

PEER REVIEW HISTORY

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ARTICLE DETAILS

TITLE (PROVISIONAL)	Perinatal consequences of a Category One caesarean section at term
AUTHORS	Grace, Leah; Greer, Ristan; Kumar, Sailesh

VERSION 1 - REVIEW

REVIEWER	Dr RENU SINGH DEPARTMENT OF OBSTETRICS & GYNECOLOGY KING GEORGE'S MEDICAL UNIVERSITY,LUCKNOW INDIA
REVIEW RETURNED	04-Feb-2015

GENERAL COMMENTS	author should describe the specific CTG pattern as nonreassuring fetal status is a vague term. Further I would like to know whether all women were in spontaneous labor?or few women had induced labor as well. within category 1 CS malpresentation in labor will not have a poor neonatal outcome unless the labor is advanced with acute fetal distress.further in cases with non reassuring fetal status was meconium observed when CS was done.
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REVIEWER	Tak Yeung LEUNG Department of Obstetrics and Gynaecology, The Chinese University of Hong Kong
REVIEW RETURNED	27-Feb-2015

GENERAL COMMENTS	<p>This is retrospective study on category I CS. The authors stated two aims in this study: (1) to investigate neonatal outcomes following a category I CS at term and (2) to ascertain obstetric factors that might influence these outcomes.</p> <p>For the first aim, the authors found that neonatal outcomes were poorer after category I CS when compared to II CS. This result is not surprising as category I CS was indicated for obstetric emergency or fetal distress. This result is not new either as many previous studies had shown that. In fact, it was misleading as it appeared that the longer the decision-to-delivery interval, the better was the outcomes (1).</p> <p>For the second aim, the authors did not find any maternal risk factors for category 1 CS. Such result is not surprising and is not meaningful at all in such retrospective setting. For example, even for a well-known factor diagnosis like cord prolapse, the authors could not demonstrate a statistical significance (2.1% vs 0.2%; $p=0.73$) in their large cohort.</p> <p>The description of the methodology was ok but the intrinsic limitation</p>
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	<p>is its retrospective nature which cannot produce meaningful answers.</p> <p>Concerning the result, in addition to the above comment, I would like to know the actual decision-to-delivery interval in both groups but the figures were not stated.</p> <p>Discussion: "Our study did not have any cases of intrapartum demise or neonatal death in either caesarean section cohort. This may reflect the standard of obstetric, anaesthetic and neonatal care in a major metropolitan teaching hospital with all the relevant facilities and expertise readily available." While perinatal death is an important audit parameter, it is very uncommon nowadays in developed countries. More meaningful audit parameter is decision-to-delivery interval or bradycardia-to-delivery interval (1).</p> <p>"Although babies that are growth restricted are at increased risk of intrapartum complications, we did not find such an association in our study" The authors only compared the mean birth weight between groups but not the percentile, or number of babies below a certain cut-off. The effect of IUGR may hence be masked in a large cohort.</p> <p>Reference: 1. Leung et al Urgent cesarean delivery for fetal bradycardia Obstet Gynecol. 2009 Nov;114(5):1023-8.</p>
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REVIEWER	Bryony Jones Queen Charlotte's & Chelsea Hospital Imperial College Healthcare Trust United Kingdom
REVIEW RETURNED	09-Jun-2015

GENERAL COMMENTS	<p>suggest amend line 37/38; "neonatal still birth" is not term I am familiar with - should this read "neonatal death"?</p> <p>It is unlikely that the use of this term in coding might have contributed to the the surprising absence of any neonatal deaths following emergency caesarean section however it may be worth just checking this and cross check coding with searching for neonatal death or still birth following vaginal delivery during the same time to validate search methodology.</p>
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VERSION 1 – AUTHOR RESPONSE

1. Reviewer Name: Dr RENU SINGH
 Institution and Country DEPARTMENT OF OBSTETRICS & GYNECOLOGY
 KING GEORGE'S MEDICAL UNIVERSITY, LUCKNOW INDIA

Please leave your comments for the authors below author should describe the specific CTG pattern as nonreassuring fetal status is a vague term. Further I would like to know whether all women were in spontaneous labor?or few women had induced labor as well. within category 1 CS malpresentation in labor will not have a poor neonatal outcome unless the labor is advanced with acute fetal distress.further in cases with non reassuring fetal status was meconium observed when CS was done.

The CTG patterns defined as non reassuring fetal status encompassed either suspicious or pathological heart rate patterns as defined by NICE (NICE CG 55. Intrapartum care: Care of healthy women and their babies during childbirth. 2007). In terms of labour, the study cohort included women who were admitted in spontaneous labour and those who were induced. The induction of labour rate at the Mater Mothers' Hospital in Brisbane for term babies is approximately 28%. We agree that caesarean sections for fetal malpresentations are unlikely to result in a poor neonatal outcome. However, the point we are making is that when Cat 1 CS are performed for malpresentation there is usually an element of fetal compromise inherent in the presentation, otherwise the obstetric staff would not have classified the caesarean section as a Cat 1 procedure. Our results suggest that in this scenario, neonatal outcomes are worse.

