International Journal of Reproduction, Contraception, Obstetrics and Gynecology
Mane JD. Int J Reprod Contracept Obstet Gynecol. 2019 Feb;8(2):402-405
www.ijrcog.org

pISSN 2320-1770 | eISSN 2320-1789

DOI: http://dx.doi.org/10.18203/2320-1770.ijrcog20190018

Original Research Article

Are cesarean delivery rates and indications changing?

Jitendra D. Mane*

Department of Obstetrics and Gynecology, Military Hospital, Dehradun, Uttarakhand, India

Received: 21 December 2018
Accepted: 28 December 2018

***Correspondence:**
Dr. Jitendra D. Mane,
E-mail: jitendra.mane@yahoo.com

ABSTRACT

Background: There seems to be gradual raising trend in cesarean deliveries over decades with associated decrease in perinatal mortality rate. This study was undertaken to compare the caesarean delivery (CS) rates along with its indications over the last decade and to examine whether it is changing.
Methods: The aim is to compare the rate and indications of CS in a retrospective manner from the data collected between January 1 and December 31 in the year 2006, 2011, and 2016 in a zonal hospital. The rates and indications of CS were analyzed to find whether they are changing if yes which are the factors contributing for the same. Categorical variables were compared using chi-square test.
Results: The CS rate showed an increasing trend from 26 % in 2006 to 27.6 % in 2011 to 32.4 % in 2016. Of the total CS, repeat CS rate was significantly increased from 76 (6.61%) in 2006 to 106 (10.34%) in 2011 to 128 (13.72%). Primary CS percent remained more or less same during the study period. Post cesarean pregnancy (p=0.00001) and fetal distress (p=0.012) showed significant rise as an indication for CS which were major contributor for rise in last decade while failed induction decreased.
Conclusions: Over the decade there is increase in the total CS rate mainly attributable to repeat CS while post CS pregnancies and foetal distress were leading cause for CS. There is need for reducing primary CS along with increase in trial of labor after cesarean in properly selected women.

Keywords: Cesarean section indication, Cesarean section rate, Failed induction, Foetal distress, Repeat Cesarean section

INTRODUCTION

Pregnancy involves two lives, though mother's life is of paramount importance but new born also needs to be physically and mentally well. With advent of good aesthetic agents, sterilization technique for equipment's, antibiotics and surgical skills CS is one of the safe surgeries to perform and provide optimum outcome for mother and her baby. One of the most dramatic features of modern obstetrics is the increase in the CS rate.[1,2] CS rate has increased in different parts of the world, both in developed and developing countries. But with increasing number of CS there is rise in repeat CS along with its complications like increased intraoperative adhesions, increased injuries to bladder and bowel, abnormal placentation requiring extensive surgery, blood transfusion and ICU admissions. Increase detection of foetal distress with continuous cardio topography monitoring, elderly pregnant women due to delayed childbearing, multiple pregnancies, breech, post caesarean pregnancies, conception following infertility treatment, cesarean delivery on maternal request and safety of CS are various reasons for increased CS.[3] In Latin American countries it ranges up to 40%.[4] WHO advises that caesarean rate should not be more than 15% with evidence that CS rates above 15% are not associated with additional reduction in maternal and neonatal mortality and morbidity.[5,6] To conduct vaginal birth after

caesarean delivery the institute must fulfil ACOG criteria.[7] This study is aimed to find out whether there is changing rate of CS, along with its indications over a period of last decade.

