

## REDUCTION OF CAESAREAN SECTION RATE IN DEVELOPING COUNTRIES: THE WAY FORWARD.

E. I. Archibong, S. J. Etuk, A. A. Sobande\*, I. H. Itam, G. K. Oyakhire\*\*.

Departments of Obstetrics and Gynaecology, College of Medical Sciences, University of Calabar, Calabar, \*College of Medicine, King Khalid University, Abha, Saudi Arabia, \*\*Edo State University, Ekpoma.

### ABSTRACT

This review article highlights the obstacles and prospects of reduction of caesarean section rate in developing countries. The strategic areas targeted are: reduction of primary caesarean section and vaginal birth after primary caesarean section. These areas have been discussed with reference to findings from developed countries.

The population must be well informed on the values of antenatal care and there should be definite delivery room guidelines and dedication in the management of patients in labour. Annual auditing of caesarean section rates and complications will reflect the effectiveness of the applied policies.

**KEY WORDS:** *caesarean section, vaginal birth, antenatal care, medical auditing.*

### INTRODUCTION

Before the 16<sup>th</sup> century, abdominal delivery or caesarean section (CS), was performed on dead or dying women in an effort to preserve the unborn child for the state, while in traditional African society, it was and is still performed to "free the baby from the dead mother, so that she would not be the infant's coffin"<sup>1</sup>. Ever since the first recorded CS on a living woman performed by a Swiss (Jacob Nufer) on his wife in 1500<sup>2</sup> and then Robert Smith performed another CS on a living woman in Edinburgh in 1737<sup>3</sup>, the CS rate has been on the rise globally. A rising trend in CS rate was noted in Ile-Ife, Nigeria in 1988<sup>4</sup>. Baudelocque (a French obstetrician) in 1790 defined caesarean delivery (CD) as "that operation by which any way is opened for the child than that destined for by nature"<sup>5</sup>. Different uterine "portals of exit" were thereafter tried for the child, including the classic uterine incision by Cragin in 1900 and the lower segment vertical incision by Kronig in 1912. In 1926, Kerr introduced the low transverse uterine incision, which was finally accepted universally in the late 1940s<sup>6</sup> and is still popular up to date.

Though the CS reports from developing countries might be sketchy, the complications of CS still contribute substantially to unacceptable high maternal mortality<sup>4</sup>. Some authors have reported maternal mortality rates of 18.1 to 40 per 1000 following caesarean section<sup>7,8</sup>. Substantial increases in the frequency of CS in developed countries have been reported by various authors<sup>9,10</sup>. In the last two decades, the rate of CS has more than tripled in North America<sup>11</sup> and doubled in many European countries<sup>12</sup>. The same trend has been reported in Australia<sup>13</sup>, Latin

America<sup>14</sup> and the Middle East<sup>15,16</sup>. The CS rates in the same hospital in United States dramatically increased from 4.5% in 1965 to 30.0% in 1997<sup>17</sup>. Increased safety of CS, anaesthesia, blood banking, antibiotics therapy and improved neonatal care are additional contributory factors to this increase in CS in developed countries. Extensive intrapartum fetal surveillance particularly with the use of electronic fetal monitoring devices with occasional uncertain interpretation, increase cases of litigation in obstetric practice and maternal request for CS have also contributed to this increase. These safety measures are not without cost, which most developing countries cannot afford.

Poverty is still "endemic" in many developing parts of the world. Because of recurrent infections, malnutrition and early marriage, adults fail to attain their full developmental potentials at first pregnancy with resultant adverse obstetric related complications in the women folk. The cost of medical care has driven a lot of women to deliver in "spiritual churches" with resultant unacceptable high morbidity and mortality<sup>18</sup>. In developed countries, caesarean sections are performed mostly electively, while in developing countries they are performed as emergencies<sup>19</sup>. Caesarean delivery was in the past widely seen in developing countries as a defeat of womanhood and taboo. As urbanization slowly creeps into the rural populations there is increased willingness and demand for CS. There is however a global trend towards reduction of CS rate.

This review article targets the developing countries with a view of comparing figures available from developed parts of the world and joining the trend in CS rate reduction strategy. Two broad areas have been identified and targeted. These are: reduction of primary CS rate and encouraging vaginal birth after CS.