2. Reviewer Name: Tak Yeung LEUNG

Institution and Country Department of Obstetrics and Gynaecology, The Chinese University of Hong Kong

Please leave your comments for the authors below This is retrospective study on category I CS. The authors stated two aims in this study: (1) to investigate neonatal outcomes following a category I CS at term and (2) to ascertain obstetric factors that might influence these outcomes.

For the first aim, the authors found that neonatal outcomes were poorer after category I CS when compared to II CS. This result is not surprising as category I CS was indicated for obstetric emergency or fetal distress. This result is not new either as many previous studies had shown that. In fact, it was misleading as it appeared that the longer the decision-to-delivery interval, the better was the outcomes (1).

Our results do show that neonatal outcomes are worse in Cat 1 procedures. Although, we fully accept that this may be intuitively apparent some studies have found no difference in outcomes even in growth restricted babies (Gilbert WM, Danielsen B. Pregnancy outcomes associated with intrauterine growth restriction. Am J Obstet Gynecol. 2003;188:1596-9; discussion 9-601). Furthermore one of the references (Jibodu OA, Arulkumaran S. Intrapartum fetal surveillance. Curr Opin Obstet Gynecol 2000;12:123-7.) used by Dr Leung in his own paper that he cited below suggests that most babies delivered for fetal distress do not have worse outcomes for the simple fact that they are delivered rapidly enough to avoid injury. Furthermore, the ability particularly in large teaching hospitals where emergency operative facilities and staff are available 24/7 to perform rapid delivery of the baby, the majority of cases do not result in an adverse outcome. Indeed, in our discussion we highlight this factor.

For the second aim, the authors did not find any maternal risk factors for category 1 CS. Such result is not surprising and is not meaningful at all in such retrospective setting. For example, even for a well-known factor diagnosis like cord prolapse, the authors could not demonstrate a statistical significance (2.1% vs 0.2%; $p=0.73$) in their large cohort.

We are slightly confused by the reviewer's point. Is he suggesting that just because we did not find a statistical difference between the 2 groups that our results are not valid? Once again the point we made in our discussion is that the majority of cases fetal compromise occur unexpectedly and are presumably the result of deteriorating placental function in labour. Hence, our observation that if there was a suitable screening test to identify fetuses at risk, obstetric management could then perhaps be altered to improve outcomes.

The description of the methodology was ok but the intrinsic limitation is its retrospective nature which cannot produce meaningful answers.

We are surprised by this comment given that Dr Leung's paper below is a retrospective study.

Concerning the result, in addition to the above comment, I would like to know the actual decision-to-delivery interval in both groups but the figures were not stated.

Unfortunately we do not have this data.

Discussion:

"Our study did not have any cases of intrapartum demise or neonatal death in either caesarean section cohort. This may reflect the standard of obstetric, anaesthetic and neonatal care in a major

metropolitan teaching hospital with all the relevant facilities and expertise readily available.” While perinatal death is an important audit parameter, it is very uncommon nowadays in developed countries. More meaningful audit parameter is decision-to-delivery interval or bradycardia-to-delivery interval (1).

Please see our response above. We used a composite neonatal outcome measure to assess the consequences of a Cat 1 CS. This is a commonly used approach when describing perinatal outcomes.

“Although babies that are growth restricted are at increased risk of intrapartum complications, we did not find such an association in our study” The authors only compared the mean birth weight between groups but not the percentile, or number of babies below a certain cut-off. The effect of IUGR may hence be masked in a large cohort.

The median birth weights (IQR) in the 2 groups were 3420 (3095-3770) and 3550 (3190-3920) respectively. By any measure these are not growth restricted fetuses.

3. Reviewer Name Bryony Jones

Institution and Country Queen Charlotte's & Chelsea Hospital
Imperial College Healthcare Trust
United Kingdom

Please state any competing interests or state 'None declared': no competing interests

Please leave your comments for the authors below

suggest amend line 37/38; "neonatal still birth" is not term I am familiar with - should this read "neonatal death"?

We have amended this to read neonatal death.

It is unlikely that the use of this term in coding might have contributed to the surprising absence of any neonatal deaths following emergency caesarean section however it may be worth just checking this and cross check coding with searching for neonatal death or still birth following vaginal delivery during the same time to validate search methodology.

This exclusion criteria for this study detailed in the materials and methods section were multiple pregnancy, known fetal demise at any gestation but prior to labour, known lethal abnormality or confirmed aneuploidy. In addition only term appropriately grown babies were included in this study. Therefore this was a relatively “low risk” cohort which would have extremely low rates of neonatal demise. We have nonetheless re-checked our database and can confirm that the figures presented in the manuscript tables are correct.