www.jmscr.igmpublication.org
Impact Factor 5.84
Index Copernicus Value: 71.58
ISSN (e)-2347-176x ISSN (p) 2455-0450
crossref DOI: https://dx.doi.org/10.18535/jmscr/v5i11.163

IGM Publication
Journal Of Medical Science And Clinical Research
An Official Publication Of IGM Publication

To Study the Maternal and fetal Outcome of Unbooked rural Referrals who Undergo Emergency Caesarean Delivery at RIMS, Raipur

Authors
Dr Neerja Agarwal[1], Dr Abha Parghania[2]
[1]Assistant Professor Department of OBG Raipur Institute of Medical Sciences Raipur.
[2]Senior Resident Department of OBG Raipur Institute of Medical Sciences Raipur
Email: *neerja_agarwal@hotmail.com*

Abstract
Background: *Cesarean section is the most common done obstetric emergency and the outcome of surgery differs depending on various factors. Maternal and fetal outcome depends on proper follow up during antenatal period.*
Objectives: *To study them Maternal and fetal outcome and complications in rural referral patients (unbooked cases) undergoing emergency cesarean delivery and to compare them with booked cases undergoing emergency cesarean deliveries in Raipur Institute of Medical Sciences.*
Purpose: *This study was undertaken to find out the difference in maternal and fetal outcome between booked cases with proper antenatal follow up and unbooked cases referred from rural health centres.*
Method: *The study is a cross-sectional study conducted at Raipur Institute Of Medical Sciences from October 2013 – September 2015 over a period of 2 years.560 cases of rural referrals (unbooked cases) undergoing emergency cesarean delivery were the study group. The control group consisted of 420booked cases undergoing emergency cesarean delivery. Various parameters of maternal morbidity, neonatal morbidity and mortality were compared in both the groups.*
Results: *Of the various factors analysed in relation to type of Cesarean delivery statistically significant association were found between emergency ceasearean and younger patients multi -parity, irregular attendance at antenatal clinic, no prenatal care, indications, intra operative complications and low Apgar scores ($P<0.05$).*
Conclusion: *Cesarean delivery done in rural referrals on emergency basis associated with significant intraoperative, postoperative morbidity and neonatal morbidity and mortality.*
Every effort should be directed to proper antenatal care and planned cesarean delivery, as determined during antenatal period. Importance of an effective health care package and timely referral from peripheral hospitals should be stressed so as to reduce the various problems associated with emergency cesarean delivery.
Keywords: *Emergency cesarean delivery, booked and unbooked, maternal morbidity, neonatal morbidity and mortality.*

Introduction

Cesarean delivery is one of the most commonly performed operations today[1]. Obstetric practice has witnessed an increasing frequency in caesarean deliveries, in India it has increased from 26.6% (2007-2008) to40.7% (2010-2011)[2]. The procedure has involved from being done in desperate situation s as postmortum surgery to save the unborn child to present times where one of the commonest indication for caesarean delivery is previous caesarean birth.3.According to estimates of WHO 2015, world health statistics, the maternal mortality ratio is 560 (1990), 370 (2000), 190(2013) per 100,000 live births.[4]

Inspite of all attempts to deliver the fetus by elective cesarean section many times emergency

cesarean section may have to be resorted for fetal or maternal salvage.[69]The incidence of severe maternal morbidity is significantly higher among women undergoing emergency cesarean section than women undergoing elective one.[70] In emergency cases, there is lack of all the facilities, availability of trained staff, all the criteria may not be fulfilled, and both maternal and fetal complications are more common.[71]

Late referrals in case of obstructed labour toxaemia in pregnancy and inadequate transport facilities to apex hospital-this leads to increased risk of maternal and perinatal complications[5]. Prenatal care aims to identify high risk pregnancy and to prevent and manage problems and factors that adversely affect the health of the mother and infant. Improper antenatal and intranatal care at peripheral level is responsible for poor maternal and perinatal outcome[6].

The three delay's which can affect a woman's chance of surviving an obstetric emergency are[7]:

Delay in problem recognition and decision making.

