ORIGINAL **PROF-816**
(CLINICAL PRACTICE ARTICLE)

MATERNAL AND FETAL OUTCOME;
COMPARISON BETWEEN EMERGENCY CAESAREAN SECTION VERSUS ELECTIVE CAESAREAN SECTION

DR. MUHAMMAD ALI, FCPS
Senior Medical Officer,
Obstetrics and Gynaecology,
Nishtar Hospital, Multan.

DR. MANSOOR AHMAD , MBBS
Postgraduate Registrar,
Obstetrics and Gynaecology,
Nishtar Hospital, Multan.

DR. RASHIDA HAFEEZ, FCPS
Registrar, Obstetrics and Gynaecology,
Nishtar Hospital, Multan.

ABSTRACT ... Objective: To find the maternal and fetal morbidity and mortality in elective versus emergency caesarean section. **Design:** Prospective **Setting:** Obstetrics and Gynaecology Unit-III, Nishtar Hospital, Multan. **Period:** One year. **Material and methods:** 150 patients who underwent caesarean section were evaluated for maternal and fetal complications. **Results:** Overall intra-operative complications rate was 8.67%. 12 out of 13 complications occurred in emergency group. Postoperative complication was 34.66% and out of it emergency versus elective were 90.38% vs 9.62% respectively. Similarly maternal mortality was 666/100,000 in emergency group. Fetal complications were also higher in emergency group in this study i.e. 22.2% vs 10.86% in emergency vs elective group. Similarly prenatal morbidity was 15.04% in emergency group vs 8.10% in elective group. Fetal outcome was 100% in elective vs 94.69% in emergency caesarean section group. In one year period of study caesarean birth rate turned out as 17.56% which is quite comparable to the rate in western countries but the rate does not reflect true caesarean birth in a given population because of the fact that this hospital being a tertiary referral center drains only complicated cases of the wide spread area of south Punjab. Higher incidence of caesarean birth can be reduced without increasing the morbidity and mortality. Furthermore, proper sterilization and prophylactic antibodies can reduce the infectious morbidity after both emergency and elective caesarean section. **Conclusions:** Higher incidence of emergency caesarean section is a major contribution for increased rate of maternal and fetal morbidity and mortality in caesarean deliveries. This can be reduced by improving the quality and availability of antenatal care of masses. We can also reduce the incidence of caesarean birth without increasing perinatal morbidity and mortality.

INTRODUCTION

Caesarean section is defined as delivery of the fetus, alive or dead, through incision in the abdominal wall and the uterine wall. The definition does not include removal of the fetus from the abdominal cavity in case of rupture of the uterus or in the case of abdominal pregnancy. The evolution of Caesarean section during this century is a relatively safe procedure. Improved anaesthetic

techniques and antiseptic procedures has revolutionized obstetrics practice. Many vaginal procedures and internal version, destructive procedures and symphysiotomy have become rare or obsolete. In recent years, however, the use of Caesarean section has become increasingly controversial, uncertainty exist about the relative risk and benefits to the patients[1]. But there has been a dramatic rise all over the world in the recent decades. In USA it was 23% in 1985 and 25% in 1988[2]. Since that time Caesarean section rate has plateued slightly both in USA and several other western countries[2,3,4]. Though the reasons for increasing Caesarean section rate over the past decades are not completely understood but possible explanation may be the following;

1. Reduced parity leading to increased number of nulliparous pregnant female.
2. Increased maternal age leading to increased frequency of Caesarean section[5].
3. Extensive use of electronic fetal monitoring.
4. Breech presentation[4].
5. Decreased incidence of mid pelvic vaginal delivery[6].
6. Malpractice ligation, though well documented correlation between Caesarean section and reduction in childhood neurological problem is still lacking[7,8].
7. Socio-economic and demographic factors like better socioeconomic condition[9], decreased maternal height, higher pregnancy rate and women carrying a male fetus[10].

Caesarean section has a definitive valuable place in obstetrics due to life saving value both for mother and baby but operation performed as an emergency and one performed as an elective procedure belongs to entirely different entities according to the measures taken, facilities and skilled staff available and preparation done. Further more, the clinical condition of mother and fetus in two different circumstances does affect the maternal and fetal outcome.

The common indications for Caesarean section in modern obstetrics include repeat procedure, dystocia, breech presentation and fetal distress[11].

Emergency Caesarean deliveries are commonly done for fetal distress; prolonged and obstructed labour, severe pregnancy induced hypertension, eclampsia, antipartum haemorrhage and ruptured uterus[12].

