Comparison of neonatal outcome between cesarean section and vaginal delivery at a secondary level hospital of Eastern Rajasthan

Dr. Shekher Sharma[1], Dr. Renu Yadav[2§], Dr. Kusum Sharma[3], Dr. Kusum Gaur[4]

[1,2]Senior Resident, Department of Pediatrics, Mujafarnagar Medical College, Mujafar Nagar (UP) India
[3]MO/IC, Dr. Kusum Sharma Hospital, Bharatpur (Rajasthan) India
[4]Professor, Department of Community Medicine, SMS Medical College, Jaipur (Rajasthan) India
[§]Corresponding author's Email: shekharpeds@yahoo.com

Abstract— *There is controversy regarding betterment of cesarean section or vaginal delivery as per neonatal outcomes. So this study was conducted on 100 cesarean section and 100 vaginal delivery to compare the neonatal outcomes in cesarean section or vaginal delivery. Chi-square test and unpaired 't' tests were used to find out difference in proportion and means respectively. The present study revealed that there was no significant difference in neonatal outcomes in CS group and VD group in outcome of delivery, baby weight, and Apgar score after five minutes of delivery. Proportion of cases with reparatory distress were also without significant difference ($p>0.05$). Only significant ($p<0.05$) difference was observed in Apgar score at birth, where it was significantly more in CS group than VD group.*

Keywords: Neonatal Outcome, Cesarean Section, Vaginal Delivery.

I. INTRODUCTION

India has the highest number of neonatal mortalities in the world. As of 2015, 20% (1,201,000) of global under-five deaths occurred in India, meaning that one in every five global child deaths occurred in India.[1] Over 50% of under-five deaths and 70% of infant deaths occur during the first 4 weeks of life.[2]

A survey was conducted in 596 Indian districts to compare the neonatal mortality[3] and reported that NMR ranged from 4.3 (Kannur, Kerala) to 65.1 (Datia, Madhya Pradesh), with the mean NMR being 29.8. Almost two-thirds of the districts (n = 380, 63.7%) had NMRs between 20 and 40. The top third of neonatal deaths could be accounted for by just 71 districts of a total of 596.[3]

Reducing the maternal and neonatal mortality is one of top of health and development agendas.[4] The proportion of births by cesarean section (CS) has been chosen as the indicator of provision of lifesaving services for both mothers and newborns.[5]

Some studies favor elective cesarean delivery, and other surveys benefit vaginal delivery. Some studies recommend elective cesarean delivery to prevent urinary and fecal incontinence after vaginal delivery and adverse neonatal outcome.[6–8] Other studies prefer vaginal delivery because cesarean delivery has a higher risk of maternal death,[9] a longer recovery time and operative complications,[10] a higher risk of unexplained stillbirths in subsequent pregnancies,[6] and respiratory problems of the newborn infant.[11–13] Others[5,12,14] reported that good-quality care during labor, birth, and in the immediate postpartum period than the route of delivery plays a key role to prevent the onset of complications and enable their early detection and prompt management.

So this present study was designed to compare the neonatal outcomes of cesarean section and vaginal delivery in Eastern Rajasthan.

II. METHODOLOGY

This hospital based analytic observational study was conducted in during year 2018 at Dr. Kusum Sharma Hospital, Bharatpur (Rajasthan) India.

This study was conducted on normal healthy mothers who were having normal antenatal (ANC) period and delivered at Dr. Kusum Sharma Hospital, Bharatpur (Rajasthan) India. All these women were willing to participate in this study. Women who develop any complication during delivery were excluded from this study.

Among women attending at Dr. Kusum Sharma Hospital for delivery and elective for cesarean section were included in CS group and subsequent vaginal delivery was taken in V D group. Thus 100 women were selected for CS group and 100 for VD group.

Neonates of these delivered women were followed for 4 weeks to develop any complication. Data thus obtained were entered in Microsoft excel version 2010. Qualitative data was expressed in percentage and quantitative data were expressed in mean & SD. Chi-square test was used to infer the significance of difference in proportions and Unpaired 't' test was used to infer the significance of difference in means.