Delay in reaching a health facility.

Delay in receiving care at health care facility

Periodic health surveys to be done like NFHS, DLHS, AHS to decrease the mortality and morbidity[8].

The literature indicates that the most likely known targets for prenatal interventions to prevent low birth weight rates are

1) psychosocial (aimed at smoking);

2) nutritional (aimed at low pre pregnancy weight and inadequate weight gain);&

3) medical (aimed at general morbidity).

However data on the effectiveness of these services are lacking[9].

Although future research efforts will need to address the issues of bias inherent in much of the published research, the published literature suggests that prenatal care regimens which provide social and behavioral services along with medical care could improve both the health of the mother and outcome of pregnancy[10]. Present study was undertaken at Raipur Institute of Medical Sciences, which is a rural based medical college institute which is a tertiary referral center which has a patient population mainly from low socioeconomic status and rural areas. Patients were referred from private hospitals, cases handled by untrained dais and untrained medical personal then being referred to us as unbooked cases in an emergency state form management. These high risk rural referral cases (unbooked) are managed by emergency caesarean delivery which are compared to booked emergency cesarean deliveries, therefore it is essential to compare the outcome of cesarean deliveries in both situations, hence the need for study.

Aim

- To study the maternal and fetal outcome of emergency caesarean delivery between unbooked rural referrals and booked cases at Raipur institute of medical sciences, Raipur.

Objectives

- To study the maternal and fetal outcome of unbooked rural referrals who undergo emergency caesarean delivery at RIMS, Raipur.
- To study the obstetric outcome of booked cases of RIMS, Raipur, who undergo emergency caesarean delivery.
- To compare the obstetric outcome of unbooked rural referrals and booked cases of RIMS, Raipur, who undergo emergency caesarean delivery at RIMS, Raipur.
- To study, evaluate and compare the risks and complications associated with emergency caesarean delivery in both booked and unbooked cases.
- To study and compare the demographic characters of both groups.

Patients and Methods

Place of Study: This study was conducted in the Department of Obstetrics and Gynecology, Raipur Institute Of Medical Sciences, Raipur.

Period of Study: October 2013 to September 2015.

Type of Study: Comparative cross sectional study

Study population:

Study group: 560 cases of rural referrals (unbooked cases) undergoing emergency cesarean delivery.

Control group: 420 booked cases undergoing emergency cesarean delivery.

The necessary permission and approval from the Hospital ethics committee was taken.

Written informed consent was obtained from the patients.

Inclusion Criteria

- Gestational age > 37 weeks
- Unbooked cases handled outside and reffered, who underwent
- cesarean delivery on emergency.
- Booked cases admitted in our hospital and underwent emergency cesarean delivery.
- Singleton pregnancy.

Exclusion Criteria

- Gestational age < 37 weeks
- Multiple gestations
- Booked and unbooked cases admitted in our hospital for elective cesarean delivery.
- Booked and unbooked cases undergoing normal delivery or instrumental vaginal deliveries.

Method of Collection of Data

Raipur Institute Of Medical Sciences (RIMS), is a rural based medical college in Raipur situated at 25 kms from Raipur, surrounded by about 130 villages. RIMS is a tertiary care centre having a large number of referral cases (unbooked patients) from these areas. Hospital is well equipped and has round the clock availability of qualified team comprising of obstetricians, pediatricians and anaesthesiologists and blood bank facility.

The main source of data for this study were 560 patients (unbooked) who were handled in PHC's, CHC's, private nursing homes, untrained dais and referred to us considered as unbooked cases, who underwent emergency cesarean delivery and 420 patients who were booked and posted for emergency cesarean delivery during the study period.

Booked mothers were those who had attended minimum of three antenatal clinics in our institute, first visit at 20 weeks or as soon as pregnancy is known, second visit at 32 weeks and third visit at 36 weeks.[88]

Unbooked mothers were those who had no prenatal care during their whole pregnancy and those who were referred in emergencies from other medical centres and hospitals.[89]

Demographic variables included age, socioeconomic status and education status. Obstetric history included parity status, maternal health before and during pregnancy, significant clinical events in previous pregnancy and detailed information regarding complication occurring intrapartum and postpartum. Medical evaluations including medical disorders like diabetes mellitus, hypertension, cardiac disease thyroid disorders which can show their impact on maternal and fetal outcome was obtained.

