Methods of delivering the placenta at caesarean section

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At caesarean section, delivery of the placenta by cord traction is associated with fewer risks compared with manual removal of the placenta. Therefore, manual removal of placenta should be avoided as a routine procedure, but may be performed if there is significant bleeding in order to have better access to the uterine incision or tear.

RHL Commentary by Goonewardene M

1. INTRODUCTION

Caesarean section rates are rising worldwide and becoming a cause for concern as caesarean section has been shown to be positively associated with maternal mortality and severe morbidity, even after adjusting for risk factors (1).

After delivery of the baby by caesarean section, it is common practice to administer intravenous oxytocin to the mother and deliver the placenta by controlled cord traction. Massaging the uterine fundus may help to separate the placenta from the endometrium. In this procedure, manual removal of the placenta is carried out only if there is a delay in its separation and expulsion. An alternative method is to remove the placenta manually immediately after delivery of the baby. Although the latter approach may be quicker, it may increase the risk of significant blood loss and endometritis (2, 3, 4). Some studies, however, have not shown an increased risk of morbidity from immediate manual removal of the placenta (5). In this review (6), the best available evidence has been evaluated to establish whether routine manual removal of the placenta at caesarean section is as safe as its delivery by controlled cord traction or by other methods of delivery of the placenta.

2. METHODS

A comprehensive search without any language restriction was carried out, with all eligible studies having been identified and reviewed. The trials were identified from the Cochrane Pregnancy and Childbirth Group's Trial Register with the help of the trials search coordinator (30 September 2007) and also by hand-searching reference lists of relevant publications. Selection criteria for the studies and method of data extraction and presentation are satisfactory. Randomized controlled trails comparing manual removal of the placenta with either controlled cord traction or spontaneous delivery of the placenta were included. Quasi-randomized controlled trials were excluded. There was considerable heterogeneity in the types of interventions and co-interventions performed in the comparison (control) groups. Hence, the review authors used the random effects model for meta-analysis of many of the outcomes.

3. RESULTS

A total of 15 trials involving 4694 women undergoing elective or emergency caesarean section were included. In five studies, women in the comparison (control) groups received uterine massage and/or controlled cord traction was applied; in the rest of the trials, in the control groups, the placenta was delivered spontaneously.

The primary outcome measure was blood loss of >1000 ml during or within the first 24 hours of caesarean section. Two trials, conducted in the Islamic Republic of Iran and Switzerland involving 872 women showed that manual removal of the placenta carried a higher risk of blood loss of >1000 ml [relative risk (RR) 1.81; 95% confidence interval (CI) 1.44–2.28] compared with controlled cord traction. However, in four trials involving 1715 woman there was no increase in blood transfusions in the manual removal group. The

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secondary outcome measures – haemoglobin and haematocrit levels and their reduction after caesarean section – showed marked heterogeneity.

In two studies involving 384 women, postoperative haematocrit in the manual removal group was modestly less than in the control groups [weighted mean difference (WMD) −1.55; 95% CI −3.09 to −0.01], with significant heterogeneity between the two studies. However, in two other studies involving 600 women there was no significant difference in the postoperative haemoglobin levels between the two study groups.

Four studies involving 1883 women showed a greater reduction in haematocrit in the manual removal group (WMD 3.04; 95% CI 0.81–5.27), with marked heterogeneity between the studies. Two trials involving 364 women showed a moderate reduction in haemoglobin in the manual removal group (WMD 0.83; 95% CI 0.23–1.42), with significant heterogeneity between the two studies.

Thirteen trials involving 4134 women showed that manual removal of the placenta was associated with a statistically significantly increased risk of endometritis (RR 1.64; 95% CI 1.42–1.9).

In two studies involving 580 women, there was no difference in the risk of puerperal fever between the study groups. In two studies involving 534 women no significant difference was observed in feto-maternal blood transfusion between the study groups. In eight studies involving 2021 women no significant difference was observed in the duration of the caesarean section operation between the study groups.

