4 [0.3%]; RR 0.4; 95% CI 0.1–1.5), or in the duration of ventilation, oxygen treatment, and hospital length of stay. Meconium was "thick" or "moderately thick" in 39% of patients in each treatment arm. There were no statistical differences in outcomes between these two groups, although the study was not powered for this outcome. Infants in other high-risk groups such as those with non-reassuring fetal heart rate, delivered by Caesarean section, or requiring positive-pressure ventilation did not seem to benefit from intrapartum suctioning. The conclusion of the authors was that routine intrapartum oropharyngeal and nasopharyngeal suctioning of term-gestation neonates born with meconium-stained amniotic fluid does not prevent MAS.

SUMMARY

The SOGC supports and agrees with the guidelines of the American Heart Association, The American Academy of Pediatrics, and the Canadian Neonatal Resuscitation Program Steering Committee, which no longer recommend routine intrapartum suctioning of the oropharynx and nasopharynx of neonates delivered following labours complicated by meconium.

Recommendation

The quality of evidence reported in this document has been assessed using the Evaluation of Evidence criteria in the Report of the Canadian Task Force on Preventive Health Care (Table).

It is recommended that institutions adopt a policy indicating that non-suctioning is as safe as routine suctioning at the perineum for infants born with meconium-stained amniotic fluid. (IA)

REFERENCES

1. Neonatal Resuscitation Guidelines; 2005 American Heart Association guidelines for cardiopulmonary resuscitation and emergency cardiovascular Care. Circulation 2005;112(24 Suppl):IV188–95.
2. de Caen A, Singhal N. A summary of the changes in pediatric and neonatal resuscitation guidelines from the International Liaison Committee on Resuscitation document. Paediatr Child Health 2006;11:11–3.
3. Carson BS, Losey RW, Bowes WA, Simmons MA. Combined obstetric and pediatric approach to prevent meconium aspiration syndrome, Am J Obstet Gynecol 1976;126:712–5.
4. Falciglia HS. Failure to prevent meconium aspiration syndrome. Obstet Gynecol 1988;71:349–53.
5. Falciglia HS, Henderschott C, Potter P, Helmchen R. Does DeLee suction at the perineum prevent meconium aspiration syndrome? Am J Obstet Gynecol 1992;167:1243–9.
6. Vain NE, Szyld EG, Prudent LM, Wiswell TE, Aguilar AM, Vivas NI. Oropharyngeal and nasopharyngeal suctioning of meconium-stained neonates before delivery of their shoulders: multicentre, randomised controlled trial. Lancet 2004;364: 597–602.
7. Woolf SH, Battista RN, Angerson GM, Logan AG, Eel W. Canadian Task Force on Preventive Health Care. New grades for recommendations from the Canadian Task Force on Preventive Health Care. CMAJ 2003;169(3):207–8.