III. RESULTS

In the present study, out of 100 women were in CS group and 100 women were in VD group. Both the groups were comparable as per age of women, type of family, type of food and body mass index (BMI) of women. These two groups were comparable as per gravida, gestational age and previous ANC visit. (Table 1)

Table 1
Comparison of characteristics of CS and VD Groups

S. No.	Variables		CS Group (N=100)	VD Group (N=100)	P Value LS
1	Age in years	Mean±SD	27.25 ± 3.5	24.5 ± 4.75	
2	Occupation	Working	24	18	0.385 at 1DF NS
		Housewife	76	82	
3	Type of family	Nuclear	44	48	0.670 at 1DF NS
		Joint	56	52	
4	Type of food	Vegetarian	88	93	0.335 at 1DF NS
		Mixed	12	7	
5	BMI	Mean±SD	21.8 ± 2.4	21.3 ± 2.3	0.134 NS
6	Gravida	Primigravida	38	33	0.340 at 1DF NS
		2-3 Gravida	61	62	
		>3 Gravida	1	4	
7	Gestational Period	28-32 Weeks	9	6	0.245 at 1DF NS
		32-37 Weeks	84	93	
		>37 Weeks	4	1	
8	Previous ANC Check up	Yes	94	91	0.591 at 1DF NS
		No	6	9	

When neonatal outcomes were compared in both the group i.e. CS group and VD group it was found without significant difference ($p>0.05$) in outcome of delivery, baby weight and Apgar score after five minutes of delivery. Proportion of cases with reparatory distress were also without significant difference ($p>0.05$). Only significant ($p<0.05$) difference was observed in Apgar score at birth, where it was significantly more in CS group than VD group. (Table 2)

Table 2
Comparison of Neonatal outcomes of CS and VD Groups

S. No.	Variables		CS Group (N=100)	VD Group (N=100)	P Value LS
1	Outcome of Delivery	Alive	100	98	0.477 at 1DF NS
		Dead	0	2	
2	Baby Weight	< 2500 Gms	5	9	0.498 at 1DF NS
		2500-3999 Gms	92	89	
		4000 Gms & above	3	2	
3	Apgar Score Mean±SD	At Birth	6.16 ± 1.28	7.24 ± 1.32	<0.001 S
		After 5 Minutes	8.12 ± 1.34	7.78 ± 1.14	0.055 NS
4	Respiratory Distress	Yes	4	7	0.535 at 1DF NS
		No	96	93	
5	Hospitalized after discharge	Yes	12	19	0.241 at 1DF NS
		No	88	81	

IV. DISCUSSION

The present study observed that in CS group none was born dead whereas in VD group 2% were born dead but this difference was not significant (p>0.05). It was also observed that in CS group normal body weight was in 96% whereas in VD group it was 89% but this difference was also non significant(p>0.05). It was also observed that in CS group Apgar score at birth was 6.16 whereas in VD group it was 7.24 and this difference was found significant (p<0.001). It was also observed that in CS group Apgar score after five minutes was 8.12 whereas in VD group it was 7.78 but this difference was also non significant(p>0.05). It was also observed that in CS group respiratory distress was in 4% whereas in VD group it was 7% but this difference was also non significant (p>0.05). It was also observed that in CS group respiratory infant was hospitalized again after discharged in 12% whereas in VD group it was 19% but this difference was also non significant(p>0.05).

Abebe etall[15] reported that newborn born through CS were more than VD but it was not statistically significant. It may suggest that late decision was made to do the CS or the immediate neonatal care given was inadequate to resuscitate them or to transfer to NICU timely in this study.

Abebe etall[15] also observed that there was a difference in mean score noted at first minute of both groups, and the results were statistically significant. Children born through the CS (mean =6.83, standard deviation =1.31) had a significantly lower as it was observed in the present study.

Abebe etall[15] also observed that Apgar score at fifth minutes was 8.49 in vaginal delivery group and 8.32 in CS group which was not with significant difference (*P*=0.793).

Poor quality of obstetric care might account for high rates of newborn mortality as well as maternal mortality and intrapartum stillbirths. A number of studies have revealed the effectiveness of the quality of delivery care on the reduction of maternal and newborn mortality.[5,8,14]

It is well documented in several studies[5–7,11,13] that CS delivery is more associated with increased fetal complications including reduced Apgar score, respiratory distress syndrome, and neonatal transfer rate. Consistent with other studies,[10] the risk of birth asphyxia among babies born by CS was higher than those delivered vaginally. The mean Apgar score in the first minute was reduced among the CS group compared to the vaginal delivery group. This observation may be due to the nature of CS done which is usually done in emergency situation. However, consistent with other studies,[16] there was no difference in Apgar score between the two groups in the fifth minute.