In booked group on admission detailed history was taken, routine investigations were done. Pre Anaesthetic check up was done prior to surgery. The procedure was explained and informed written consent was obtained. Patient was advised NPO and pre medicated with tab. Ranitidine and pre loaded with IV Infusion of 1 Ltr of Ringer Lactate solution 1 hr before the procedure.

In unbooked cases on admission to hospital with a referral letter from the peripheral centre, detailed history such as Name, age, parity, socio economic status, whether , handled at home or untrained dais, at PHC's by health workers, medical officer's or at private nursing home were noted.

Reason for referral, distance travelled, mode of transport to reach our institution, reasons for not attending antenatal clinic were also noted.

A complete obstetric history was taken, duration of pregnancy, duration of onset of pain, H/O vaginal leak or bleeding. Method of intervention like use of oxytocin, epidosin, ARM was noted.

Detailed past obstetric history, menstrual history, family and personal history, medical and surgical history were noted .All these were recorded on predesigned proforma.

Fetal wellbeing was assessed with ultrasonography and cardiotocography.

Maternal outcome measures were followed for mortality and morbidity, which can be due to major obstetric or postpartum haemorrhage, puerperal sepsis, wound infection DIC,ARF, pulmonary edema, and postoperative mechanical ventilation. Postpartum haemorrhage is defined as a blood loss of more than 500 ml in the first 24 hours following delivery of the fetus in vaginal deliveries and more than 1000 ml in cesarean deliveries. Severe or massive PPH is defined as a blood loss of more than 150 ml per minute or a sudden loss of more than 1500 to 2000 ml.[90]

The ACOG has defined PPH as a hematocrit drop of 10 percent or more, or a haemorrhage that requires immediate blood transfusion.[90]

All complications that occurred during labour, intra-operative period, post-operative period, postnatal hospital stay were recorded.

Severe maternal morbidity is described as Maternal Near Miss (MNM). Maternal Near Miss case is defined as " a woman who nearly died but survived a complication that occurred during pregnancy, childbirth, or within 42 days of termination of pregnancy" [91].

Fetal outcome studied were perinatal mortality (stillborn or neonatal death). Stillbirth or fetal death is defined as" the absence of signs of life at or after birth". Early neonatal death is defined as "death of a live born neonate during the first seven days after birth". Late neonatal death is defined as "death after 7 days but before 29 days ".[92]

New born weight was recorded, APGAR scoring done, after pediatric examination those with birth asphyxia were admitted to Neonatal Intensive Care Unit (NICU) and each new born was followed till discharge from the hospital.

Collected data entered in the proforma were analysed, significance of difference of various morbidities in the two groups were calculated by pearsons chi-square test.

P value < 0.05 is taken as significant.

Discussion

More than 500,000 women die of childbirth every year worldwide at present. One woman dies and twenty other suffer from injury or disease because of childbirth every minute. Of these, India alone accounts for about 100,000 maternal deaths every year, with an overall maternal mortality rate of 407 per 100,000 live births. The rate varies from state to state, being highest in Utter Pradesh and Rajasthan (707 and 677 respectively) and lowest in Tamil Nadu and Gujarat (76 and 29 respectively)[92.]

The maternal health programme, a component of the Reproductive and Child Health Programme, aims at reducing maternal mortality to less than 180 by the year 2010 by the provision of essential and emergency obstetric care, facilitating referral transport, safe abortion and the detection and treatment of reproductive tract infections. (Ian Donald). Most maternal deaths are due to hemorrhage, anemia and puerperal complications, obstructed labour, PIH, anemia and infections and the vast majority would be preventable with universal access to antenatal care and an effective system or referral.