Three studies involving 546 women showed a significantly higher postoperative hospital stay in women who had manual removal of the placenta (WMD 0.39 days; 95% CI 0.17–0.61). However, as such this increase by an average of about 10 hours is not of great clinical concern.

4. Discussion

4.1. Applicability of the results

The review authors conclude that at caesarean section delivery of the placenta by cord traction is associated with fewer risks compared with manual removal of the placenta. All trials included in the review were conducted in generally well-resourced settings, with nine studies having been carried out in the USA. However, there is no reason to believe that the conclusions of this review may not be applicable to under-resourced settings where caesarean sections are performed.

Overall, the evidence in favour of delivery of the placenta by cord traction cannot be considered as strong since the trials included in this review had considerable heterogeneity and limitations related to for example assessment of blood loss and use of peri-operative antibiotics. With regard to blood loss, it should be noted that accurate estimation of blood loss is difficult and there can be marked differences in estimates depending on the person assessing the blood loss as well as on the method used for the assessment. Hence, it is important to blind the investigator at the time of assessment of blood loss. However, except for one study involving 108 subjects, in which data on estimated blood loss were obtained from case records, the investigator assessing blood loss was not blinded to the method of placental delivery. The method of assessment of blood loss also varied between studies. Methods used in different trials included estimated blood loss recorded in case notes, volumetric and gravimetric methods to measure blood loss with or without amniotic fluid, and surrogate measures such as reduction of haemoglobin percentage and haematocrit 24 and 72 hours after the operation. In four trials involving 1444 women, classical and vertical uterine incisions, which are associated with increased blood loss, were used in addition to the common low-transverse uterine incision.

4.2. Implementation of the intervention

The findings of this review imply that manual removal of placenta should be avoided as a routine procedure during caesarean delivery. However, in the presence of significant bleeding (for example from a placenta

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praevia or an unexpected tear in the low uterine segment), manual removal of placenta may be indicated in order to have a quicker and better access to the uterine incision or tear.

At the secondary level of health care, where caesarean sections are carried out, the recommendation of this review could be easily incorporated when updating the existing clinical practice guidelines on the techniques of caesarean section. The findings of this review are not relevant to the primary or community care levels.

The well established principles of active management of the third stage of labour during a vaginal delivery (7) can also be used in caesarean section. Ten units of oxytocin should be given intravenously immediately after delivery of the baby. Placental separation and expulsion can be facilitated by uterine fundal massage and controlled cord traction. If there are concerns regarding continued loss of blood from the uterine incision, sutures can be applied to the angles of the uterine incision and haemostatic clamps applied to the cut edges, while awaiting placental separation and expulsion.

4.3. Implications for research

The acceptable average time lag between delivery of the baby and delivery of the placenta by uterine fundal massage and controlled cord traction needs to be established. Further studies are also needed on the potential benefits of intra-umbilical vein injection of oxytocin (8), manual removal of the placenta in cases of delayed separation of the placenta, and the timing of such interventions. The extent of spillage of blood into the peritoneal cavity and of feto-maternal transfusion associated with manual removal of the placenta may also be a useful topic of further research.