In elective or planned group of caesarean deliveries mother is well prepared mentally and physically for procedure. Maturity of fetus is confirmed. All the criteria for surgery are tried to meet with the senior staff including obstetrician, anaesthetist and pediatrician are available and ancillary services are good. So best possible conditions are fulfilled in case of elective Caesarean section. On the other hand emergency Caesarean section lacks many of these facilities. Time is too short to meet with all the criteria of surgery. The procedure has to be done in all these deficient circumstances that sterilization, preparation, condition of the patient and the fetus are not up to the mark. Above all, the help of the senior staff' might not be available promptly. Therefore, entirely different situation of emergency and elective Caesarean section may influence the outcome. Both maternal and fetal complications are undoubtedly more common in emergency cases[13].

Caesarean associated maternal and fetal morbidity and mortality has been brought down during this century due to improved operative technique and facilities. But with emergency procedure risk of maternal and fetal morbidity and mortality increases many folds and efforts must be made to reduce the, incidence and complications of emergency Caesarean section. This study was designed to find the maternal morbidity and mortality in elective and emergency Caesarean section and to compare the fetal outcome in emergency and elective caesarean section.

MATERIAL AND METHODS

All patients undergone Caesarean section during one year in Obstetrics and Gynaecology, Unit-III, Nishtar Hospital, Multan were included in the study.

RESULTS

During the study period 850 patients were admitted in the ward and 150 patients undergone caesarean section, so the incidence of caesarean section in our unit was 17.65% during the study period. Out of 150 patients, 113(75.34%) had emergency and 37(24.66%) had elective caesarean section.

Most of the patients (80%) were in 20-30 years age group. Youngest was 18 years of age and eldest was of 42 years. 86% cases were done in patients below 30 years of age while only 14% were of more than 30 years age.

The Commonest group delivered by caesarean section was para 1-2 (49.33%), while grand multiparous women comprised 20(13.32%). Only one patient was above para-l0. In para 1-2 group, the primigravida was the commonest group delivered by primary caesarean section.

Commonest indication for caesarean section was repeat caesarean section 54(36%), out of this 38(70.3%) done as an emergency and 16(29.7%) as an elective. Mal-presentation found to be a cause in 20(13.33%), APH in 17(11.30%) and fetal distress in 10(6.66%) patients as is evident from Table-I.

Table-I. Indications for caesarean section.

Indications	Total	Emergency		Elective	
		No of pts	%age	No of pts	%age
Repeat C/E	54	38	70.30	16	29.70
Mal-presentation	20	12	60	8	40
Antipartum haemorrhage	17	12	70.58	5	29.42
Cephalopelvic disproportion	12	8	66.66	4	33.33
Fetal distress	10	10	100	-	-
Failed progress of labour	10	10	100	-	-
Pre-eclampsia	8	7	87.5	1	12.5
Miscellaneous	8	4	50	4	50
Eclampsia	6	6	100	-	-
Obstructed labour	5	5	100	-	-

90(60%) patients were operated under general anaesthesia. Out of this, 65(72.22%) were emergency and 25(27.77%) were elective caesarean section. 58(38.66%) patients were operated under spinal anaesthesia and 48(42.48%) of this group were emergency and 10(27.03%) were elective caesarean section. Epidural anaesthesia was given only in elective cases.

Pannenstiel incision was given in 120(80%) patients. Out of 120, 89(74.16%) patients in emergency group and 31(25.83%) in elective group got the pannenstiel incision. While 21.24% patients belonging to emergency group and 16.22% of elective group received midline incision. Midline incision was mainly given due to presence of previous midline scar.

Intra-operative surgical and anaesthetic complications

were observed in very few patients. Thirteen out of 150 patients got surgical complications, out of whom 12 were from emergency caesarean section (92.31%) and only one was from elective group (7.69%). Amongst these complications, massive haemorrhage was the most common problem encountered. Six patients out of 13 faced this problem and 5 were belonging to emergency group. Extension of uterine incision/tear, bladder injury and caesarean hysterectomy complicated only emergency group as shown in Table-II.

