

Frequency and Factors Leading to Caesarean Section after Induction of Labour in Primigravidas at Term

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ABSTRACT

Background: Labour induction is a common practice in every obstetric unit and primigravidas are more likely to undergo induction of labor and caesarean section due to failed induction. Apart from labour factors, pre eclampsia, fetal distress and gestational diabetes are known factors leading to higher caesarean section after induction of labour. The objective of this study was to determine the frequency of caesarean-section and common factors leading to it after induction of labor in primigravida at term.

Materials & Methods: This Descriptive study was conducted From Sep11, 2017 to Mar10, 2018 in Obstetric and Gynaecology department, FGPC Islamabad.

Results: A total of 125 patients presenting with primigravida at term pregnancy after induction of labor were included in the study. Average age of the patients was 28.61 years+6.45 SD. The caesarean section was found in 57(45.6%) patients. The most common factor was pre eclampsia which was observed in 29 (23.2%).

Conclusion: Caesarean Section rate is high in primigravidas with induced labour at term with almost same frequency in all age groups and the most common factor contributing to caesarean section is pre eclampsia leading to fetal distress.

Keywords: Primigravida; pregnancy; caesarean-section; labor.

INTRODUCTION

Induction of labor is the initiation of labor after 28th weeks of gestation and before the onset of natural labor through pharmacological and or mechanical methods to achieve vaginal delivery (Planned initiation of labor).It can be conducted in the presence or absence of fetal membranes. There are higher chances of induction of labour in primigravida (49.8%) . Caesarean section rate is higher in them as compared to multigravida ⁽¹⁾⁽²⁾ Induction of labor is indicated in post term pregnancies, pre-labor rupture of membranes, intrauterine fetal death, fetal compromise, chorioamnionitis, oligohydramnios, polyhydramnios, maternal medical conditions like hypertension, diabetes, heart disease and others ⁽³⁾⁽⁴⁾⁽⁵⁾ The incidence of induction of labor has consistently increased. Its rate varies from 9.5-33.7% of pregnancies annually. It is carried out in approximately 25% of pregnancies in developed countries (lowest in Niger 4.5%, highest in Srilanka 35%, 22% in USA). It is a common procedure in our country. Its exact rate is not known but in some institutions, it is described up to 40%.⁶ There is no study claiming that induction of labor is safe and has only beneficial effect. However it is claimed to reduce caesarean section rate and improve neonatal outcome but on the other hand it can cause uterine hyperstimulation, operative deliveries and caesarean sections, fetal distress, infections and in worst case uterine rupture. ⁽⁶⁾⁽⁷⁾ Many maternal and fetal factors can lead to failed induction . Risk factors for failed induction of labor includes nulliparity(29.4%), older maternal age, shorter maternal stature, increased BMI , hypertension, gestational diabetes and pregestational diabetes.^{8,9} Induction of labor can be done by PGE2, PGE1, misoprostol and Foley's catheter.⁽¹⁰⁾ The rationale of this study is to determine the

frequency and factors leading to caesarean-section after induction of labor among primigravida at term as the local literature on this subject is limited.

MATERIALS AND METHODS

This was a descriptive case series study conducted in Department of Obstetrics and Gynaecology Unit II, Federal Government Polyclinic Hospital Islamabad from Sep 11, 2017 To Mar 10, 2018 after approval from Ethical Committee of the institution. Sample Size was calculated by WHO calculator from reference 1 Confidence level % = 1- α = 95% Anticipated Population Proportion= P= %=0.294¹ Absolute Precision Required= d=%=0.08 Sample Size= n= 125. Sampling Technique was Non probability consecutive sampling. Booked primigravidas at term with singleton, alive vertex presentation and non anomalous gestation with intact membranes were included in study while women with malpresentation, placenta previa, previous myomectomy, premature rupture of membranes, cervical dilatation at the time of admission greater or equal to 4 cm were excluded from study. Informed consent was taken from each woman. A detailed history regarding her personal data, last menstrual period, duration of pregnancy in weeks were taken. BMI was calculated. Bias were controlled by excluding women with contraindication to vaginal delivery through history and examination. All the information including outcome variable i.e. caesarean section were entered on the proforma and subjected to statistical analysis to measure the objectives. Data were analyzed by using computer software SPSS version 16 on computer. Descriptive statistics were applied to measure qualitative and quantitative variables. Quantitative variables like age were measured as mean and standard deviation.

Qualitative variables as pre-eclampsia, BMI, GDM, oligohydramnios and Caesarean section was measured as frequency and percentages. Effect modifiers like age, Diabetes mellitus, hypertension, BMI were controlled by stratification. Post stratification chi square test was applied. P value ≤ 0.05 was significant

RESULTS

A total of 125 primigravidas at term pregnancy after induction of labor were included in the study. Average age of the patients was 28.61 years+6.45 SD with range 20-45 years. Patient’s age was divided in three groups. The most common age group presenting as primigravida at term pregnancy was 26-35 years. There were 46 (36.8%) patients of the age less than 25 years, 63 (50.4%) were of age range 26-35 years and 16 (12.8%) presented at age more than 36 years of age. (Table 1).