The question why some women do not attend antenatal clinics and how this affects the outcome of pregnancy is of clinical importance because of the persistently high proportion of unbooked patients delivered. The majority of the unbooked mothers take up little of the doctors' time because they receive minimal or no antenatal care and spend only a short time in hospital for delivery[92].

Late referrals in case of obstructed labor ,abnormal presentations, toxaemia and inadequate transport facilities to apex hospital –this leads to increased risk of maternal and perinatal complications[8]. Improper antenatal and intranatal care at peripheral level is responsible for poor maternal and perinatal outcome[9].

Unbooked mothers make a substantial contribution to perinatal morbidity and mortality. The initial aims before assessing the fetal outcome were to attempt to discover the basic reasons for their failure to attend antenatal clinics.

In this study 980 cases were enrolled in the study out of which 420(42.86%) were booked cases and 560 (57.14%) were unbooked cases who underwent emergency Lscs and it was observed that maternal morbidity was lower in the booked group as compared to the unbooked group.

This study aimed to compare the sociodemographical characteristics, obstetrical complications and fetal and maternal outcomes in pregnant women booked for antenatal care and delivery in our centre were compared with that of women unbooked for antenatal care in our centre or brought in during the course of labour because of onset of complications, but without any records of her antenatal care being forwarded.

Table (21) Comparison of Incidence of emergency cesarean section in booked vs un-booked group with other studies

S.no	Study group	Booked	Un-booked
1	Vidyadhar et al (2012)[84]	n= 389 27%	n= 476 73%
2	Gulfareen et al (2009)[93]	n=167 43.9%	n=213 56%
3	Vijayasree M (2015)[92]	n= 238 47.6%	n= 262 52.4%
4	Nargis D et al (2010)[94]	n = 52 23.5%	n = 270 76.5%
5	Iklaki et al (2012)[95]	n=245 19%	n=399 50%
6	Present study (oct 2013- sep 2015)	n=420 42.86%	n=560 57.14%

In the present study the incidence of emergency cesarean section was more in the unbooked group and is comparable with the other studies as shown in the above table.

In a study of referred cases from rural areas done by Limaye et al [48], cesarean delivery was 6 times higher in referred unbooked cases.

Kim et al.(2012)[96] has proposed that timely referral within and to Emergency Obstetric Newborn Care (EmONC) facilities would decrease the proportion of CS deliveries that develop to emergency status. He also proposed that it could have been because of negligence of understanding the seriousness of patients condition, financial constraints, referral system and non availability of transport to shift patients towards tertiary care centres which makes condition among unbooked group further complicated resulting in emergency caesarean section.

Table (22) Comparison of distribution of Age of the study subjects with other studies

Age group (in Yrs)	Study groups									
	Jaspinder et al[88] (2013)		Riffat J et al (2008)[97]		Mundhra R et al (2013)[98]		Rajal Thaker et al (2013)[99]		Present study	
	B n=42	UB n=58	B n=388	UB n=347	B n=323	UB n=479	B n=952	UB n=219	B n=420	UB n=560
<20 yrs	1 (2.39%)	9 (15.52%)	15 (3.9%)	20 (5.8%)	20 (6.19%)	52 (10.85%)	73 (7.6%)	18 (0.2%)	26 (6.19%)	61 (10.85%)
20-30 yrs	30 (71.44%)	45 (77.60%)	367 (94.6%)	309 (89%)	292 (90.40%)	368 (76.83%)	763(80.1%)	159(72.5%)	380 (90.4%)	430 (76.83%)
>30 yrs	11 (26.20%)	4 (6.9%)	6 (1.5%)	18 (5.2%)	11 (3.41%)	59 (12.32%)	116(12%)	42 (19.1%)	14 (3.41%)	69 (12.32%)

As shown in the above table, the maximum number of cases were seen between 20-30 yrs of age group in both booked and unbooked group. Teenage pregnancy was more in unbooked group i.e 10.85% compared to booked group which is only 6.19%, in the present study, which is comparable and similar in other studies.

Jaspinder etal (2013) stated that young age along with lack of awareness regarding importance of antenatal care and lack of education especially health education might have withdrawn them from taking antenatal care at an early gestational age or till the development of obstetric complications. This led to their higher number in unbooked group.

