

## Rising Caesarean Sections Rates — Where Do We Go From Here?

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### ABSTRACT

The high rates of and trend towards Caesarean sections (CS) reflect a change in obstetric practice, patient views and patient empowerment in recent years. More than 60% of CS can be attributed to repeat CS, dystocia, foetal distress and breech presentation. Studying indications for Caesarean sections are useful for hospitals, clinicians and researchers in determining strategies to contain the rising Caesarean section rates (CSR). Previous CS may be the major source of future reductions of the CSR in our practice although the uptake of vaginal births after CS (VBAC) has been low. While maternal requests for CS in the absence of medical indications is not as frequently encountered as in the western world, this issue is discussed as the concept of patient-centred choice is gaining credence with CS done increasingly upon maternal request. In the process of conducting research and reaching a consensus of what constitutes an ideal CSR, every effort is taken to make CS as safe as possible.

*Keywords:* caesarean sections rates, indications, trends

### INTRODUCTION

Increasing rates of Caesarean deliveries have received widespread attention in recent years and have increased widespread discussion in the public domain.<sup>1</sup> The ideal Caesarean section rate (CSR) has never been defined and national rates of Caesarean delivery vary from country to country.<sup>2</sup> Detailed analysis of differences in trends and reasons for the Caesarean section (CS) have identified pathways to recognise possible short-term and long-term risks, and to contain the rising CSR.<sup>3</sup>

### RISING CAESAREAN SECTION RATES

In 1985, the World Health Organization (WHO) issued a consensus statement suggesting there were no additional health benefits when the CSR rose above 10 to 15%.<sup>4</sup> This was based on an examination of estimates of national CSR and maternal and perinatal mortality rates of various countries. Despite this, CSR continued to rise in the 1990s and by 2000 it was close to or exceeding 20%. At the Singapore General Hospital (SGH), the CSR ranged from 12% in 1990 to 14% in 1997.<sup>5</sup> By 1999, the CSR had increased to 18%.

The overall increase in CSR from 16.7% to 25.1% in a recent study is a finding common to many developed countries.<sup>5</sup> In comparison, CSR was 21.3% in England in 2000, 12-14% in the Nordic countries in 1999, and 22% in the USA in 1999.

As over 60% of CS can be attributed to repeat CS, dystocia, foetal distress and breech presentation, management practices that reduce the number of CS performed for these indications could contribute to the stabilisation of CSR.<sup>4</sup> In particular, reducing primary CS for dystocia and increasing the rates of vaginal birth after CS (VBAC) would help to reduce CSR.<sup>6</sup> Reducing primary CS for foetal distress with more accurate diagnosis using foetal scalp pH measurement and foetal electrocardiogram analysis using STAN S21 can contribute to curtailing CSR.<sup>7</sup>

### PREVIOUS LOWER SEGMENT CAESAREAN SECTION

Strategies to contain CSR have focused on the different indications. Of particular interest has been the emergence of VBAC as a safe alternative to repeat CS. Both the American College of Obstetricians and

Gynecologists (ACOG) and the National Institutes of Health (NIH) have endorsed the feasibility of VBAC.<sup>7-9</sup> The ACOG has published a practice guideline summarising the evidence supporting VBAC as the preferred method of delivery after one previous CS and a possible method of delivery after 2 or more CS although we cannot advocate or proclaim that VBAC is safe after 2 previous CS based on some small series papers.<sup>10-11</sup>

The uptake for VBAC by clinicians has been low. Possible reasons include an increasingly litigation-conscious society, concern about scar rupture (>1%) from induction of labour in women with a previous scar and most importantly, the new commonly-held belief that mode of delivery is a matter of personal choice and many women who have had a previous CS may indeed prefer an operative delivery as they perceive it to be safer.<sup>12</sup>

The National Sentinel CS Audit Report stated that the clinical group contributing most to the overall CSR is that composed of women at term with a singleton cephalic pregnancy and a previous CS (44%).<sup>4</sup> Results from a local study demonstrates that previous CS contributes significantly to the increase in CSR, accounting for about 4% of the total deliveries.<sup>5</sup>

In view of these considerations, the recommendation for patients with one or more CS to undergo VBAC must be accompanied by detailed counselling and informed consent. Patients and their partners must be able to understand and accept the risks of possible life-threatening complications, including scar rupture and haemorrhage.<sup>11-12</sup> To minimise the risk of adverse outcomes, VBAC should only be conducted in tertiary hospitals where there is immediate access to an emergency CS in the event of scar complications, and only after prudent patient selection.

