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Prenatal risk score in high risk pregnancy cases and maternal outcome: a study from South India

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Abstract

Identification of a high risk pregnancy by Coopland score helps the obstetrician to identify patient at high risk and also elaborate a prognosis of pregnancy.

Objective: The present study was conducted to evaluate maternal outcomes in high and low risk pregnancies.

Methodology: In the present study of 100 cases of high risk caesarean section were evaluated and compared with 100 cases of low risk caesarean sections over a period of two years.

Results: 96% cases in the high risk group (study group) and 98% cases in low risk group (control group) were between the age group of 17-35years. In the study group there were 42% primigravida, 56% multigravida and 2% grandmultipara, while in the control group respective figures were 46%, 52% and 2%. 54% of the study group and 58% of the control group were operated as emergency cases. 62% of the cases in the study group and 14% cases in the control group had intraoperative complications. 50% in the study group and 12% in the control group had postoperative maternal morbidity. 4% and 2% cases in the study group had hospital stay between 10 to 15 days and more than 15 days respectively. In the control group, all the cases had hospital stay less than 10 days. The average duration of surgery in 90% cases of the study group was less than 1 hour

Conclusion: We suggest Coopland risk scoring for every case admitted for a caesarean section, which will be definitely helpful in predicting and evaluating the eventual maternal outcomes. Appropriate timely care and referral can have a positive impact in lowering the maternal mortality and morbidity and possibly better neonatal outcome.

Keywords: High risk pregnancy, Maternal outcome, Caesarian section, Coopland scoring

Introduction

A high-risk pregnancy (HRP) is one in which the maternal environment or past reproductive performance presents a significant risk to fetal well-being, such as premature birth, small for date infant, full term with low reservoir or still births and early neonatal death. Identification of patients at risk for these complicated pregnancies with poor outcome is fundamental to antenatal care.(1)

A high risk pregnancy may be identified by using a scoring system such as the system developed by Coopland AT.(2) Risk scoring system may be defined as a formalized method of recognizing, documenting and cumulating antepartum, intrapartum and neonatal risk factors in order to predict complications for the fetus and new born.(1)

Strategies to reduce the Caesarian section (CS) rate are the indication of each CS as an optimal mode of delivery should be critically examined. The obstetrician is under an obligation to share the evidence along with the pregnant women and her attendants that CS is the optimal mode of delivery.(3) The strategies to change delivery pattern should be aimed at both high and low risk women.(4) The present study is conducted to evaluate maternal outcomes in both high and low risk pregnancies.

Materials and Methods

This prospective descriptive study was conducted at Department of Obstetrics & Gynaecology at Mamata General Hospital, Khammam from August 2007 to August 2009. Clinical evaluation of 100 high risk and 100 low risk caesarean cases was done to study the maternal morbidity and mortality in post LSCS cases. All married women aged from 16 years to 40 years, having gestational age of more than 28 wks and underwent Caeserian section (Emergency/elective) were included in the study. The cases under study included booked and unbooked admission. The booked cases in general had minimum of two antenatal checkups. On admission history of the patient was taken regarding her age, address and occupation, menstrual history, obstetrical history was taken regarding gravity, parity abortion, number of term & preterm labours, any history of previous CS, indication (Medical, Surgical, Obstetrical & Gynecological) for CS and intra-operative complication. Scoring of the patients (low risk and high risk cases) was done by modified Coopland's Scoring System.(2) Values of all the high risk factors were summed up and a total score determined whether the pregnancy was "Low risk" or "High risk", accordingly and were categorized as:

Low risk with the score of 0-2, High risk with the score of 3-5.

Majority of patient underwent emergency section.

The intrapartum scale focused on problems of abnormal progress of labour, meconium stained liquor, fetal heart rate deceleration, presentation, induced labour and mode of delivery. Detailed history and information including neonatal complication and perinatal outcome was recorded using predesigned and pretested proforma. The observations in both groups were compared using p values calculated P value of <0.5 was taken as statistically significant. Results were compared with similar studies.

