**Title: The growing rate of caesarean sections- A catch 22 situation**

**Section: Selected Summary**

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**Abstract:**

The percentage of Caesarean Section (CS) is used as indicator of access to and use of emergency obstetric care services in a population. The cut off of 15% set in 1985 by World Health Organization (WHO) is yet to be updated based on the changing epidemiology of pregnancies, comorbidities, social dynamics and evolving medical services and technology. CS in India is inequitably more common in urban and private facilities. The desired reduction in maternal and mortality rates cannot be achieved without an increase in CS in the short term. This increase will stabilise or reduce following overall socioeconomic development that will steer better health related behaviour and by strengthening of public health care delivery system. Healthy dialogue between medical fraternity and policy makers, internal audit and public display of the rates may be a good start to assessing and handling the situation.

**Keywords:** Caesarean section, emergency obstetric care, maternal mortality

**Background**

In 1985, World Health Organization (WHO) and Pan American Health Organization (PAHO) had reviewed the existing situation of obstetric care services and declared that rates of Caesarean Section (CS) more than 15% cannot be justified by any means.(1) The percentage of CS was used as indicator of access to and use of emergency obstetric care in a given population.(2) Lower rates correlated with higher maternal mortality rates and indicated unequipped emergency obstetric care facilities. Higher rates are open to interpretation, given that optimal rates of CS elude researchers. Further, it was also feared that excess CS would be a barrier to equitable health care worldwide. WHO estimated that in 2008, 3.18 million additional CS were needed and 6.20 million unnecessary caesarean sections were performed costing US$ 432 million and US$2.32 billion respectively.

From the epidemiological viewpoint, the CS rates of any region cannot be viewed in isolation. (3) Besides, three decades down the timeline, the validity of the allowable number of CS rates, has been questioned in the light of evolving medical and reproductive technology, changing epidemiology of pregnancies and complicating comorbidities, evolving doctor-patient relationships, increasing participation of patients in decision making in health care etc. It is not a straightforward task to provide an optimal caesarean rate for a given population.

Besides inherent risks of surgery and anaesthesia, CS performed without medical indications are proven to have higher risk of adverse outcomes.(4) The picture of vaginal delivery is not all rosy either. Risks of perineal trauma, obstetric fistula, urinary or anal incontinence, obstructed labour leading to still birth are some of the complications in a vaginal birth. An uneventful vaginal birth requires that the decision was made on sound clinical judgement with availability of continuous monitoring by a skilled birth attendant during the process of birth, well-established referral links and emergency transport services, should the need arise.

**Existing rates of LSCS worldwide**

Worldwide, around 15% of the deliveries are by CS with wide international variations from 2% in the least developed to 30 % among the developed nations.(5,6) Around 80% of the deliveries in India take place in institutions, of which only 50% are in public facilities. The proportion of births by CS in India have doubled in the last decade amounting to 17 % of all deliveries. CS rates varies from 40.9% of the deliveries in private facilities to 11 % of those in public facilities as per NFHS-4. Even among public facilities, the urban facilities report close to 20% of births happening through CS which is above the WHO mark of 15%.(7) The Telengana state has reported the highest (75%) proportion of births due to CS. All this has made CS in India an urban affair concentrated in private facilities. It has rekindled the debate between the policy makers and the health care providers as to the justification of the high, possibly unnecessary, number of CS.(8)

**CS in public and private facilities**

The distribution of the caesarean sections between public and private facilities is particularly skewed towards the private facilities with more than thrice the proportion of deliveries being conducted via CS in private facilities as in public. This has probably led to the doubt and scathing criticism suggesting financial motives rather than medical indications. States like Kerala and Tamil Nadu with a higher proportion of births happening in public facilities, report lesser public private difference in CS rates. These states also boast of better socioeconomic indicators compared to their northern counterparts. Existing research suggests that while CS rates upto 15 % correlate with lower maternal and neonatal mortality rates, beyond 15% there is no added benefit gained by the increasing CS rates. Further, this association between CS and mortality rates weakened or disappeared after adjusting for socioeconomic indicators suggesting that it was socioeconomic development that drives the apparent association of CS rates with better mortality rates.(9,10)

**Factors leading to rise in LSCS**

One has to analyse if the increase in CS is due to the actual increase in medical indications for CS. Increasing incidence of gestational diabetes mellitus, multiple pregnancies due to higher use rate of assisted reproductive techniques, older age of mother etc. Further, demand side issues due to one child families, personal preference, are also contributory factors. The technique of CS and anaesthesia have evolved and become more sophisticated and safe over the years.

**Way forward**

Robustly designed research to monitor trends of CS rates, to elicit the association between CS rates and mortality, morbidity indicators; both short term and long term may help establish the upper limit of allowable CS rates in India and with some clarity establish an operational definition of ‘unnecessary’ CS. Costing studies in this scenario may help advocate the need to monitor and control these rates by estimating the financial burden of unnecessary CS.

