

Audit of Caesareans Section in Present Practice

Shafqat Mukhtar, Yasmeen Shah, Muhammad Ikram and Muhammad Saeed
Department of Obst/Gynae, Shaikh Zayed F.P.G.M.I & Hospital, Lahore

ABSTRACT

Objective: To compare the rate of rise of caesarean section, to know the factors which are responsible for this rise and what measures can be done to decrease its rate. **Study Design:** (1) A retrospective study (2) Two cycle of audit were conducted. **Method:** Case records of all women that underwent caesarean section in the Department of Obstetrics and Gynaecology, Shaikh Zayed Federal Postgraduate Medical Institute and Hospital, Lahore, from 1st January 1994 to December 1994 and second from January 2008 to December 2008 was collected on the basis of age, parity, booking status, gestational age, onset of labour and level of urgency of caesarean section. **Results:** Two cycle audit were conducted. In first from January 1994 to December 1994 total numbers of deliveries were 1685 and caesarean section rate was 27%, in second from January 2008 to December 2008 total number of deliveries 2167 and caesarean section rate was 42.6%. Analysis shows that caesarean section rate is increased in present practice. **Conclusion:** The result of our study shows that there is 15% increase in caesarean section rate was compared to 14 years back which is ideally not beneficial for long term interest of patients. So the all possible effort should be made to bring down the caesarean section rate without compromising the well being of mother and fetus.

Key Word: Antenatal care, caesarean section, indications, systemic review.

INTRODUCTION

Caesarean section is a commonly performed operation on women that is globally increasing in prevalence each year.¹⁻⁵ There is a large variation in the rates of caesarean section both in high and low income countries, as well as between different institution within these countries.^{3,4}

The most widely recommended upper limit rate of caesarean section was 15% as advocated by World Health Organization (WHO).⁶ This was based on caesarean rates of countries with the lowest maternal and neonatal mortality rate at the time of the recommendation, and took into account both developed and developing countries.^{4,6} Since then the World Health Organization has published a revision in 1994, stating that acceptable caesarean section rates should be range between 5 and 15 percent.⁷

Caesarean section in developing countries is associated with significant increase in maternal morbidity.^{4,8} Particularly following elective caesarean section⁹ and caesarean section without

medical indications.¹⁰ (e.g. repeat C-Section, placenta praevia, placental abruption, failure to progress). Once a caesarean section carried out there is always a possibility of another one in subsequent pregnancy. The commonest cause of morbidity following caesarean section are haemorrhage, sepsis, blood transfusion, antibiotic treatment and hospital stay. There is also risk of placenta praevia/morbid adherence of placenta and uterine rupture in subsequent pregnancies.

Current available data from well resourced countries suggest that morbidity and mortality for both mother and baby arising from caesarean section are higher when compared with vaginal delivery.¹² However in low income countries, very low caesarean section rates (less than 1%) have been associated with higher maternal and infant mortality linked both inability to perform a caesarean section when needed.^{4,11}

Intervention aimed at reducing maternal and perinatal morbidity and mortality associated with caesarean have included auditing of the rates, indications for and associated health outcome.^{13,14}

The present audit was done to establish the factors which are responsible for this rise and what measures can be done to decrease its rate.

METHOD

Women admitted consecutively to our department for delivery were recruited for the study over a period of 1 year duration. It was a two cycle audit from January 1994 to December 1994 and second from January 2008 to December 2008.

Main indications for caesarean section were collected on the basis of age, parity, Booking status, gestational age (was expressed in weeks and was based on an ultrasound scan performed at the twentieth week of gestation), onset of labour (spontaneous, induced or no labour) and level of urgency whether it was elective, emergency or elective/emergency. Vaginal after caesarean section and external cephalic version (ECV) between 34-35 weeks were offered following the provision of appropriate information and counseling to patient with previous caesarean section and breech presentation respectively. Similarly patient with twin pregnancies were given the option of mode of delivery. Caesarean section was also performed on patient's request.

Definitions

The caesarean section performed were divided into three groups on the basis of the following definitions, which are endorsed by Royal College of Obstetricians and Gynaecologists (RCOG):

1. Elective- at a time to suit the patient and the maternity team (Obstetricians, anaesthetist, neonatologist and the nursing team);
2. Emergency / Elective urgent- maternal or fetal compromise that is not immediately life – threatening;
3. Emergency – immediate threat to life of woman or fetus.