Table (23) Comparison of distribution of study subjects in relation to parity with other studies

Parity	Study groups					
	Jaspinder et al [88] (2013)		Rajal Thaker et al (2013)[99]		Present study	
	B n=42	UB n=58	B n=952	UB n=219	B n=420	UB n=560
Primi	19 (45.24%)	36 (62.07%)	402 (42.2%)	100 (45.6%)	168 (39.9%)	194 (34.6%)
Multi	23 (54.77%)	22 (37.94%)	550 (57.6%)	119 (54.1%)	252 (60.1%)	366 (65.4%)

As shown in the above table, there is higher percentage of multiparity in unbooked group i.e 65.4% compared to booked group,which was similar to other studies. In a study conducted by Mundhra R etal (2013) ,a significantly higher percentage of multiparous patients (24.84%) were unbooked and she stated that this was most likely because these mothers had previous successful deliveries without antenatal care and therefore they felt assured and did not feel the need to seek antenatal care in the present pregnancy and she also proposed that this could be attributed to their lower educational and lower socio-economic status, as a result of which they were not aware of the need for birth spacing and the importance of contraceptive measures.

Table (24) Comparison of Socioeconomic status of study subjects with other studies

Economic status	Study groups							
	Mundhra R et al[98] (2013)		Jaspinder et al[88] (2013)		Vijayasree M (2015)[92]		Present study	
	B n=323	UB n=479	B n=42	UB n=58	B n= 238	UB n= 262	B n=420	UB n=560
Upper	30 (9.29%)	0 (0%)	11 (26.2%)	5 (8.63%)	-	-	8 (1.9 %)	0 (0%)
Upper middle	101 (31.27%)	24 (5.01%)			-	-	51 (12.07%)	26 (4.55 %)
Lower middle	95 (29.41%)	96 (20.04%)	31 (73.81%)	36 (62.07%)	-	-	152 (36.21%)	127 (22.73%)
Upper lower	97 (30.03%)	359(74.95%)			-	-	123 (29.31%)	175 (31.22%)
Lower	0 (0%)	0 (0%)	0 (0%)	17 (29.32%)	18.06%	61.8%	86 (20.51 %)	232 (41.5%)

Our study found the relation between unbooked category and lower socio-economic status ($p<0.05$, 41.5%) which has been consistent with other studies (Jaspinder etal 2013) as shown in the above table. Jaspinder etal (2013) described that mothers with low socio-economic scale either approach for antenatal care in late pregnancy or during delivery with complicated stage of labour. On the other side mothers of high socio-economic scale had higher number in booked group as compared to their counterpart and he also revealed that financial issue which includes cost of antenatal services and transportation might be cited as one of the factors affecting utilization of antenatal care.

Table (25) Comparison of Education status of study subjects with other studies

Educational qualification	Study groups					
	Rajal thaker et al (2013)[99]		Ursula M Botha (2004)[100]		Present study	
	B n=952	UB n=219	B n=200	UB n=100	B n=420	UB n=560
illiterate	184 (19.3%)	76(34.7%)	71 (35.5%)	54 (54%)	78 (18.5%)	218(39%)
Primary edu.	474 (49.7%)	92 (42%)			218 (52%)	233(41.5%)
Secondary edu.	263 (27.6%)	47 (21.4%)	129 (64.5%)	46 (46%)	120 (28.5%)	109(19.5%)
Tertiary	31 (3.2%)	4 (1.8%)			4(1%)	0 (0%)

As shown in the above table majority of unbooked group i.e 39% were illiterate compared to booked group which was 18.5%.. This was consistent with other studies which was 34.7% in unbooked group in a study conducted by Rajal thaker et al (2013) where as it was 19.3% in booked group in his study. This shows that poor educational status is a contributing factor for improper utilization of antenatal care.

Conclusion

The following conclusions can be obtained from the present study.

BOOKED antenatal patients have better maternal outcome when compared to UNBOOKED patients.