METHODS

The aim of the study is to compare the CS rate and various indications for CS over ten years data was collected in a retrospective manner from labour room and operation theater records for the year 2006, 2011, and 2016 in the 500 bedded zonal hospital. For each year as described earlier data on total number of deliveries, number of CS with their indications was noted. The CS rate was calculated as the number of caesarean births divided by total births. The rate for each indication was calculated annually as the number of caesarean births performed for each indication per total number of births. The categories of indication of CS included post caesarean pregnancies, fetal distress, failed induction, multiple gestation, malpresentation, non-progress of labour (arrest of dilatation or arrest of descent), cephalopelvic disproportion, maternal indications (severe preeclampsia, eclampsia, precious pregnancies, third degree perineal repaired) and foetal indications (severe fetal growth restriction, prematurity, severe oligohydramnios, congenital anomalies where vaginal delivery is traumatic). Foetal distress included foetal non-reassuring or abnormal non-stress test when not in labor, foetal distress in labor, abnormal umbilical artery doppler studies and thick meconium stained liquor in early labor.

In this study all post caesarean pregnancies were taken for caesarean section as an institutional policy as the ACOG prerequisites for vaginal birth after caesarean delivery were not fulfilled in view of availability of single gynecologist, anesthesiologist with on call blood bank and operation theater facilities. Only those post caesarean pregnancies were prepared for vaginal delivery if they reported in advance labor, patient's willingness for trial of labor and no contraindications for TOLAC (trial of labor after cesarean). Categorical variables were compared using chi-square test.

RESULTS

On scrutiny of the records the general characteristics of the patients i.e. age, parity and mean gestational age were comparable over the decade (Table1).

Table 1: Characteristic of patients.

Characteristic	2006	2011	2016
Mean age (mean±SD)	25.21±3.82	25.54±4.25	26.04±4.88
Mean parity (mean±SD)	1.56±0.66	1.44±0.60	1.32±0.70
Mean gestational age (mean±SD)	39.53±1.30	39.38 ±1.52	39.44±1.52

The total deliveries that took placed in present institute were 1150 in 2006, 1025 in 2011 and 933 in 2016, of which 851,742 and 630 were vaginal deliveries in the respective years. The number of CS performed was 299(26%), 283(27.6%) and 303(32.4%) in the years 2006, 2011 and 2016 respectively.

Table 2: Deliveries.

Deliveries	2006	2011	2016	p value
Vaginal	851 (7%)	742 (72.4%)	630 (67.53%)	0.391
Caesarean	299 (26%)	283 (27.6%)	303 (32.47)	0.465
Primary	233 (19.39%)	177 (17.26%)	175 (18.75)	0.337
Repeat CS	76 (6.61%)	106 (10.34%)	128 (13.72)	0.00001
Total	1150 (100%)	1025 (100%)	933 (100%)	

Table 3: Indications of CS.

Indications	2006		2011		2016		p value
	n	%	n	%	n	%	
Post CS pregnancy	76	6.6	106	10.34	128	13.71	0.00001
Fetal distress	23	2	26	2.53	39	4.18	0.0122
Non-progress of labor	38	3.30	35	3.41	29	3.10	0.778
Malpresentation	33	2.86	29	2.82	26	2.78	0.748
Multiple gestation	7	0.6	8	0.78	14	1.50	0.094
IUGR	16	1.39	11	1.07	13	1.39	0.764
Failed induction	31	2.69	20	1.95	13	1.39	0.119
Medical	16	1.39	10	0.97	12	1.28	0.764
Antepartum hemorrhage	14	1.21	11	1.07	12	1.28	0.907
Cephalopelvic disproportion	32	2.78	19	1.85	11	1.17	0.494
Unspecified	13	1.13	8	0.78	6	0.71	0.465

This showed the rising percentages in corresponding years, but the rise was not significant p = 0.465. Of the total CS repeat CS were significantly increased from 76 (6.61%) in 2006 to 106 (10.34%) in 2011 to 128 (13.72%) (p=0.00001) with primary CS percent remained more or less same (Table 2).