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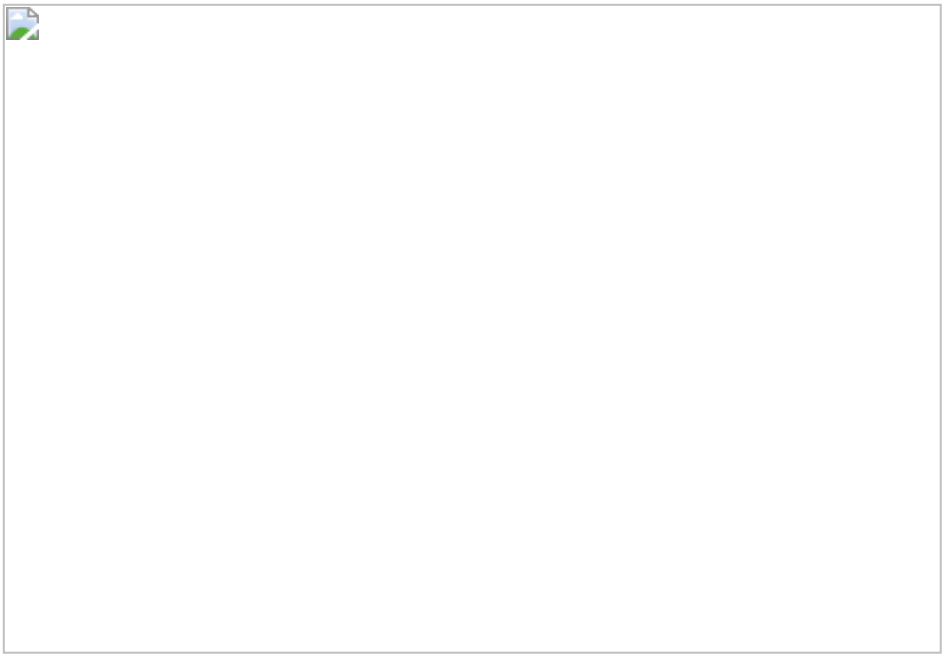
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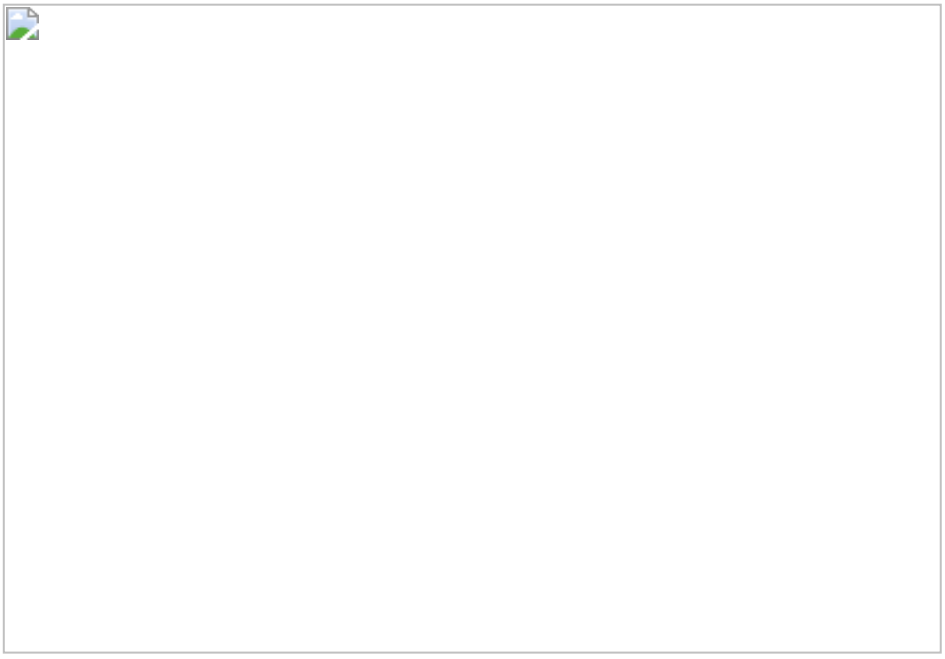