V. CONCLUSION

This present study concludes that there was no significant difference in neonatal outcomes in CS group and VD group in outcome of delivery, baby weight, and APGAR score after five minutes of delivery. Proportion of cases with reparatory distress were also without significant difference ($p>0.05$). Only significant ($p<0.05$) difference was observed in APGAR score at birth, where it was significantly more in CS group than VD group.

As there was not much difference in neonatal outcomes of cesarean section and vaginal delivery, so it is suggested that decision of type of delivery may be taken as per the indication.

CONFLICT OF INTEREST

None declared till now.

REFERENCES

[1] UNICEF. September 2015. New York, USA: UNICEF; 2015. Committing to Child Survival: A Promise Renewed, Progress Report 2015.

[2] PHFI A. SC-State of India's Newborns (SOIN) 2014 – A report. Public Health Foundation of India, All India Institute of Medical Sciences and Save the Children New Delhi, India. [Last accessed on 2016 Mar 16]. Available from: http://www.newbornwhocc.org/[Ref list].

[3] Ram U, Jha P, Ram F, Kumar K, Awasthi S, Shet A, Pader J, Nansukusa S, Kumar R. Neonatal, 1-59 month, and under-5 mortality in 597 Indian districts, 2001 to 2012: estimates from national demographic and mortality surveys. Lancet Glob Health. 2013 Oct; 1(4):e219-26.

[4] UNICEF. *Every Newborn. An Action Plan to End Preventable Death, Draft Report*. New York, USA; 2014.

[5] WHO. WHO Statement on Caesarean Section Rates. Every effort should be made to provide caesarean sections to women in need, rather than striving to achieve a specific rate. *Reproductive Health*. 2015.

[6] Kolås T, Saugstad OD, Daltveit AK, Nilsen ST, Øian P. Planned cesarean versus planned vaginal delivery at term: comparison of newborn infant outcomes. *Am J Obstet Gynecol*. 2006;195(6):1538–1543.

[7] Larsson C, Saltvedt S, Wiklund I, Andolf E. Planned vaginal delivery versus planned caesarean section: short-term medical outcome analyzed according to intended mode of delivery. *J Obstet Gynaecol Can*. 2011;33(8):796–802.

[8] Mann S, Pratt S, Gluck P, et al. Assessing quality in obstetrical care: development of standardized measures. *J Qual Patient Safety*. 2006;32(9):497–505.

[9] Matthews TG, Crowley P, Chong A, McKenna P, McGarvey C, O'Regan M. Rising caesarean section rates: a cause for concern? *BJOG*. 2003;110(4):346–349.

[10] Zanardo V, Simbi A, Franzoi M, Solda G, Salvadori A, Trevisanuto D. Neonatal respiratory morbidity risk and mode of delivery at term: influence of timing of elective caesarean delivery. *Acta Paediatr*. 2004;(5):93.

[11] Livingston EG, Huo Y, Patel K, et al; International Maternal Pediatric Adolescent AIDS Clinical Trials Group Protocol 1025 Study Team. Mode of delivery and infant respiratory morbidity among infants born to HIV-1-infected women. *Obstet Gynecol*. 2010;116(2 pt 1):335–343.

[12] Matthews Z, Hulton LA, Stones RW. *A Framework for the Evaluation of Quality of Care in Maternity Services*. Southampton: University of Southampton, UK; 2000.

[13] Seabra G, Saunders C, de Carvalho Padilha P, Zajdenverg L, da Silva LB, de Souza Santos MM. Association between maternal glucose levels during pregnancy and gestational diabetes mellitus: an analytical cross-sectional study. *Diabetol Metab Syndr*. 2015;7:17.

[14] WHO. *Monitoring Emergency Obstetric Care: A Handbook*. World Health Organization: Geneva; 2009.

[15] Abebe Eyowas F, Kidane Negasi A, Eyassu Aynalem G and Gebeyehu Worku A. Adverse birth outcome: A comparative analysis between cesarean section and vaginal delivery at Felegehiwot referal hospital Northwest Ethiopia: A retrospective record review. Dovepress. 2006;2016:65-70.

[16] Wiklund I, Edman G, Ryding EL, Andolf E. Expectation and experiences of childbirth in primiparae with caesarean section. *BJOG*. 2008;115(3):324–331.