Less practical experience in operative vaginal delivery, such as forceps and vacuum delivery for obstetricians-in-training, may have contributed to a higher reliance on CS over operative vaginal delivery as the solution of choice in many situations.

In future, this indication should be a major source of reductions in CSR due to:

1. its preponderance as an indication for CS, and
2. major changes in the management of labour and delivery of births in women with previous CS, including prudent patient selection, a potential trial of labour in the women with a previous CS scar and setting targets to increase and audit VBAC rates.<sup>2</sup>

## FOETAL DISTRESS

A small reduction in CSR may be possible through a different approach to the diagnosis of foetal distress. That the introduction of electronic foetal monitoring in the absence of foetal scalp blood pH estimation contributed to increasing CSR in the 1980s is supported by several randomised controlled trials.<sup>13-15</sup> However, the combined use of electronic foetal monitoring and foetal scalp blood pH estimation has been reported to reduce the diagnosis of foetal distress and resulting CS.<sup>16</sup>

There is evidence that foetal electrocardiogram waveform analysis is effective for foetal surveillance in labour.<sup>17</sup> Maclachlan *et al* demonstrated that there was a significant correlation between increasing T/QRS ratio and falling pH.<sup>18</sup> The Plymouth trial concluded that the combination of ST wave form and CTG analysis compared with CTG analysis only would reduce operative interventions for foetal distress without placing the foetus at a risk.<sup>19</sup> The STAN clinical guidelines identify foetuses at risk of intrapartum asphyxia, allowing an accurate diagnosis of foetal distress and avoiding unnecessary CS.<sup>20</sup> A recent observational study concluded that the combination of foetal pulse oximetry and foetal echocardiography appears feasible and indicates signs of intermittent hypoxia; this may form the basis of new technology that combines both methods of foetal monitoring during labour.<sup>7</sup>

## BREECH

The Term Breech Trial was a landmark study (published in the year 2000) which has influenced clinical practice in the management of term breech pregnancies.<sup>21</sup> Although there was no statistically significant change in CSR for breech presentation in the same local study,<sup>5</sup> there was a 44% increase in the absolute number of CS due to breech. This may suggest that many clinicians are changing their practice in accordance with the evidence from the Term Breech Trial.

Two aspects in the management of breech presentation at term warrant discussion. Firstly, up to 50% of breeches in which vaginal delivery is planned may eventually deliver by CS. Secondly, the increasing practice of external cephalic version may have decreased the number of breeches at term. The potential contribution of breech presentation to declines in CSR is small and is chiefly due to the small number of births with this indication (2%) at term.<sup>2</sup>

## CEPHALOPELVIC DISPROPORTION

Cephalopelvic disproportion (CPD) is another potential area for reductions in CSR which could be brought about by changes in the management of labour and delivery. The use of oxytocin to augment labour may play a role in the reduction of CS for CPD, although this has not been demonstrated in controlled trials.<sup>22-24</sup> More importantly, there is an urgent need to develop objective criteria for the diagnosis of CPD.<sup>3</sup> CPD is a major contributor to the high CSR in our practice and this necessitates the development of evidence-based strategies to anticipate and objectively diagnose dystocia.