Table 1. Age wise distribution of the patients

	Frequency	Percent	Mean +SD
20.00-25.00	46	36.8	
26.00-35.00	63	50.4	
			28.61+6.45
36.00-45.00	16	12.8	
Total	125	100.0	

Table 2. Caesarean-section factors responsible after induction of labor

		Count	%
Caesarean Section	Yes	57	45.6%
	No	68	54.4%
Pre-eclampsia	Yes	29	23.2%
	No	96	76.8%
Gestational Diabetes Mellitus	Yes	18	14.4%
	No	107	85.6%
Obesity	Yes	17	13.6%
	No	108	86.4%
Oligohydramnios	Yes	20	16.0%
	No	105	84.0%
Polyhydramnios	Yes	15	12.0%
	No	110	88.0%

Table 3. Age wise distribution of caesarean-section

	Age (in years)	Caesarean Section		Total	p-value
		Yes	No		
	20.00-25.00	22	24	46	0.929
		47.8%	52.2%	100.0%	
	26.00-35.00	28	35	63	
44.4%		55.6%	100.0%		
36.00-45.00	7	9	16		
	43.8%	56.2%	100.0%		
Total		57	68	125	
		45.6%	54.4%	100.0%	

The caesarean section was found in 57(45.6%) patients. The most common factor was pre eclampsia which was observed in 29(23.2%) patients followed by oligohydramnios 20 (16%), gestational diabetes was in 18(14.4%) and obesity was noted in 17(13.6%) patients. (Table 2). Age wise distribution of shows that Caesarean Section rate was observed approximately in same proportion throughout all ages which shows that the suspected clinical features were same for all ages. The patients having age less than 25 years have 47.8%, age

group 26-35 years have 44.4% Caesarean Section and patients having more than 36 years of age have 43.8% Caesarean Section.(Table 3) When the cesarean section was stratified over its factors, all the factors showed their high significance.(Table 4) When age wise stratification over age was made than it also shows the insignificance results.

Table No: 4. Factor wise distribution of caesarean-section

		Caesarean Section		p-value
		Yes	No	
Pre-eclampsia	Yes	25	4	0.000
		86.2%	13.8%	
	No	32	64	
		33.3%	66.7%	
Obesity	Yes	14	3	0.001
		82.4%	17.6%	
	No	43	65	
		39.8%	60.2%	
Oligohydramnios	Yes	17	3	0.000
		85.0%	15.0%	
	No	40	65	
		38.1%	61.9%	
Polyhydramnios	Yes	14	1	0.000
		93.3%	6.7%	
	No	43	67	
		39.1%	60.9%	

DISCUSSION

Labour induction is a common practice in every obstetric unit . A wide variety of inducing agents are used by obstetrician to initiate the process of labour. In the last two decades, the labour induction methods and indications have changed enormously to more safer practices. The indications of labour induction can be classified as maternal, fetal or elective for the convenience of both women and obstetricians . The incidence of induction varies from 5% to 22% depending upon local circumstances and availability of services..^{11, 12} The rate of c- section after labour induction varies between 12-86% in various studies done in developed and developing countries¹³. Recent reports showed that population based CSR exceeding the WHO threshold of 15% are more common in private than public hospital. ¹⁴ The reasons are fear of being sued, health insurance policies, c-section on demand, non trained midwives, lack of assisted vaginal breech delivery skill, poor implementation of active management of labor and differences in clinical practices. The c-section rate in this study is more than 45% and the results are supported by D J Rouse, who found 61% of caesarean delivery rate when women were induced and followed for 12 hours in latent phase of labour.¹⁵ The major reasons for failed induction were labour arrest, fetal distress, cephalopelvic disproportion and non reassuring CTG. The factors responsible for caesarean delivery were status of gravida, doses of inducing agents and poor Bishop score before induction. The N B khan reported null parity, poor Bishop score before induction, prolonged latent stage of labour as major factors for failed induction similar with our study result¹⁶. The role of inducing agent is very important as the success of vaginal delivery is more with misoprostol and less with oxytocin.^{17,18}

In our study, fetal distress accounts for more than

15% of cases of failed induction . One of study quoted that fetal distress accounts for 14.4% of caesarean sections. Fetal distress was diagnosed by CTG pattern and presence of meconium stained liquor.¹⁹ Pre eclampsia of pregnancy and gestational diabetes also accounted for significant rate of cesareans in this study. The definitive reason is that severe pregnancy induced hypertension and associated intrauterine growth restriction leads to early fetal compromise along with maternal risk of cerebral oedem and coagulopathy . These complications can be prevented by vigilant monitoring during induction as c-section is associated with 8 fold higher mortality and 12 times higher morbidity than vaginal delivery.²⁰

CONCLUSION

Caesarean Section rate is high in primigravidas with induced labour at term with almost same frequency in all age groups and the most common factor contributing to caesarean section is pre eclampsia leading to fetal distress.