Results

In the present study, 96% cases in the high risk group (study group) and 98% cases in low risk group (control group) were between the age group of 17-35years. In the study group there were 42% primigravida, 56% multigravida and 2% grandmultipara, while in the control group respective figures were 46%, 52% and 2%. 54% of the study group and 58% of the control group were operated as emergency cases, while 46% of the study group and 42% of the control group were elective caesarean (Z = 4.88, P < 0.01). 62% of the cases in the study group and 14% cases in the control group had intraoperative complications. 50% in the study group and 12% in the control group had postoperative maternal morbidity. 4% and 2% cases in the study group had hospital stay between 10 to 15 days and more than 15 days respectively. In the control group, all the cases had hospital stay less than 10 days. The average duration of surgery in 90% cases of the study group was less than 1 hour, while 10% in the study group required operation for more than 1 hour. In the control group duration of surgery was less than 1 hour in all the cases.

Table 1: Comparative Analysis of Age Distribution in Study Group and Control Groups

Age Distribution	High Risk		Low Risk	
	No.	%	No.	%
17-35 years	96	96	98	98
> 35 years	4	4	2	2
Total	100	100	100	100

Table 2: Comparative analysis of Maternal according to Coopland's Scoring system

S. No	Coopland's Score	Low Risk Patients	High Risk Patients	Maternal Outcome
1	0	12		2(16.7%)
2	1	8		4(50%)
3	2	80		8(10%)
4	3		76	36(47.4%)
5	4		18	8(44.4%)
6	5		6	2(33.3%)

Table 3: Comparative analysis of parity distribution between study group and control groups

Parity	High Risk		Low Risk	
	No.	%	No.	%
Primigravida	42	42	46	46
Multigravida	56	56	52	52
Grandmultipara	2	2	2	2
Total	100	100	100	100

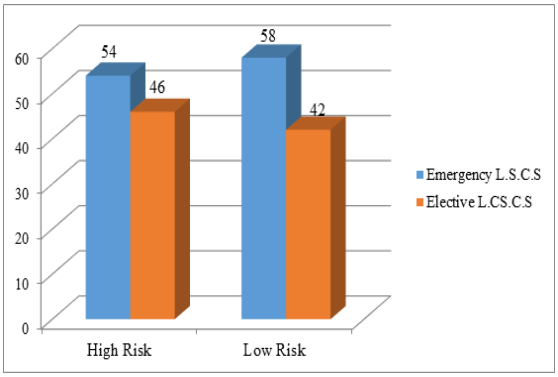

Fig. 1: Comparative analysis of type of LSCS between study group and control groups

Table 4: Comparative Analysis of indication of Caesarean Section Between study group and control group

Indication	High Risk		Low Risk	
	No.	%	No.	%
CP or CPD	4	4	6	6
Non progress (dystocia)	4	4	10	10
Failed induction	4	4	6	6
Previous Caesarean	24	24	28	28
Placenta previa	8	8	-	-
Abroptio placenta	4	4	-	-
IUGR	2	2	-	-
BOH	2	2	2	2
Infertility	2	2	4	4

Elderly Primigravida	2	2	-	-
Fetal distress	26	26	34	34
Breech	8	8	-	-
Transverse	2	2	-	-
Macrosomia	2	2	4	4
Obstructed labour	4	4	-	-
Genital Hespes	-	-	2	2
HIV +ve	-	-	4	4
Oligohydromnios	2	2	-	-
Total	100	100	100	100

Table 5: Comparative analysis of intraoperative maternal complications between study group and control groups

Intraoperative Complications	High Risk		Low Risk		Z value	P value
	No.	%	No.	%		
Previous poor quality scar at lower abdominal wall	4	4	4	4		
Omental and flimsy adhesion	6	6	4	4	2.14	P<0.05
Scar dehiscence	4	4	4	4	0.52	P>0.05
Impending to rupture	2	2	0	-		
Atonic uterus	4	4	-	-	1.57	P>0.05
Obstructed labour	4	4	-	-		
Abnormal uterine morphology and pathology	4	4	2	2	2.76	P<0.01
Retroplacental clots	4	4	-	-		
Ruptured uterus Placenta previa - Minor - Major	 6 2	 6 2	 - -	 - -		
Intraoperative bleeding - Moderate - Severe	 10 2	 10 2		 - -		
Extension of incision into - Broad ligament - Lower segment - Upper segment	 4	 4 -	 - -	 - -		
Injury to bladder and bowels	2	2	-	-		
Others (High up bladder)	4	4	-	-		
	62	62	14	14	13.20	P<<0.01