Initiation of healthy dialogue between medical fraternity and policy makers in this regard is suggested over ‘naming and shaming’. Internal medical audit of the CS performed at all private facilities and public display of the rates may be a good start, without any blame game given the reputation of the practitioner and institution is at stake. (11) While CS for non-medical reasons are strictly discouraged, the medical fraternity should be allowed their professional freedom to exercise their up to date knowledge and make the appropriate decision for a given patient.

Public display of all medical statistics poses the risk of misinterpretation of information by a section of uninformed public. More specialised and tertiary care hospitals are likely to have higher rates of operative deliveries given the referral rates and the inherently complicated nature of cases being referred to these facilities. Given the lack of credibility of and accountability for health related information circulated in social media and other mass media, this could lead to confusion and misguidance of the public.

There is a need to provide balanced information to the patient so as to empower the woman and the family to make an informed choice regarding the birth plan, in the antenatal period itself. Enforcing either vaginal or CS may be deleterious to the health of the patient and exposes the practitioner to the risk of litigation should any adverse outcome occur. The risks and benefits of both options in context of the given patient should be clarified well in advance. The patient also has to be sensitised that the choices will be flexible given the progress of events intrapartum. But how empowered our public are, with the dismally low female literacy rates of certain states and poor socioeconomic status indicators, is questionable.

Strengthening of public health facilities and increasing the number and quality of Comprehensive Emergency Obstetric Care (CEmOC) facilities will encourage people to choose public health facilities for childbirth and thereby prevent their exploitation by private facilities for financial benefits. Strict quality assurance programs to ensure that best practices are adhered to and monitoring and evaluation systems that friendly to patients and doctors are the means to prevent unnecessary CS and protect the vulnerable sections.(3)

**Conclusion**

It is a catch 22 situation. The desired reduction in maternal and mortality rates cannot be achieved without an increase in CS in the short term. This increase will stabilise or reduce following overall socioeconomic development that will steer better health related behaviour and by strengthening of public health care delivery system.

**References**

1. Moore B. Appropriate technology for birth. Lancet. 1985;326(8458):787.

2. Maine D, World Health Organization. Reproductive Health and Research. Monitoring emergency obstetric care : a handbook. Dept. of Reproductive Health and Research, World Health Organization; 2009. 25-31 p.

3. Robson M, Hartigan L, Murphy M. Methods of achieving and maintaining an appropriate caesarean section rate. Best Pract Res Clin [Internet]. 2013 [cited 2017 Feb 27]; Available from: http://www.sciencedirect.com/science/article/pii/S1521693412001575

4. Souza J, Gülmezoglu A, Lumbiganon P, Laopaiboon M, Carroli G, Fawole B, et al. Caesarean section without medical indications is associated with an increased risk of adverse short-term maternal outcomes: the 2004-2008 WHO Global Survey on Maternal and Perinatal Health. BMC Med [Internet]. 2010 Dec 10 [cited 2017 Feb 27];8(1):71. Available from: http://bmcmedicine.biomedcentral.com/articles/10.1186/1741-7015-8-71

5. Betrán AP, Merialdi M, Lauer JA, Bing-Shun W, Thomas J, Van Look P, et al. Rates of caesarean section: analysis of global, regional and national estimates. Paediatr Perinat Epidemiol [Internet]. 2007 Mar [cited 2017 Feb 27];21(2):98–113. Available from: http://www.ncbi.nlm.nih.gov/pubmed/17302638

6. Vogel JP, Betrán AP, Vindevoghel N, Souza JP, Torloni MR, Zhang J, et al. Use of the Robson classification to assess caesarean section trends in 21 countries: a secondary analysis of two WHO multicountry surveys. Lancet Glob Heal. 2015;3(5):e260–70.

7. National family Health Survey- 4. India Fact Sheet [Internet]. Mumbai; 2016 [cited 2017 Mar 2]. Available from: http://rchiips.org/NFHS/pdf/NFHS4/India.pdf

8. Name and shame errant docs: Maneka Gandhi on excessive C-sections. The Indian Express [Internet]. 2017 Feb 22; Available from: http://indianexpress.com/article/india/name-and-shame-errant-docs-maneka-gandhi-on-excessive-c-sections-4538491/

9. Betran A, Torloni M, Zhang J. What is the optimal rate of caesarean section at population level? A systematic review of ecologic studies. 2015 [cited 2017 Feb 27]; Available from: https://reproductive-health-journal.biomedcentral.com/articles/10.1186/s12978-015-0043-6

10. Ye J, Betrán AP, Guerrero Vela M, Souza JP, Zhang J. Searching for the Optimal Rate of Medically Necessary Cesarean Delivery. Birth [Internet]. 2014 Sep [cited 2017 Feb 27];41(3):237–44. Available from: http://doi.wiley.com/10.1111/birt.12104

11. Robson MS, Scudamore IW, Walsh SM. Using the medical audit cycle to reduce cesarean section rates. Am J Obstet Gynecol. 1996;174(1):199–205.