Table-II. Intra operative maternal complications

Complications	Total	Emergency	Elective
Haemorrhage	6	5	1
Extension of uterine incision/tear	4	4	-
Bladder injury	1	1	-
Caesarean section	1	1	-
Difficult endotracheal intubation	1	1	-
Total	13	12	1
%age	100	92.3	7.69

Table-III shows that wound infection was the commonest complication encountered following caesarean section; and out of 21 cases 20 were from emergency and only one was from elective group. Other common complications faced were UTI, pelvic and genital tract infection, chest infections. Spinal headache was observed in five patients, 4 were belonging to emergency group (UTI was the commonest complication encountered in elective group and the reason might be the indwelling catheter). Maternal death occurred in one patient of emergency group, who developed DIC. Out of 52 patients, who developed postoperative complications 47 were belonging to emergency group (90.38%) and only 5 were from elective group (9.62%).

Respiratory distress was found in 11 babies, nine were belonging to emergency group and two to elective group. Seven babies aspirated liquor, 6 belonged to emergency group. Soft tissue injury to fetus was encountered only in two babies in emergency group.

Table-III. Post operative maternal complications

Complications	Total	Emergency	Elective
Wound infection	21	20	1
Urinary tract infection	14	12	2
Chest infection	5	4	1
Pelvic & Genital infection	5	5	-
Spinal headache	5	4	1
Caesarean hysterectomy	-	-	-
Disseminated I/V coagulation	1	1	-
Maternal death	1	1	-
Total	52	47	5
%age	100	90.38	9.62

Overall perinatal morbidity was higher in emergency group. 17 cases out of' 20 (85%) belonged to emergency group and three belonged to elective group (15%). Nine babies died in this study, 8 belonged to emergency and only one baby died in elective group due to aspiration pneumonia. So from overall mortality 88.83% belonged to emergency group and 12% were from elective group. So out of 29 fetus who developed complications 25(86.20%) were from emergency group and 4(13.8%) were from elective group as shown in Table-IV.

Out of 9 deaths, 8 demises were in emergency group while only one neonatal death occurred in elective group which was due to aspiration pneumonia. In emergency group total 8 babies were died, 5 were having fresh stillbirth, one was macerated dead baby while in two early neonatal death occurred. Perinatal mortality rate was 7.09% for emergency group and 2.70% for elective group as shown in Table-V.

Table-IV. Fetal complications			
Complications	**Total**	**Emergency**	**Elective**
Respiratory distress	11	9	2
Aspiration of liquor	7	6	1
Injury to soft tissue	2	2	-
Perinatal death	9	8	1
Total	29	25	4

Table-V. Fetal outcome.		
Outcome	**Emergency n=113**	**Elective n=37**
Born alive	107	37
Fresh still birth	5	-
Macerated dead baby	1	-
Early neonatal death	2	1

Hospital stay was prolonged in emergency Caesarean section than that elective Caesarean section. 94(83.18%) of the patients who underwent emergency surgery stayed in ward for 4-8 days. While in elective Caesarean section 17 out of 37(45.94%) were discharged on day 3rd. Out of 14 patients who stayed for 9 days or more 12 were from emergency Caesarean section group(Table VI).

Table-VI. Post operative stay in hospital				
Days	**Emergency**		**Elective**	
	No	**%age**	**No**	**%age**
Up to 3 days	7	6.19	17	45.94
4-7 days	30	26.5	3	8.10
7-8 days	64	56.63	15	-
9-10 days	6	5.30	1	2.70
Above 10 days	6	5.40	1	2.70

DISCUSSION

Caesarean birth rate has increased from 4.5% to almost 25% in 1988[2]. Since then the rate has plateued or declined slightly both in USA and other Western countries. In I990, it was 12.8% in Norway, 14.2% in Scotland, 10.7% in Sweden, 20.3% in Canada and 23.6% in USA, while it came down to 21.8% in 1993[14]. A study done in Faisalabad in 1994 revealed caesarean section rate at 28%[15].

In our study spanning one year period in Unit-III Obstetrics and Gynaecology, caesarean birth rate turned out as 17.65% which is quite comparable to the rate in western countries, but the rate does not reflect true caesarean birth in a given population because of the fact that Nishtar Hospital, Multan being tertiary referral center drains only complicated cases of the catchment area. Many of the hospital vaginal deliveries of the draining area are done by traditional birth attendants (TBAs), lady health visitors (LHVs) and local general practitioners at their clinics. While many more caesarean sections are being done at mushroom clinics all around.