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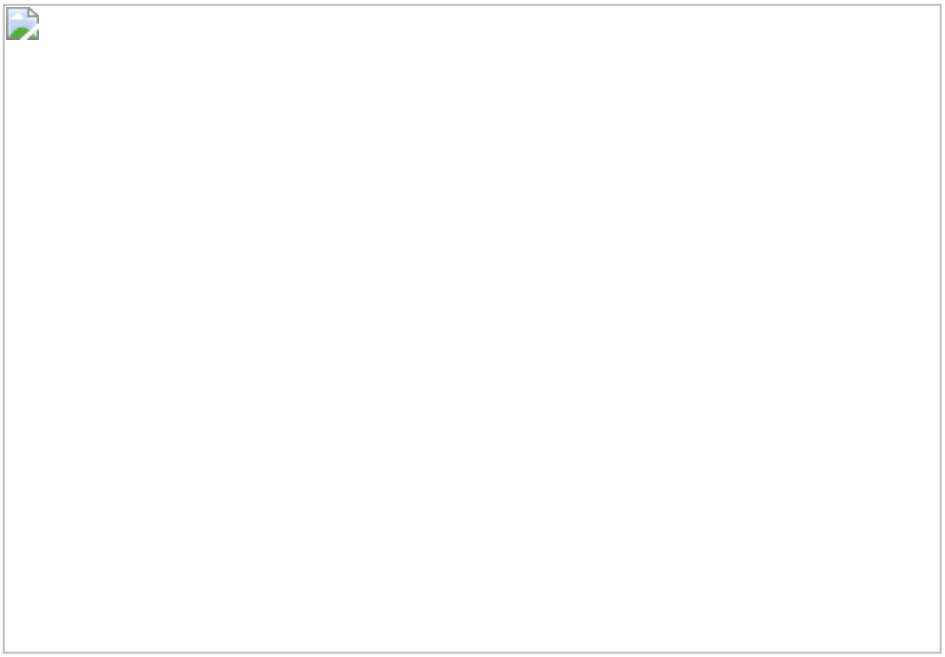
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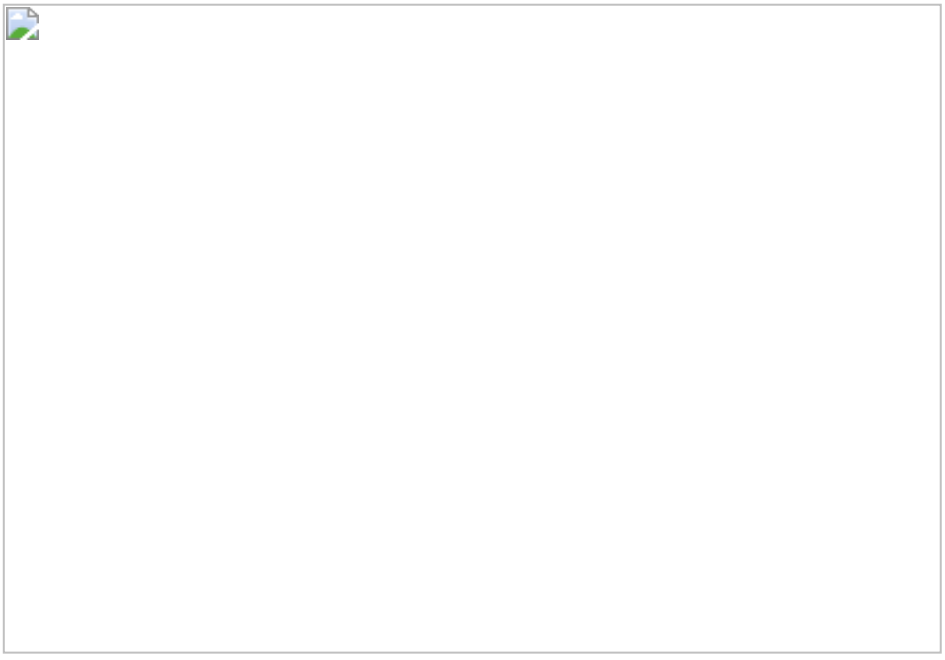
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