Indications for which CS were performed also showed changing trend. With post CS pregnancy being significant contributor for rise in CS (p=0.0001). The other leading cause being fatal distress 23 (2006) to 26 (2011) to 39 (2016) (p=0.012). Number of high order pregnancies showed a rise but was not statistically significant 7 (2006) vs 8 (2011) vs 14 (2016) (p=0.094%). Failed induction as a cause for CS showed decreasing trend from 31 (2.69) in 2006 to 20 (1.95%) in 2011 to 14 (1.39%) in 2016. Other indications for CS generally didn't show much variation (Table 3).

DISCUSSION

Now a day's in view of rising CS rates there is lots of concern in both developing as well as developed countries across the world.[2,3] The rates of both primary and repeat cesarean delivery have been on the rise. [8] Due to rising CS rates there is feeling of loot amongst the clients and law enforcing authorities are suspicious about the intend of treating physician thereby willing to impose restrictions on the numbers. Overall there is increase in CS rates all over the globe, Mittal et al showed rise of CS rate from 17.15 % in 2001 to 28.93 % in 2011.[9] Present study results also showed rise from 26% in 2006 to 27.6 % in 2011 to 32.47% in 2016 which were also consistent with other authors Barber et al, Ba'aqeel et al, Swapna et al, Agarwal M et al.[8,10-12] Studies conducted by authors across different countries showed increased rate of CS. Litorp et al, has shown much higher rates up to 49 % in 2011.[13-15] As per the Organization for Economic Co-operation and Development (OECD) Health data 2011, the CS rates in countries like Brazil, Mexico, and Turkey have exceeded up to 40 %. The primary and repeat CS rate were reported to be increased by Mittal et al, Barber et al, Stavrou et al.[8,9,13] In present study primary contributor for increased rate of CS over study period was previous cesarean pregnancies. Probably due to less of vaginal birth after cesarean pregnancies at present center in view of limitation resources and not fulfilling the prerequisites of ACOG. The increase in rate was statistically significant (p=0.00001) in present study. Choudhary et al, also showed previous cesarean rather than foetal distress as the largest contributor for CS.[16] Foetal distress in this study was main indication for primary CS with rate varying from 2 % in 2006 to 2.53 % in 2006 to 4.18 % in 2016 which was statistically significant which was also reported by other researchers.[8,17,18] This increase in rate following foetal distress is likely due to increased intrapartum monitoring with cardiotocography and low threshold from health care provider and parturient women due to worries of neonatal morbidities. Failed induction as an indication for CS has reduced in present study from 2.69% in 2006 to 1.95 % in 2011 to 1.39 % in 2016 which is not significant. This is probably due proper selection of patients for induction, availability of multiple safe and effective agents for pre-induction cervical ripening and all out efforts for induction including resorting to early artificial rupture of membranes.[19,20] Multiple pregnancy rates increased in present study, a finding consistent with other reporters may be due to increase maternal age, infertility issues and use of ovulation induction drugs.[9,16] Labour dystocia or non-progress of labour was not found to be increased in present study contrary to Mittal et al, Indications for other factors for CS didn't change significantly in study period.[9]

CONCLUSION

Caesarean section rates have increased from 2006 to 2016 primarily due to increase in repeat caesarean sections and foetal distress rather than primary CS. To reduce the rate of CS the rate of primary CS needs to be reduced by proper selection of patient for CS for indications like foetal distress, non-progress of labour, and by offering trial of vaginal birth after caesarean in properly selected women after augmentation of resources. With CS on demand on rise as new indication along with fear of litigation, the CS rate is bound to rise further but a proper judicious approach is required along with counselling of the women so that there is no further rise in rate of caesarean deliveries.