It is, therefore, quite justified to say that the general concept of the public about increased frequency of caesarean section at such hospitals is not true. Over 85% caesarean sections are performed in western world and USA due to prior caesarean section, labour dystocia, fetal distress and breech presentation. In emergency caesarean deliveries the procedure is usually done for cases with fetal distress, prolonged and obstructed labour, severe PIH, eclampsia and ruptured uterus. In our study, common causes for elective caesarean section were repeat caesarean section (43.24%), mal-presentation (18.92%), APH (13.51%) and CPD (8%). While in emergency group, again repeat caesarean section was the commonest indication (33.62%), others being labour dystocia (20.35%), pre-eclampsia and eclampsia (11.50%), mal-presentation (11.50%), APH (10.61%) and fetal distress (8.84%).

In a local study at Lahore, the common indications for emergency caesarean section were failure to progress, fetal distress, CPD, PIH, eclampsia and mal-presentation

while in elective group the major indications were repeat caesarean section, mal-presentation, APH, CPD and PIH plus eclampsia[16]. Various other studies have also shown the similar pattern[17]. Repeat caesarean section and labour dystocia accounted for approximately half of such deliveries in our study (54%) which is consistent with incidence in USA[4,18,19]. In our study emergency (75.34%) and elective, caesarean section (24.66%) were comparable with local studies where it was 86.04 vs 13.96% and 80.29% vs 19.70% respectively[16,20].

The proportion of emergency cases in any hospital depends upon number of factors e.g: catchment area, type of obstetric population, ratio between booked and non-booked cases and the referral role of the hospital[21]. There are other general factors as well contributing to this like socio-economical condition, literacy rate, frequency and quality of antenatal care and timely referral by TBAs. About 65-75% cases in Nishtar Hospital, Multan are non-booked while often the booked cases having few antenatal visits come as emergency cases. According to various studies, previous caesarean section came out to be the major indication for repeat caesarean section[22].

Caesarean section rate can be reduced by trial of labour in selected cases with 60-80% success rate[23]. While proper monitoring of labour, use of partograph and timely use of oxytocin for augmentation can reduce the caesarean section done for failed progress of labour[24].

All types of maternal and Fetal complications are seen more commonly with emergency cases as compared to elective one[13], but maternal and fetal morbidity and mortality is largely dependent on the nature of the condition for which the operation was performed[17]. Overall intra operative complications were 8.67%, 12 out of 13 patients who got complications were in emergency group and one in the elective group. Neilson et al[25] showed that intra operative caesarean section complication rate was 11.6% with elective section having lower complication while a similar study at Lahore also showed the same results[20].

In our study, the incidence of postoperative complications was 34.66%. Extension of uterine incision/tear injury to adjacent viscera and caesarean hysterectomy were the complication found only in emergency group and might be the result of poor surgical techniques by junior surgeons. Postoperative complications rate was also more frequent in emergency (90.38% versus 9.62%). Most common cause of morbidity was infective morbidity 30%; 36.28% complicating emergency cases and 10.81% complicating elective group. Again the cause might be poor sterilization and poor handling. Spinal headache was having nearly same frequency in said groups (3.54% versus 2.70%) again senior staff would be help.

The study was comparable for higher complication rate in emergency group with other studies' Maternal mortality encountered in emergency group was quite high 666/100000 birth but considering the fact that the only demise encountered was not the direct result of surgical trauma but the sequale of DIC the mortality rate is nil in this study. The fetal complications were also higher in emergency group in our study 22.21% versus 10.80%, respiratory distress being the commonest problem (7.33%) encountered. Perinatal morbidity was 15.04% in emergency group versus 8.10% in elective cases, while perinatal mortality was 7.07% in emergency group versus 2.70% in elective group.

The fetal outcome was 100% in cases of elective group versus 94.69% in emergency group according to live birth babies. Therefore, it is quite evident that both the maternal and fetal complications are undoubtedly more common in emergency cases. Furthermore, average hospital stay was more in emergency group. Although maternal death is infrequent sequalea of caesarean section, morbidity increased dramatically compared with vaginal delivery. These factors plus increased recovery time not only cause physical and mental trauma to patient but also result in many folds, increase in cost of caesarean section compared with vaginal delivery.

CONCLUSIONS

Higher incidence of emergency caesarean section is a

major contribution for increased rate of maternal and fetal morbidity and mortality in caesarean deliveries. This can be reduced by:

1. Improving the quality and availability of antenatal care of masses.

2. Proper and updated training of health personnel (TBAs) etc, involved for better management and timely referral.

3. Launching public health programmes for general public to make them aware of pregnancy related risk factors to avail the existing health facilities.