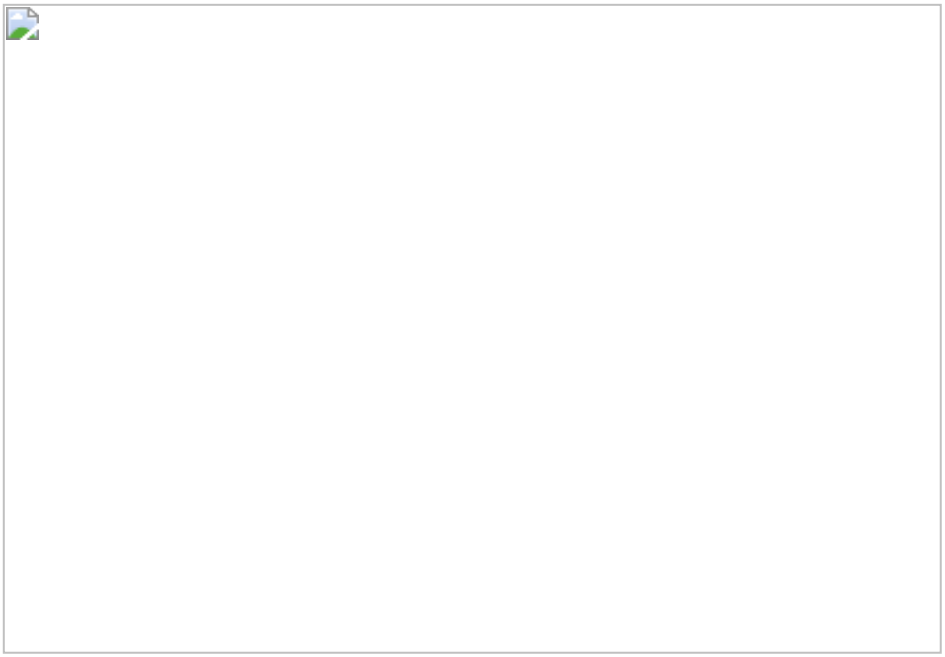
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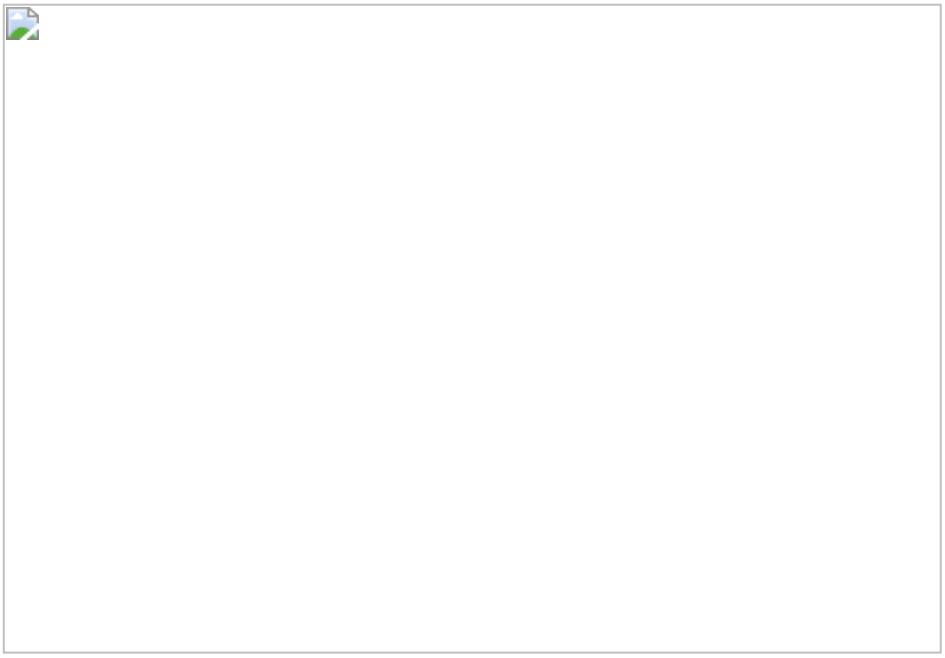
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