Table 6: Comparative analysis of post operative morbidity between study group and control group

Postoperative complications	High Risk		Low Risk		Z value	P value
	No.	%	No.	%		
Pyrexia (Puerperal pyrexia)	18	36	6	12	3.88	P<0.01
UTI	8	16	2	4	0.588	P>0.05
Chest infection	2	4	-	-		
Paralytic ileus	4	8	-	-	1.53	P>0.05
Wound sepsis	4	8	2	4	1.98	P<0.05
PPH	4	8				
Pulmonary edema	2	4		2		
Chorioamnionitis	2	4				
Others - DIC - HELLP syndrome - CCF, hypoxia - Hypoxia & dyspnoea	 2 2 - 2	 4 4 - 4		 2	 2.38 9.12	 P<0.01 P<<0.01

	50	100	10	24		

Table 7: Comparative analysis of duration of hospital stay between study group and control groups

Duration of stay	High Risk		Low Risk	
	No.	%	No.	%
Upto 10 days	94	94	100	100
10-15 days	4	4	-	-
> 15 days	2	2	-	-
Total	100	100	100	100

Table 8: Comparative analysis of duration of surgery

Duration of surgery	High Risk		Low Risk	
	No.	%	No.	%
≤ 1 hour	90	90	100	100
≥ 1 hour	10	10	-	-
Total	100	100	100	100

Discussion

In the study period, there were 3612 total delivery and 553 total caesarean delivery. The incidence of caesarean delivery in this was 29.63%. Maximum cases, both in high risk group (96%) and in low risk group (98%) were in age group of 17-35 years. This was in accordance with findings observed by Vijayasree M.[5] Maternal morbidity was more in high risk groups than in low risk group. This finding is also in accordance with study by Vijayasree M.[5]

Intraoperative maternal complications in this study were greater in the high risk cases (62%) (moderate to severe intraoperative bleeding 14%, abnormal uterine morphology and pathology (4%), abnormal adhesions (6%), obstructed labour atonic PPH (4%), scar dehiscence (4%), need for classical caesarean section (0%), obstetric hysterectomy (0%) as compared to the low risk groups (adhesions and scar dehiscence 4%, atonic PPH 0%). This is comparable to observations of Vijaykar S,[6] Clark SL,[7] and McCurdy Jr.[8] Thus we see that surgical expertise is needed in dealing with the possible intraoperative complications, specially in the high risk cases. As such, senior experienced consultants should be present prior hand to deal with the possible hazards.

In our study, it is clear that the maximum number of caesarean section done in both high risk and low risk groups were multigravidae, which was against the findings of the other studies[9,10] where primigravidae were common. In this study, the postoperative complications were much more in the high risk cases (50%) (Postoperative pyrexia 36%, wound sepsis 8%, paralytic ileus 8%, UTI 4%) as compared to the low risk group (24%), (postoperative pyrexia 12%, UTI 2.5%). This is comparably similar to observation by Naumann RW.[11]

In present study, it is seen that the maximum number of high risk cases, were operated in the emergency hours, while maximum number of low risk cases were operated during the routine hours. This shows the grim scenario of the medical care delivery system in India. This is supported by study of Stark M et al.[12]

In the present study, it can be seen that the indication for caesarean section in the high risk cases were due to foetal distress (26%), while for previous section (24%), failure to progress (4%), PROM (16%), and for hypertensive disorders (30%), while in the control group the maximum number of cases were operated due to FD (27.5%), Previous CS (26%), fetal malposition (24%), FPD and CPD (17.5%). Findings were in accordance with studies of Krishna U et al.[13]

In the present study, it is evident that duration of hospital stay was more in the study group as compared to the control group. This supported by the study of Poma PA et al,[14] and Stark M.[12] In our study, it is seen that the overall duration of surgery was more in the high risk group, this may be because of the fact that in the study group, more complications were dealt with. This fact is supported by study of Stark M.[12]

Conclusion

We suggest risk as per Coopland scoring for every case admitted for a caesarean section, which will definitely be helpful in predicting and evaluating the optimum eventual maternal outcomes. Appropriate timely care and referral can have a positive impact in lowering the maternal mortality and morbidity and possibly better noenatal outcome.

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