BOOKED antenatal patients have better perinatal outcome when compared to UNBOOKED antenatal patient.

Present study shows qualitatively similar pattern of results when compared to other studies.

This study shows a strong association between unbooked status and risks of maternal and fetal adverse outcomes.

The present study showed that poor utilization of antenatal care is associated with increased maternal and perinatal morbidity and mortality.

Complications can arise at anytime during pregnancy, childbirth and postnatal period and in the absence of intervention, there is high feto-maternal morbidity and mortality.

Ceasarean delivery in rural referrals on emergency basis is associated with significant intraoperative and postoperative morbidity and perinatal morbidity and mortality.

This study emphasis that High Risk pregnancy identification and proper antenatal, intranatal and postnatal care will reduce the incidence of obstetric emergencies.

Reduction in poverty, illiteracy and improvement in health awareness in women will help in making pregnancy safe.

Strengthening of primary and secondary level facilities and timely referral to tertiary care level plays a crucial role in decreasing maternal morbidity as well as various problems associated with emergency cesarean delivery.

Multidisciplinary team approach can provide optimal care for the Near-Miss patients and thereby help in reducing maternal and perinatal morbidity and mortality.

This study concluded that with proper antenatal, intranatal and postnatal care, maternal and neonatal morbidity and mortality can be reduced and MILLENIUM DEVELOPMENT GOALS can be achieved.

References

1. Desai E, Leuva H, Leuva B, Kanani M. A study of primary caesarean section in multipara. Int J Reprod Contracept Obstet Gynecol. 2013; 2(3):320-324.
2. Bogg L, Diwan V, Vora KS, DeCosta. A Impact of Alternative Maternal Demand-Side Financial Support Programs in India on the Caesarean Section Rates:

Indications of Supplier-Induced Demand ,Maternal and Child Health J. 2015 Aug: 11.
3. Akolekar R, Pandit S N, Rao.B.S.. The cesarean Birth FOGSI publications, 1st ed. National Book Depot, reprint 2010; 1-3.
4. World health statistics. Part II, Global health indicators. Table 2, Cause specific mortality and morbidity. WHO 2015; . 64.
5. Samiksha S, G. V. S. Murthy, Anitha T, Sanjeev U, Murali K, Rajan S, S. R. Srikrishna. Maternal and Child Health Journal. 2015 Jul; 19(7):1447-1454.
6. Umesh Sabale, Alka Murlidhar Patankar. Study of Maternal and Perinatal Outcome in Referred Obstetrics Cases. Journal of Evolution of Medical and Dental Sciences. 2015 Mar; 4(26) :4448-4455.
7. Maternal United Nations Population Fund (UNFPA). Maternal Mortality Update 2002: A Focus on Emergency Obstetric Care. New York: UNFPA; 2003:8.
8. Indias health care system 2013:04; 20-22.
9. Greg R, Alexander , Carol C, Korenbrot, The future of children, The role of prenatal care in preventing low birth weight, Princeton university. 1995 Spring; 5(1) ,103-120.
10. Scholl, Theresa O, et al. Prenatal care and maternal health during adolescent pregnancy: A review and meta-analysis. Journal of Adolescent Health, Volume 15, Issue 6, 444-456.
11. Young JH. Caesarean Section: The History and Development of the Operation From Earliest Times. London, HK Lewis & Co Ltd, 1944.
12. National Library of Medicine. Caesarean Section – a brief history. 1993. Accessed March 25th, 2004 from http://www.nlm.nih.gov/exhibition/cesarean/cesarean_ 2.html to …/cesearean_6.html
13. Boley JP. The History of Caesarean Section. CMAJ 1991; 145(4): 319-322
14. Gabert HA, & Bey M. History and development of Cesarean Operation. Obstetrics and Gynecology clinics in North America 1988; 15:591-605
15. Hillan EM. Caesarean Section: historical background. Scottish Medical Journal 1991; 36(5):150-154.
16. Cunningham F G, Leveno J K, Bloom S L. Williams Obstetrics. 23rd ed. USA: Mc Graw Hill; 2010
17. Martin JA, Hamilton BE, Ventura SJ, et al: Births: final data for 2010. Natl Vital Stat Rep 61(1):1, 2012.
18. Ministry Of Health and Family Welfare , Gov.Of. India. DLHS-3(2007-2008).
19. Baskett TF, Arulkumaran S. Intrapartum care. 2nd ed. London: RCOG Press; 2011. P. 155-168.
20. Renu M, Nupur G. Ian Donald's Practical Obstetric Problems. 7thed. New Delhi: Wolters Kluwer; 2014.
21. Kambo I, Bedi N, Dhillon B S,Saxena N C. A Critical Apprriasal of Cesarean section rates at teaching hospital in India. International Journal Gynecol and obstet 2002; 79 : 151-158.
22. Rosenstein MG, Kuppermann M, Gregorich SE, et al: Association between vaginal birth after cesarean delivery and primary cesarean delivery rates. 122:1010, 2013.
23. Holmgren C, Scott JR, Porter TF, et al: Uterine rupture with attempted vaginal birth after cesarean delivery. Obstet Gynecol 119:725, 2012.
24. A Mesleh Madawi Al Naim, Krimly R. Pregnancy outcome of patients with previous four or more cesarean sections. J Obstet Gynecol 2001; 21(4): 355-357.
25. Cunningham FG, Levon KJ, Bloom SL, Hanath JC, Rouse DJ, Spong CY. Abnormal labor-Williams obstetrics,23rd edition. Mc Graw Hill 2010 : 464.
26. Sizer AR,Nirmal DM. Occipito posterior position: associated factors and obstetric

