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Caesarean section surgical techniques: all equally safe

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Since 1985, a caesarean section rate of 10–15% has been deemed optimum by the international health-care community.[1] When caesarean section rates rise towards 10% across a population, maternal and newborn deaths decrease; when they are higher than 15%, there is no evidence of reduced mortality.[1] Complications of caesarean sections can be substantial and sometimes permanent for both mothers and babies, and can result in disability or death, especially in settings with inadequate facilities or capacity to undertake safe surgery and treat surgical complications.[2–4]

Despite this evidence, findings from 150 countries show that the number of caesarean sections being done worldwide has increased to unprecedented levels, currently at 19% of all births worldwide ranging from 6% to 27% in low-income and high-income regions, respectively.[5] In some countries, caesarean section rates are up to 50%, mainly in the private sector, including in Brazil, Iran, and Mexico, resulting in millions of women undergoing unnecessary surgery.[6,7] In 2008, 3·18 million additional caesarean sections were needed and 6·20 million unnecessary caesarean sections were done.[7] The cost of the global excess caesarean sections was estimated to be US$2·32 billion, with the cost of the global needed caesarean sections about $432 million.[7]

The need to reverse these trends notwithstanding, the primary need is to ensure safe and high quality standards for this very common surgical intervention. Astonishingly, no standard evidence-based guidelines exist for caesarean sections and much variation is apparent between what is considered best practice; differences include blunt versus sharp abdominal entry, single versus double layer closure, closure versus non-closure of the peritoneum, and polyglactin sutures over chromic catgut. For that reason, the results of the CORONIS trial reported by the CORONIS collaborative group in *The Lancet* are important for health-care providers.[8,9]

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The CORONIS trial is a pragmatic international 2×2×2×2×2 non-regular fractional, factorial, unmasked, randomised controlled trial done at 19 sites in Argentina, Chile, Ghana, India, Kenya, Pakistan, and Sudan. Women were enrolled if they were to undergo their first or second caesarean section through a planned abdominal incision.[8,9] In 2013, the researchers reported the short-term outcomes associated with different surgical techniques at caesarean section in 15 935 women in low-income and middle-income countries.[8] Blunt versus sharp abdominal entry was compared, as well as exteriorisation of the uterus for repair versus intra-abdominal repair, single versus double layer closure of the uterus, closure versus non-closure of the peritoneum, and chromic catgut versus polyglactin-910 for uterine repair. On a range of these short-term outcomes, up to 6 weeks after delivery, no clear benefits of any of the comparisons were reported.[8]

Primary outcomes of the CORONIS follow-up study[9] in *The Lancet* include pelvic pain, deep dyspareunia, hysterectomy, and outcomes of subsequent pregnancies. 13 153 (84%) of 15 633 women were followed up for an average of 3·8 years, and no significant differences were recorded in long-term outcomes, including pelvic pain, deep dyspareunia, incisional hernia, intra-abdominal adhesions, outcomes of subsequent pregnancies, hysterectomy, and the morbidity and mortality of children.[9] Overall, severe adverse outcomes were uncommon in these settings.[9]

The CORONIS collaborative group's follow-up study[9] has some limitations, such as a lower than anticipated subsequent pregnancy rate (44% *vs* 80%), and a high incidence of caesarean section before the onset of labour in subsequent pregnancies, which lowers the power of the study to look at uncommon events. Nevertheless, it is the largest trial on caesarean section surgical techniques so far, with a significant follow-up. The researchers noted

no evidence of a difference in risk of abdominal hernias for blunt versus sharp abdominal entry, nor for the risk of death or serious morbidity of the children born at the time of trial entry. For exteriorisation of the uterus versus intra-abdominal repair, the investigators noted no evidence of a difference in risk of infertility or of ectopic pregnancy. For single versus double layer closure of the uterus, there was no evidence of a difference in maternal death or a composite of pregnancy complications. For closure versus non-closure of the peritoneum, no difference could be found in any outcomes relating to symptoms associated with pelvic adhesions such as infertility. For chromic catgut versus polyglactin-910 sutures, there was no evidence of a difference in the main comparisons for adverse pregnancy outcomes in a subsequent pregnancy, such as uterine rupture.

The study by the CORONIS collaborative group showed no evidence to favour one surgical technique over another one. This means that other considerations affecting clinical practice, such as time and cost savings, might become more important. Polyglactin-910 is at least twice as expensive as chromic catgut, with no benefit, suggesting that chromic catgut should be the suture material of choice. Non-closure of the peritoneum seems to be preferred because of cost and time savings. For clinical practice, it is important to realise that all surgical techniques reported in this trial seem to be equally safe, which suggests that the rigorous use of the surgical techniques is more important than the technique as such. In view of the huge numbers of women undergoing this intervention, this report is important and long overdue.

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I declare no competing interests.

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The French experience of the threat posed by Zika virus

On Feb 1, 2016, a public health emergency of international concern was declared by WHO[1] as the possible association between Zika virus and clusters of microcephaly raised international awareness. France was in a unique position to evaluate and respond to the situation for a number of reasons. First, the 2013–14 French Polynesian outbreak was the initial report of neurological and congenital complications in people infected by Zika virus, with an increase in incidence of Guillain-Barré syndrome and eight reported cases of neurological congenital malformations.[2,3] Second, Martinique, Guadeloupe, and French Guyana (French overseas departments in the Americas) are presently facing the Zika epidemic. Third, national health authorities had to anticipate possible autochthonous transmissions of Zika in mainland France[4] during April to October (when the mosquito vector is most active), and with the 2016 UEFA European Championship hosted early in the summer season.

In 2013–14, the French Ministry of Health, through the Public Health Emergency Operations Center (PHEOC) responded to the French Polynesian authorities' request for assistance. Expertise and support missions were sent and resulted in the strategic reorganisation of health-care services, the implementation of a vector-control plan, and reinforced epidemiological follow-up.