

Factors Affecting the Rate and the Indications of Primary Caesarean Section

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Objective: To describe the clinical indications of primary caesarean sections and to evaluate the factors affecting the obstetric outcome.

Methods: We reviewed caesarean deliveries at the King Fahd Hospital of the University performed between 1st of January 1994 and 31st December 1998 (n=690). The indication for the procedure and obstetrics outcome was obtained from the surgeon's operative reports and obstetrics files.

Results: The hospital caesarean rate during the study period was 9.8%. About 49% of the caesareans were primary procedures. There were more caesarean sections in women below the age of 30 years and in parity < 5. Elective primary caesarean delivery was performed in 26.9% cases while emergency caesarean section was performed in 73.1% of cases. The leading cause of primary caesarean sections was cephalopelvic disproportion followed by breech presentation and fetal distress. Emergency caesarean sections were performed more frequently in patients who had no or irregular antenatal care. Babies born by emergency caesarean section had lower 5 minutes Apgar score and more post operative complications. Larger babies ≥ 3.5 kg were delivered by caesarean section mainly due to failure to progress and breech presentation.

Conclusion: Primary caesarean section rates contribute to nearly 49% of the total caesarean section rate and it is on the increase. Many obstetric factors responsible for the increase should be evaluated.

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Caesarean delivery is a common obstetric procedure in the Western countries. Currently, one in four pregnant women will be delivered by caesarean section (CS) and the CS rates have been increased in the west¹. In the United States, CS rates has risen to more than 40% between 1976 and 1981, it went down to 25% in 1988². This has been associated

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with decreasing perinatal mortality rate^{3,4}, and decreased maternal mortality and morbidity^{5,6}. Others believe that increase in the operative delivery may not be associated with a reduction in the perinatal mortality⁷.

Risk factors affecting the primary CS rates have been studied extensively and the main factors affecting it are, age, parity, socioeconomic status, and maternal weight gain⁸. In this article, we aim to find out the rate and indications of primary CS in this part of Saudi Arabia and the obstetric factors affecting it.

METHODS

This is a retrospective study conducted at the King Fahd Hospital of the University (KFHU). We reviewed the medical records of all primary CS performed between 1st of January 1994 and 31st December 1998. The major indications for primary CS (the immediate cause leading to CS) were identified. These clinical indications were grouped into categories shown in Table 2.

Variables studied were mother's age, parity, antenatal clinic attendance, maternal height, fetal weight, 5 minutes Apgar scores and post operative complications. Cephalopelvic disproportion (CPD) and failure to progress were diagnosed clinically and radiologically.

Statistical analyses were performed with Chi-square tests as appropriate. Differences were considered statistically significant when $p < 0.05$.

RESULTS

During this period there were 14300 deliveries. Out of these, 1402 (9.8%) were caesarean sections, 690 (49%) were primary and 712 (51%) were repeat procedures.

Table 1 shows that the peak child-bearing age was between 21 and 25 years. There were more caesarean sections in women below the age of 30 years and in parity ≤ 5 compared with older patients, $P < 0.00001$. Elective primary CS delivery was performed in 186 (26.9%) cases while emergency CS was performed in 504 (73.1%) cases.

Table 1. Correlation of maternal age and parity

Age (years)	Parity				Total
	0	1-5	6-10	>11	
≤ 20	35	14	0	0	49
21-25	142	58	10	0	210
26-30	60	105	15	0	180
31-35	30	120	33	7	190
36-40	5	9	20	7	41
≥ 41	2	7	7	4	20

The leading cause of elective CS was breech presentation (26.9%), followed by CPD (25.8%), multiple pregnancy (14%), and antepartum hemorrhage (10.8%). The indications for emergency CS was CPD (24.6%), followed by fetal distress (24%), breech presentation (14.5%), antepartum hemorrhage (7.3%) and cord prolapse (5.8%) (Table 2). In women delivered by emergency CS, 94 (18.6%) had regular antenatal care compared with 127(68.3%) in women delivered by elective CS, $P < 0.00001$.

Table 2. Indications of primary caesarean section (n=690)

Indication	Elective (n=186)		Emergency (504)		Total (n=690)		P value
	No.	%	No.	%	No.	%	
Failure to progress and CPD*	48	25.8	124	24.6	172	24.9	NS*
Fetal distress	0	0	121	24/0	121	17.5	
Breech presentation	50	26.9	73	14.5	123	17.8	<0.0005
Antepartum hemorrhage	20	10.8	37	7.3	57	8.3	NS
Multiple pregnancy	26	14	14	2.8	40	5.8	<0.0001
Cord prolapse	0	0	29	5.8	29	4.2	
Others	42	22.5	106	21.0	148	21.5	

CPD* Cephalopelvic disproportion

NS* Not significant

Five minutes Apgar score of < 7 was observed in 15(6.8%) babies delivered by women who attended the antenatal clinic regularly, and in 37 (9.8%) babies delivered by women who had irregular antenatal care and in 13 (14.4%) babies delivered by women who had no antenatal care at all. Also, 5 minutes Apgar score was lower (<7) in babies born by emergency CS compared to those born by elective CS, 14.7% and 4.8% respectively, $P < 0.005$.