\*Correspondence: Dr. E. I. Archibong

## 1. Reduction of primary caesarean section rate.

Caesarean section, like any other surgical procedure, is not without risks. The risks and safety of CS in the world differ from place to place<sup>20</sup>. An obstetrician often sees an index pregnancy in a case of previous CS as being at risk because of the antecedent factor(s) that led to this previous operative delivery. To alleviate this fear, primary CS should be avoided unless absolutely necessary. The applications of the following principles are essential to achieve a meaningful goal:

(A) Indications often given for primary CS include dystocia due to fetopelvic disproportion, malpresentation (such as breech), fetal distress, antepartum haemorrhage, medical complications and cord prolapse.

Dystocia is quite often an individual's clinical perception of the possible outcome of labour. Even when some degree of disproportion is perceived, as long as the fetus in utero continues to show no evidence of distress, a woman in labour should be given an ample chance for labour to continue. A trained accoucheur should not however sacrifice the fetus in an attempt to achieve vaginal delivery at all cost.

(B) There should be strict guidelines and indications for induction of labour, to avoid undesired CS due to supposed, "failed induction". Offer of induction of labour on demand / social reasons should be discouraged.

(C) Breech presentation and external cephalic version: External cephalic version (ECV) which in the last two decades was becoming a lost art, is now more widely used. Querial, in his experience stretching over a period of more than 10 years, successfully performed ECV in over 60% of his patients with breech presentation beyond 36 weeks gestation. Nearly 90% successful vaginal delivery occurred in those converted, with no increased fetal, neonatal or maternal mortality or morbidity<sup>21</sup>. Hence there is still a place for antenatal external cephalic version in obstetric practice.

With careful selection of patients, bearing in mind the size and attitude of the fetus in relation to the size of the maternal pelvis and satisfactory progress in labour, assisted vaginal breech delivery can be successfully conducted on a lot of cases of breech presentation in labour by an experienced obstetrician. Caesarean section should not therefore be performed on a lady simply on the bases of breech presentation.

(D) Continuous electronic fetal heart monitoring or cardiotocography (CTG) and intermittent intrapartum auscultation: Intrapartum CTG is not widely used in developing countries and where such facilities exist, there is always that risk of misinterpretation of tracing due to inexperience. Fetal blood sampling and analysis are not available to exclude fetal acidosis in apparently abnormal tracings. The way forward is to have trained personnel who are capable of giving reliable reading and interpretation, if CTG has to be applied during labour.

However, meticulous intrapartum auscultation of the fetal heart in less equipped delivery rooms in developing countries, with a close watch on the quality of liquor, is still a useful predictor of the fetal well being.

(E) Antenatal care: A lot of medical complications in pregnancy such as diabetes mellitus and hypertension which

may lead to delivery by CS, can be promptly detected antenatally and adequately managed with achievement of vaginal delivery and good fetal outcome. The role of antenatal folate supplement in reduction of neural tube defect has been well documented<sup>22</sup>. Unfortunately, antenatal clinic attendance in most developing countries is quite low due to inability of individuals to pay for medical care, non-availability of health care centres within the reach of the population in need, poor road network and transportation, inadequate dissemination of information on the benefits of antenatal care. The benefits of regular antenatal care by far outweigh the risks associated with non-attendance.

(F) Symphysiotomy: There is still a place for revisiting this fading procedure. If the indications for it are strictly met, it has its advantages particularly in developing countries. Following a failure of assisted delivery, symphysiotomy if used may avoid the risks of further pregnancies being delivered by caesarean section<sup>23</sup>. There is a place for symphysiotomy in the delivery of the entrapped after coming head of the breech<sup>24,25</sup>. Because it is not without risks, the surgeon needs some degree of training before being allowed to perform this "simple" but potentially complex procedure.

Other problems, which need to be addressed in an effort to reduce the primary CS rate in developing countries include:

- (i) **Education.** This is a cornerstone in achieving this objective. Health education will enlighten the populace on the adverse effects of non-compliance with regular antenatal check up. The health promotion agencies should emphasize good nutrition and its benefits. Illiteracy eradication amongst the female folk will discourage early marriage and its associated obstetric problems, in the process of educational pursuit.
- (ii) **Medical treatment costs.** This needs to be substantially subsidized by the government so as to make hospital bills affordable by the citizens. High hospital bills have been identified as a major contributing factor in poor countries to failure to utilize hospital facilities. Failure to be well informed, even where medical treatment is free is also a major set back in the utilization of available medical facilities.
- (iii) **Manpower training and dedication.** The need to have trained personnel to supervise deliveries may go a long way in the reduction of the incidence of "unnecessary" CS. The training curriculum should practically emphasize operative vaginal delivery and assisted breech delivery. Trained personnel should be dedicated to achieving optimal goal.