## LESS COMMON INDICATIONS

Among the less common indications, placenta previa major contributes significantly to the overall increase in CSR as women with prior CS are at greater risk of developing placenta previa in subsequent pregnancies, requiring delivery by CS.<sup>25</sup> The risk of clinically significant placenta previa and accreta increases with each additional Caesarean due to lower segment uterine scarring.<sup>26</sup>

CSR performed for the remaining “less common” indications, such as severe pre-eclampsia (SPE), multiple pregnancies, abnormal lie and abruptio placenta, remain unchanged.<sup>2,5</sup>

## PATIENT’S REQUEST

The issue of maternal request in the absence of indications deserves discussion as the concept of patient-centered choice is gaining credence with CS done increasingly upon maternal request.<sup>27</sup>

Several reasons are cited for this trend. Some women with a history of difficult instrumental vaginal delivery or long and painful labour may not contemplate further attempts at vaginal delivery.<sup>28</sup> Others are concerned about foetal brain damage and pelvic floor trauma. While developmental delays are unrelated to the mode of delivery, an elective CS does avert the need for episiotomies, prolonged labour, difficult instrumental deliveries and pelvic floor trauma with subsequent predisposition to incontinence.

Postpartum faecal incontinence is more common than previously realised. Women with occult anal-sphincter injury are at high risk of faecal incontinence after a second vaginal delivery.<sup>29</sup> Forceps and vacuum extraction deliveries are risk factors with no protection demonstrated from emergency CS performed in late labour.<sup>30, 31</sup>

Current evidence suggests that risk of mortality associated with CS (0.09/1000 maternities) increases 5-fold compared to vaginal delivery (0.02/1000 maternities).<sup>32</sup> Nevertheless, the absolute risk of maternal death from CS remains low.<sup>33</sup> More importantly, CS is not without morbidity. Short term risks to the mother include complications relating to anaesthesia such as failed intubation and drug reactions; haemorrhage; infection; ileus and even pulmonary embolism. Long term complications include adhesions, intestinal obstruction, viscus injury and uterine rupture. There may be an effect on future fertility as there is a strong association between having a previous CS and the subsequent development of placenta previa.<sup>25</sup> The risk increases with number of prior CS by a dose-response pattern. The risk of placenta accreta was 24% with a placenta previa and one prior CS and 67% with 4 or more prior CS.<sup>26</sup>

Two reports — *Health Committee Maternity Services* and *Changing Childbirth* — have suggested that women should have a pivotal role in their obstetric care.<sup>34</sup> We should respect a woman’s choice if it is fully informed and if she can demonstrate an understanding of the implications. Until evidence points towards either mode of delivery as being superior to the other, prophylactic CS can no longer be considered clinically unjustifiable. It now forms part of accepted medical practice and the majority of obstetricians are prepared to agree to maternal request for CS.<sup>35</sup>

Some argue that successful litigation for failure to do a CS would cost more than many additional sections but there is no evidence that that a policy of increased CS would prevent disability. The wide variation in CSR suggests that there is no consensus among obstetricians about when a CS is medically indicated.<sup>36</sup>

CS remains an important area of controversy. Patients’ right to autonomy is a fundamental human right but choice needs to be informed.<sup>21</sup> Obstetricians must be aware of the consequences of decisions about the mode of delivery as neither method is devoid of risks. Ultimately, competent women are free to decline medical advice and treatment. The (negative) right to decline treatment needs to be distinguished from the supposed (positive) right to demand it. A patient, however competent, cannot invariably impose her demands.<sup>37</sup> Healthcare providers could not preserve their professional integrity or credibility if they were to act as mere instruments to the patients’ demands. Decision-making should be a collaborative enterprise based on mutual respect with the patient’s interest in mind.

Differences in patient and hospital characteristics may have contributed to the changes in indications. Further research with controls for demographic differences is required to determine the extent to which these variables contributed to the increase in CSR.<sup>3</sup> In the interim, protocols and guidelines must be followed to ensure that CS is safe. These include safe practice of anaesthesia, use of antibiotics to decrease risk of febrile episodes and infection, and thromboprophylaxis to minimise complications of thromboembolism. While measures can be undertaken to ensure that CS is safe, it is unlikely that CS will be a safer mode of delivery than vaginal delivery due to the inherent risks of surgery.

## CONCLUSION

The high rates of CS and increasing trend towards CS reflect a change in obstetric practice, patient views and patient empowerment in recent years. Studying indications for CS are useful for hospitals, clinicians and researchers in determining the appropriate strategies in relation to the increasing CSR.

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