Funding: No funding sources
Conflict of interest: None declared
Ethical approval: Not required

REFERENCES

1. Turner MJ. Delivery after one previous cesarean section. Am J Obstet Gynecol.1997;176(4):741-4.
2. Oladapo OT, Sotunsu JO, Sule-Odu AO. The rise in caesarean birth rate in Sagamu, Nigeria: reflection of changes in obstetrics practice. J Obstet Gynaecol. 2004;24:377-81.
3. Tollånes MC. Increased rate of Caesarean sections-causes and consequences. J Norwegian Med Ass: J Practical Med, New Series. 2009;129(13):1329-31.
4. Belizán JM, Showalter E, Castro A, Bastian H, Althabe F, Barros FC, et al. Rates and implications of caesarean sections in Latin America: Ecological study Commentary: all women should have a choice Commentary: increase in caesarean sections may reflect medical control not women's choice Commentary: "health has become secondary to a sexually attractive body". BMJ. 1999;319(7222):1397-402.
5. World Health Organization. Monitoring emergency obstetric care: a handbook. Geneva, Switzerland. 2009.

6. Agarwal M, Verma M, Garg A. Changing trends in cesarean delivery: rate and indications. Int J Reprod Contracept Obstet Gynecol. 2016;5(10):3522-4.
7. American College of Obstetricians and Gynecologists. Vaginal birth after previous cesarean delivery. Practice bulletin; no. 115. Washington, DC: ACOG; 2010.
8. Barber EL, Lundsberg L, Belanger K, Pettker CM, Funai EF, Illuzzi JL. Contributing indications to the rising cesarean delivery rate. Obstet Gynecol. 2011;118(1):29.
9. Mittal S, Pardeshi S, Mayadeo N, Mane J. Trends in Cesarean Delivery: Rate and Indications. J Obstet Gynaecol India. 2014;64(4):251-4.
10. Ba'aqeel HS. Cesarean delivery rates in Saudi Arabia: a ten-year review. Annals Saudi Med. 2009;29(3):179.
11. Das S, Char D, Sarkar S, Saha TK. Changing trends in caesarean section: rate and indications. J Dental Med Sci. 2014;13(1):7-9.
12. Agarwal M, Verma M, Garg A. Changing trends in cesarean delivery: rate and indications. Int J Reprod Contracept Obstet Gynecol. 2016; 5:3522-4.
13. Stavrou EP, Ford JB, Shand AW, Morris JM, Roberts CL. Epidemiology and trends for Caesarean section births in New South Wales, Australia: a population-based study. BMC Preg Childbirth. 2011;20(11):8.
14. Chong C, Su LL, Biswas A. Changing trends of cesarean section births by the Robson Ten Group Classification in a tertiary teaching hospital. Acta Obstet Gynecol Scand. 2012;91(12):1422-7.
15. Litorp H, Kidanto HL, Nystrom L, Darj E, Essén B. Increasing caesarean section rates among low-risk groups: a panel study classifying deliveries according to Robson at a university hospital in Tanzania. BMC Preg Childbirth. 2013;8(13):107.
16. Choudhary AP, Dawson AJ. Trends in indications for caesarean sections over 7 years in a Welsh district general hospital. J Obstet Gynaecol. 2009;29(8):714-7.
17. Liu S, Rusen ID, Joseph KS, Liston R, Kramer MS, Wen SW, et al. Recent trends in caesarean delivery rates and indications for caesarean delivery in Canada. J Obstet Gynaecol Can. 2004;26(8):735-42.
18. Krychowska A, Kosin´ska K, Karwan-Płon´ska A. Comparison of indications for caesarean section in 1985-86 and 2000-01: analysis of changes. Ginekol Pol. 2004;75(12):926-31.
19. Hofmeyr GJ, Gülmezoglu AM, Pileggi C. Vaginal misoprostol for cervical ripening and induction of labour. Cochrane Database of Systematic Reviews 2010, Issue 10. Art. No.: CD000941.
20. Delaney S, Shaffer BL, Cheng YW, Vargas J, Sparks TN, Paul K, et al. Labor induction with a Foley balloon inflated to 30 mL compared with 60 mL: a randomized controlled trial. Obstet Gynecol 2010;115:1239-45.

Cite this article as: Mane JD. Are cesarean delivery rates and indications changing?. Int J Reprod Contracept Obstet Gynecol 2019;8:402-5.