outcome in nulliparas. Obstet Gynecol 2000; Nov, 96(sept 1): 749-752.
27. Cheng YW, Shaffer BL, Caughery AB. The association between persistent occipito posterior position and neonatal outcome. Obstet Gynecol 2006: 107(4); 837-844.
28. Biswas A, Anandkumar C. Intrapartum fetal monitoring. Arulkumaran S,Ratnam S, Bhaskar rao K: The management of labour. Orient Layman ltd. 4 : 57-69, 1996.
29. Arulkumaran S, Penna KL, Bhaskar Rao K. Management of labour,2nd edition; universities press: 98-105.
30. The Netherlands Perinatal Registry, 2006.
31. J. A. Martin, B. E. Hamilton, P. D. Sutton, S. J. Ventura, F] ",Menacker, and M. L. Munson, "Births: final data for 2002 .National Vital Statistics Reports, . 52(10) . 1–114, 2003.
32. Induction of labor—Clinical Guideline (NICE, NHS), July 2008.
33. A.Kwee, M. L. Bots, G. H. Visser, and H. W. Bruinse, "Obstetric management and outcome of pregnancy in women with a history of cesarean section in the Netherlands," European Journal of Obstetrics & Gynecology and Reproductive Biology , 132, no. 2, pp. 171–176, 2007.
34. D. J. Murphy, R. E. Liebling, R. Patel, L. Verity, and R. Swingler, "Cohort study of operative delivery in the second stage of labour and standard of obstetric care," BJOG: An International Journal of Obstetrics & Gynaecology, vol. 110, no. 6, 610–615, 2003.
35. A.Ben-Haroush, N. Melamed, B. Kaplan, and Y. Yogev, "Predictors of failed operative vaginal delivery: a single-center experience," The American Journal of Obstetrics and Gynecology, vol. 197, no. 3, pp. 308.e1–308.e5, 2007.
36. Chauhan A. Placenta previa. Pregnancy at risk. A practical approach to high risk pregnancy and delivery. Usha Krishna, 5th edition; FOGSI: 493-500.
37. Pariente G, Wiznitzer A, Sergienko R, Mazor M, Holcberg G, Sheiner E. Placental abruption: Critical analysis of risk factors and perinatal outcomes. J Matern Fetal Neonatal Med 2011;24:698-702.
38. Ananth CV, Oyelese Y, Yeo L, Pradhan A, Vintzileos AM. Placental abruption in the United States, 1979 through 2001: Temporal trends and potential determinants. Am J Obstet Gynecol 2005;192:191-8.
39. Bibi S, Ghaffar S, Pir MA, Yousfani S. Risk factors and clinical outcome of placental abruption: A retrospective analysis. J Pak Med Assoc 2009;59:672-4.
40. Witlin AG, Sibai MB. Perinatal and maternal outcome following abrouptio placentae. Hypertens Preg 2001;20:195-203.
41. Hussein L, Ingrid M, Siriel N M, Gunilla L, Lennarth N, BMC Pregnancy and Childbirth 2009, 9:13.
42. Enakpene CA, Omigbodun AO, Arowojulo AO. Perinatal mortality following umbilical cord prolapse. Int J Gynaecol Obstet. 2006 Oct; 95(1):44-45.
43. Baskett TF. Munro Kerr's Operative Obsterics, 12th ed,2014: Cord prolapse: p. 177.
44. Ofir K, Sheiner E, Levy A, et al. Uterine rupture: risk factors and pregnancy outcome. Am J Obstet Gynecol. 2003;189:4.
45. Van Han MA, Van Dongen DW, Mulder J. Maternal consequences of cesarean section. A retrospective study of intra op and post op maternal complications of cesarean section during 10 yr period.Eur J Obstet Gynecol Reprod Biol 1997 Jul ; 74(1) : 1-6.

