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Tranexamic acid for preventing severe bleeding in caesarean births

Less blood loss, but uncertainty remains about outcomes that matter to women

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Caesarean section is one of the most common major surgical procedures worldwide, accounting for about 25 million surgeries every year.[1 2] Bleeding can be substantial, with average blood losses of 700-1000 mL, and may be considerably greater if surgery is complex or underlying conditions such as placental abnormalities exist.[3] Severe bleeding is a common cause of maternal death after caesarean section in low and middle income countries, and although mortality is rare in high income countries, important non-fatal outcomes such as anaemia, fatigue, and postpartum depression are common.[4 5]

Tranexamic acid is an effective treatment for reducing bleeding.[6] The benefits are time dependent and greatest when given early.[7] These findings have prompted growing interest in whether earlier tranexamic acid use could prevent progression to severe haemorrhaging rather than treating the bleeding once established.

Several trials have assessed tranexamic acid for preventing severe postpartum bleeding, but the results are inconsistent.[8] The linked trial by Zhang and colleagues (doi:10.1136/bmj-2026-089636) adds to this evidence by examining the effect of tranexamic acid in women with placenta praevia, a group at high risk of severe bleeding.

The trial included 1732 women from 24 maternity units across China. The described methods are robust, with prospective registration, good concealment of allocation, objective outcome assessment, and minimal missing data. Women with placenta praevia having a caesarean birth were randomly allocated to receive 1 g tranexamic acid or matching placebo within five minutes of cord clamping. Tranexamic acid reduced the primary haemorrhage outcome, defined as calculated blood loss ≥1000 mL or as blood transfusion within two days of giving birth, by 15%. No evidence was found for an increase in serious adverse effects.

These are important findings. Although the authors describe the reduction in bleeding as modest, this understates the impact, particularly in women at high risk of harm from bleeding for whom even modest relative risk reductions translate into worthwhile benefits. As highlighted in "The missing evidence: anaemia, postpartum bleeding and maternal death" report, women with moderate or severe anaemia can become seriously ill despite losing much less than 1000 mL of blood.[9] This is highly relevant given that one third of pregnant women worldwide experience anaemia.[10] Data on maternal wellbeing, including depression, were collected, but the trial had low power for these outcomes.

Zhang and colleagues interpreted their results in the context of other trials on caesarean section, but evidence from surgery more broadly is also relevant. The ATACAS,[11] POISE-3,[12] and TRACTION[13] trials assessed the effects of tranexamic acid before incision and observed large reductions in bleeding. Although these trials did not include participants undergoing caesarean section, they nevertheless inform our understanding of the effects of tranexamic acid, which are likely to be widely applicable.

As to future research, the question is no longer whether tranexamic acid reduces bleeding—the evidence from randomised trials in obstetrics and surgery more broadly confirm this. Rather it is how tranexamic acid should be used to maximise patient benefit, specifically ensuring rapid administration in women with established bleeding, targeting preventive use in women most likely to benefit, and generating reliable evidence on the effects on outcomes that matter to women. As regards timing, tranexamic acid in non-obstetric surgery is given before incision. In most trials on caesarean section, however, administration is delayed until after cord clamping to avoid placental transfer. Although tranexamic acid crosses the placenta, with fetuses exposed to an estimated half of maternal concentrations, there is no evidence of any neonatal adverse effects.[14] Pre-incision administration, as with non-obstetric surgery, warrants evaluation in caesarean section, with careful monitoring of maternal and neonatal outcomes. Large, pragmatic randomised controlled trials of pre-incision tranexamic acid in caesarean section that prioritise patient centred outcomes are urgently needed.

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