These results imply that decision to perform induction should be based on clear and clear and well supported indications in gravidas at term.

REFERENCES

1. Tolcher MC, Holbert MR, Weaver AL, McGree ME, Oslon JE, El- Nashar SA, et al. Predicting cesarean delivery after induction of labor among nulliparous women at term. *Obstet Gynecol.* 2015;126:1059-68.
2. Oyebode TA, Toma BO, Shambe IH, Kahanism ML, Embu HY, Daru PH, et al. Induction of labor at Jos university teaching hospital, Jos, Nigeria: a four year review. *Int J Res Med Sci.* 2015;3:1942-8.
3. Tripathy P, Pati T, Baby P, Mohapatra SK. Prevalence and predictors of failed induction. *Int J Pharm Sci Rev Res.* 2016;39:189-94.
4. Hurissa BF, Geta M, Belachew T. Prevalence of failed induction of labor and associated factors among women delivered in Hawassa public health facilities, Ethiopia, 2015. *J Women's Health care.* 2015;4:5.
5. Walker KF, Bugg GJ, Macpherson M, McCormick C, Grace N, Wildsmith C, et al. Randomized Trial of labor induction in women 35 years of age or older. *N Engl J Med.* 2016;374:9.
6. Darney BG, Snowden JM, Cheng YW, Jacob L, Nicholsan JM, Kaimal A, et al. Elective induction of labor at term compared with expectant management. *Obstet gynecol.* 2013;122:761-9.
7. Moore J, Low LK. Factors that influence the practice of elective induction of labor. *J Perinat Neonatal Nurs.* 2012;26:242-50.
8. Levine LD, Hirshberg A, Srinivas SK. Term induction of labor and risk of cesarean delivery by parity. *J Matern fetal neonatal Med.* 2014;27:1232-6.
9. Gulmezoglu AM, Crowther CA, Middleton P, Heatley E. Induction of labor for improving birth outcomes for women at or beyond term. *Cochrane Database Syst Rev.* 2012;6:CD004945.
10. Chaubey S, Kanti Y, Sandhya K, Meenakshi S, Ajay S, Shikha M. Maternal & fetal outcome after induction and expectant management of labor in primigravida and multigravida. *IJIR.* 2016;2:2454-62. Rayamajhi RT, Karki C, Shrestha N, Padhye SM, Indication for labour induction and predictors for failed induction at KMCTH. *Kathmandu Univ Med J (KUMJ)* 2009 Jan- Mar;7(25):21-5.
11. Baños N, Migliorelli F, Posadas E, Ferreri J, Palacio M, Definition of Failed Induction of Labor and Its Predictive Factors: Two Unsolved Issues of an Everyday Clinical Situation.
12. Talaulikar VS, Arulkumaran S, Failed induction of labor: Strategies to improve the success rates, *Obstet Gynecol Surv.* 2011;66:717-28.
13. Tenore JL. Methods for cervical ripening and induction of labor. *Ame Family Physician.* 2003;67(1):2123-8.
14. Kelly Winder, Induce Labour With Natural Methods – Bring On Labour Naturally, *Belly Belly Creator, Mum & Birth Attendant* <http://www.bellybelly.com.au/birth/naturalinduction>
15. Rouse DJ, Owen J, Hauth J, Criteria for failed labor induction: Prospective evaluation of a standardized protocol, *Obstet Gynecol.* 2009;96:671-7.
16. Khan NB, Ahmed I, Malik A, Factors associated with failed induction of labour in a secondary care hospital, *Med Assoc.,* 2012 Jan;62(1):6-10.
17. Sanchez-Ramos L, Gaudier FL, Kaunitz AM. Cervical ripening and labor induction after previous Caesarean delivery. *Clin Obstet Gynecol.* 2000;43:513-23.
18. Tang CH, Wang HI. Risk-adjusted Cesarean Section rate for the assessment of physician performance in Taiwan: a population based study. *BMC Public Health.* 2006;6:246.
19. Chanthasenanont A, Pongroj paw D. Indications for Cesarean Section at Thammasat University Hospital. *J Med Assoc Thai.* 2007;90:1733-7.
20. Brindley BA, Sokol RJ. Induction and augmentation of Labour. Basis and methods for current practice. *Obstet Gynecol Surv.* 1988;43:730.