46. Donald I. Cesarean section. Practical obstetric problems. 6th edition, New Delhi. B I Publications 2009: 548-566.
47. Rogers RE. Complication at cesarean section. Obstet Gynecol clinics North America, vol 15(4) ; 1988 : 673-684.
48. Schneider H. Birth asphyxia-an unsolved problem of perinatal medicine. Z Geburtshilfe Neonatol ; 205 (6) ;2001 :205-212.
49. Hood DD. Anesthesia for cesarean section. Obstet Gynecol clinics, North America, vol 15 (4) ; 1988 : 639-652.
50. Cunningham F G, Leveno K J, Bloom S L, Hauth J C,Rouse D J, Spong C Y. Cesarean delivery and peripartum hysterectomy. Williams Obstetrics. 23rd edition. Mc Graw Hill 2010; 544-555.
51. Murphy KW. Reducing the complication of cesarean section. Bonnar J (ed) RA. Obstet Gynecol, vol 20, Churchill livingstone , Edinburgh ; 1998: 141-152.
52. Limaye H R, Ghadialli M V. Maternal and fetal outcome in obstetric emergency cases referred from rural area and recommen-dations to improve it. Journal of obstet and gynec of India 1982; 32 : 520-529.
53. Neilson TF, Hokegard KH. Cesarean section and intraoperative surgical complication. Acta Obstet Gynecol scand 1984 ; 63 : 103-108.
54. Onkapa B, Ekele B. Fetal outcome following cesarean section in a university teaching hospital. J of National Medical Association, 101(6) ; 1999:
55. Adhikari S, Dasgupta M, Sanghamita M. Management of obstructed labour: A retrospective study. J Obstet Gynecol India 55(1); 48-51.
56. Gupta N, Vaid S, Acharya V. A prospe-ctive study of 70 cases of obstructed labour. J Obstet Gynecol 1991 ; 41(1) : 52-55.
57. Nuiam L A, Soltan M H, Khashoggi T, Addar M, Chowdhury N, Adelusi B A. Outcome in elective and emergency cesarean sections: A comparative study . Annals of Saudi medicine 1996; 16 (6): 645-649.
58. Vinaya Pendse et al; Profile of Booked vs Unbooked Delivery cases; Journal of Obstetrics and Gynaecology of India; 1989 Aug vol. 34 (4); 466 - 471
59. Jassawalla M.J. et al; Maternity care monitoring; Journal of obstetrics and Gynaecology of India; 1985 . 399 to 403.
60. Badole C.M. et al; Fetal Growth; Association with maternal dietary intake, haemoglobin" and antenatal care in rural area, Journal of Obstetrics and Gynaecology of India; Vol. 1992, 42, Pg 32 – 36.