We can also reduce the incidence of caesarean birth without increasing perinatal morbidity and mortality. Unnecessary caesarean section can be avoided by educational effort and keen review, encouraging trial of labour after prior lower segment caesarean section, restricting caesarean section for labour dystocia to women who meet strictly defined criteria and use of electronic fetal monitoring for high risk patients. Emergency cases should be handled by senior staff and caesarean can be done at earliest possible time to reduce drastic outcome. Furthermore, proper sterilization and prophylactic antibiotics can reduce the infections and morbidity after both emergency and elective caesarean section.

REFERENCES

1. Chamberlain. **What is current caesarean section rate?** Br .J Obstet Gynaecol 1993; 100: 403-304.

2. Taffl SM, plack PJ, Molen M, Kosary CL. **US caesarean section rate steadies** — VBAC rises to nearly one in five. Birth 1991; 18: 73.

3. **National Centre for Health Statistics 1993 summary.** National Hospital Discharge survey, advanced data from vital & health statistics. Hyattsvihle MD No264, 1995.

4. Notozon FC, Cnattingius S, Bergsjo P et al. **Caesarean section delivery in the 1980s: International comparison by indication.** Am J Obstet Gynaecol 1994; 170: 495.

5. Adashek JA, Peaceman AM, Lopez-Zeno JA et al. **Factors contributing to the increased caesarean birth rate in older parturient women.** Am J Obstet Gynaecol 1993; 169: 936.

6. American College of Obstetricians & Gynaecologists. **Practice patterns; vaginal delivery after previous caesarean** birth No. I. 1995b.

7. Le1n JM, Towers CV, Quilligan FJ et al. **Term early onset neonatal seizures: obstetric, characteristics etiologic classifications and perinatal care.** Obstet Gynaecol 1995; 85: 163.

8. Nelson KB, Dambrosia JM, Ting TY et al. **Uncertain value of electronic fetal monitoring in predicting cerebral palsy.** N Engl J Med 1996; 334: 613.

9. Gould JB, Davery B, Stafford RS. **Socio-economic differences in rates of caesarean section.** N Engl J Med 1989; 321:233.

10. Harlow BL, Frigoelet FD, Cramer DW et al. **Epidemiologic predictors of caesarean section in nulliparous patients at low risk.** Am J Obstet Gynaecol 1995; 172: 156.

11. Willium. **Caesarean delivery & caesarean hysterectomy.** 1996; 22: 509-31.

12. Hemminke E. **Comparability of reasons For caesarean sections.** Birth 1990; 17(4): 207.

13. Tighe D, Sweezy S. **Caesarean birth: preparation, considerations and complications.** Perinatal Neonatal Nurs 1990; 3: 14-30.

14. Clark SC, Taffel SM. **Caesarean rates decreasing.** Obstet Gynaecol News 1996; 31: 10.

15. ALEEM M, Altaf B, Farhat Z, Najam I. **Maternal death with caesarean section.** Pak J Med Sci 1994; 11(1): 1-7.

16. Roberts LJ. **Labour following caesarean section.** Br J Obstet Gynaecol 1994; 101: 153-55.

17. Rosen MG, Diskinson JC, Westhoff CL. **Vaginal birth after caesarean. A meta analysis of morbidity and mortality.** Obstet Gynaecol 1991; 77: 465.

18. Soliman SRH, Burrows RF. **Caesarean section: Analysis of the experience before and after National consensus conference on aspects of caesarean birth.** Can Med Assoc J 1993; 148: 1315.

19. SabirS. **Infective morbidity following caesarean section.** Pak J M Sci 1996; 13(1): 29-32.

20. Rahshan SN, Fauqula B. **Indication/ complication and fetal outcome. A comparison between emergency and elective caesarean section.** Pak J Med Sci 1995; 11(4): 277-82.

21. Taffel S. **Trends in the Unites States caesarean section rate for the 198-85 rise.** Am J Pub Health 1985; 75: 190.

22. Toyer LR and Parisi VM. **Obstetrics parameters affecting trial of labour.** Am J Obstet Gynaecol 1994; 167: 1099-I 104.

23. DeMuylder X, Thiery M. **The caesarean delivery rate can be safely reduced in a developing country.** Obstet Gynaecol 1990; 75: 60.

24. Neuhoff D. **Caesarean birth for failed progress in labour.** Obstet Gynaecol 1989; 73: 915-20.

25. Neilsen TF. **Caesarean section. A controversial features of modem obstetric practice.** Obstet Gynaecol 1986; 21: 57.