Postoperative complications were also more in patients who had emergency CS compared with patients undergoing elective CS such as fever (26.0% and 16.1%), wound infection (12.7% and 6.5%) and urinary tract infection (14.3% and 5.4%) $P < 0.001$.

Shorter women, < 154 cm had more elective CS 116 (59.7%) compared to taller women, > 154 cm, 90 (18.1%), $P < 0.00001$.

When the fetal weight was compared with the indication for CS, we found that small babies < 2.5 kg were delivered by CS mainly for multiple pregnancy in 57.3% and antepartum hemorrhage in 47.4% compared to heavier babies $P < 0.0001$. Larger babies ≥ 3.5 kg were delivered by CS mainly due to CPD and breech presentation when compared with low birthweight babies $P < 0.0001$ (Table 3).

Table 3. Correlation of fetal weight and caesarean sections indications

Indication	<2.5 kg	2.5-3.449 kg	3.5-4.0 kg	>40 kg	Total
CPD* and failure to Progress	3(1.7%)	75(43.6%)	66(38.4%)	28(16.3%)	172
Fetal distress	30(20.3%)	88(66.3%)	15(10.3%)	13(8.9%)	146
Breech	23(18.7%)	60(48.8%)	25(20.3%)	15(12.2%)	123
Antepartum Hemorrhage	27(47.4%)	13(22.8%)	10(17.5%)	7(12.3%)	57
Multiple pregnancy	23(57.3%)	14(35.0%)	3(7.5%)	0(0%)	40
Cord prolapse	12(41.4%)	11(37.9%)	6(20.7%)	0(0%)	29
Others	62(50.4%)	31(25.2%)	20(16.3%)	10(8.1%)	123

CPD* Cephalopelvic disproportion

There were no maternal deaths among patients included in this study. The average hospital stay was 7 days in both groups. About 5% of patients in each group received blood transfusion post-operatively. In all women who had emergency CS, general anaesthesia was used, while in patients who underwent elective CS, (97.3%) had general anaesthesia and the rest had epidural anaesthesia (2.7%).

Perinatal mortality rate was 9.8 per 1000 births in patients delivered by elective caesarean section compared with 10.1 per 1000 births in patients delivered by emergency caesarean section, the difference was not statistically significant.

DISCUSSION

The purpose of this study was to identify the indications of primary CS and to find out the obstetric problems associated with them. The most common indications of primary CS were failure to progress and CPD (24.9%) followed by breech presentation (17.8%) and fetal distress (17.5%). This has been reported by other observers⁹.

Emergency caesarean section during labor was the largest category of CS done in the study period (73.1%).

Most of the CPD problems are mainly seen in nulliparous women therefore any effort to address this problem must be aimed at the woman during her first pregnancy. If the first CS is avoided, then many subsequent repeat operations will be unnecessary. In this unit, we perform caesarean section on all patients who had 2 previous lower segment CS or more.

Accurate diagnosis of failure to progress and CPD is essential, because in many cases the problem is dysfunctional labor. So diagnosis and early correction of dysfunctional labor in the nulliparous women with a singleton fetus with vertex presentation is necessary. O'Driscoll suggested that active management could correct dysfunctional labor and

malrotation of the fetal vertex¹⁰. This can reduce the caesarean section rate for CPD¹¹⁻¹³.

At this unit we allow vaginal delivery for breech presentation unless there is another obstetric risk factor, provided that the pelvis size is adequate and labor is progressing satisfactorily. This also applied to primigravid patients. In some centers in Saudi Arabia, women with breech presentations were not allowed to labor, because of suggestions in the literature of high incidence of perinatal mortality and morbidity (30%)¹⁴⁻¹⁶.

Majority of the CS were performed in patients under 30 years old and with a parity ≤ 5 , probably because pregnancy complications are more common in younger and lower parity women in our population. Majority of the women delivered by emergency CS had irregular or no antenatal care at all when compared with women delivered by elective CS.

We found that small babies $<2.5\text{kg}$ were delivered by CS were mainly for multiple pregnancy and antepartum hemorrhage while, larger babies delivered by CS were mainly due to CPD and breech. These findings are well accepted since the size of the fetus influences the mode of delivery.

CONCLUSION

Caesarean section rate in Saudi Arabia is on the increase and is likely to continue in the near future to reduce perinatal mortality and morbidity and because medical litigation is now on the increase. We should try to find ways and means to avoid CS since it is not convincing that the increase in CS rate will be definitely associated with a reduction in perinatal mortality. Caesarean section is not a simple procedure because complications do occur causing significant morbidity and mortality. All pregnant women should be encouraged to attend antenatal clinic and those who are likely to be delivered by elective CS should be detected early, so that the incidence of failed labour and emergency CS can be reduced.

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