## 2. Vaginal delivery following previous primary caesarean section

This is a very important key towards reduction of caesarean section rate. Figures from some studies have however shown that vaginal delivery following one previous caesarean section can be achieved in 80.7% to 86.6% of patients if carefully selected<sup>26,27</sup>. Meier and Porreco found that 67.3% of their patients whose primary CS was for "cephalo-pelvic disproportion" (CPD), were delivered vaginally and 31% of the infants were larger than those delivered by CS. They also found that 78% of the women delivered by CS in their first pregnancy due to CPD, achieved

vaginal delivery following a trial of scar<sup>28</sup>. The message here is that primary CS due to CPD should not necessarily be an indication for a repeat CS. Such patients need to be adequately evaluated in the index pregnancy and closely observed during trial of scar.

The much-feared complication of uterine rupture in patients with previous uterine scar undergoing trial of scar occurs in less than 1% of cases<sup>29</sup>. Boulvain *et al* in their meta-analysis of trial of labour after caesarean section in sub-Saharan Africa, found uterine rupture and scar dehiscence in 2.1%. They concluded that in sub-Saharan Africa a selection policy of trial of labour after a previous caesarean section has a success rate comparable to that observed in developed countries<sup>30</sup>.

There should be a selection protocol for trial of scar in patients with previous caesarean section scar, which should be applied in developing countries. The selection guideline should include the following patients:

- (i) Those with one previous lower segment transverse scar, who had uneventful post operative period and no complications such as overwhelming infection that could have jeopardized good uterine wound healing.
- (ii) Those without previous uterine rupture.
- (iii) Those with clinically adequate pelvis in relation to the size of the fetus in the index pregnancy.
- (iv) Favourable presentation such as vertex may be selected while breech presentation should be excluded from the selection criteria. Van Roosmolen in rural Tanzania, found 45% incidence of uterine rupture and 30% perinatal mortality in attempted vaginal birth in breech presentation following CS<sup>31</sup>.

It should be noted that while successful vaginal delivery following previous CS is quite reassuring, it is important that any trial of scar should be conducted in a hospital with facilities (anaesthesia, equipment and personnel) for emergency CS, in case it is required.

A six-hour trial of scar in the phase of adequate uterine contractions should give an ample opportunity for the accoucheur to decide on the progress of labour. A very close and meticulous surveillance of the mother and fetus must be maintained during labour without sacrificing both in an effort to achieve vaginal delivery.

It is important to remember that a very unfavourable cervix and an interval of less than 6 months between the previous CS and the conception of the index pregnancy may have poor prognostic outcome.

## CONCLUSION

There must be a change of policy and management strategies in developing countries to reduce the rate of primary caesarean section. The rates should be reviewed and audited annually, to evaluate and appreciate the outcome of their applied strategies.

Though a trial of vaginal delivery is not completely risk free, the benefits are overwhelming compared to a repeat caesarean section. There is less financial burden, less number of days spent in the hospital with resultant early re-union with the family, early maternal-child bonding, improved lactation, less blood transfusion (with its possible complications) and less puerperal

infection.

There is a global trend towards reduction of CS incidence and this is the time for developing countries to follow this trend.

## Practical points

- Adequate evaluation of a patient in labour is essential. There must be a clear indication for primary or repeat caesarean section.
- External cephalic version can be successfully performed in case of breech presentation beyond 36 weeks gestation, without any adverse effects on the mother and fetus. Good selection criteria and experience are necessary for successful conduct of assisted breech delivery.
- With good selection criteria, up to 85% of cases of previous primary caesarean section can successfully achieve spontaneous vaginal delivery.
- Trial of scar needs commitment and dedication on the part of the delivery room team and there must be a management protocol. Such trials must be conducted in a hospital equipped for emergency surgical procedures.
- The population must be well educated on the values of antenatal care. The government must subsidize medical cost, to make it affordable to the populace.

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