RESULTS

There were a total of 1685 deliveries in 1994 and 2167 in 2008 of these 1230 and 1241 were vaginal deliveries and 455 and 924 were Caesarean

section giving a caesareans section rate of 27% and 42%.

Indications for Caesarean section of the 455 and 924 performed, 186 and 465 were elective 252 and 412 emergency and 17 and 47 were emergency/elective caesarean section (Table 1).

Table 1: Total numbers of deliveries and type of C-section.

Deliveries	January-December 1994		January-December 2008	
	Total	%	Total	%
Total No. of deliveries	1685		2167	
N.V.D	1230	72	1241	57
C-Section	455	27	924	42.6
Elective LSCS	186	11	465	21.4
Emergency LSCS	252	14.9	412	19.0
Em/Elective LSCS	17	1.0	47	2.1

Primary caesarean sections were 279 and 617 while repeat caesarean section were 104 and 198, and previous one caesarean section 72 and 109 as mentioned in Table 2.

Table 2: Indications of C-section.

Indications	January-December 1994 (n=455)		January-December 2008 (n=924)	
	No.	%	No.	%
Primary C-Section	279	61.3	617	66.7
Repeat C-Section	104	22.8	198	21.41
Previous C-Section	72	15.8	109	12.7

The age of the patients ranged between 19-29 years 631 (68.29%) and 30-35 years 187 (20.23%) while 186 (11.47%) patients were more than 36 years. Regarding parity 326 (35.28%) patients were primigravida, 509 (55.08%) were multipara and 89 (9.63%) were grand multipara in 2008 (Table 3).

The most common indications for caesarean were foetal distress 290 (31.38%), cephalic pelvic disproportion 70 (7.57%), primi breech alone and with 1st C/section 40 (4.32%). Labour dystocia 53 (6.06%) and patient request 56 (6.16%) (Table 4).

Common pregnancy complications such as pre-eclampsia, antepartum haemorrhage were not included in this study.

Table 3: Age distribution, parity and booking status of patients.

Indications	January-December 1994 (n=455)		January-December 2008 (n=924)	
	No.	%	No.	%
Age (years)				
19-029	237	52.08	631	68.29
30-35	135	29.67	187	20.23
36-40	83	18.24	106	11.47
Parity				
0	184	40.43	326	35.28
1-4	206	45.27	509	55.08
>5	65	14.28	89	9.63
Booked	422	92.74	861	93.18
UnBooked	33	7.25	63	6.81

Table 4: Indications of primary C-section and previous one C-section.

Indications	January-December 1994 (n=351)		January-December 2008 (n=726)	
	No.	%	No.	%
Foetal distress Primi + CTG abnormality	79	17.36	290	31.38
CPD with previous 1-C/Section	73	16.03	70	7.57%
Primi Breech alone & Previous !-C/S	38	8.35	40	4.32
Failed progress	37	8.13	53	6.06
Patient's request	12	2.63	56	6.16
Medical	22	4.83	20	2.16
IUGR	20	4.39	28	3.03
Good size baby	12	2.63	27	2.92
Placenta Previa	11	2.41	15	2.0
Failed induction	10	2.19	28	3.85
Infertility	5	1.09	8	0.86
Miscellaneous	42	11.96	91	12.53

Caesarean section for foetal distress

It becomes an important indication because of limited use of fetal scalp sampling. However intrapartum fetal heart monitoring may unnecessarily increase caesarean section rate due to incorrect interpretation of tracing (CTG) and diagnosis of fetal distress. It can be related to abnormality in position of the fetus or any abnormality causing reduced blood flow through the

placenta *i.e.* cord around the neck.

Inadequate maternal pelvis/CPD was the second common indication of caesarean section. Labour Dystocia is also reason for caesarean section. It could be due to non progressive labour. Uterine contraction may be weak or irregular, the cervix may not be dilated.

Neonatal outcome

The mean gestational age at birth of babies born by caesarean section was (range 37 to 39+ weeks and birth weight from 2.2kg to 3.8kg. Pre-term birth rate (< 37 weeks gestation) varied widely from 4% to 20%

Maternal morbidity

Ten patients had wound infection, three patients had previous history of wound infection and undergone elective caesarean section for previous caesarean section. Rest of the patient had known diabetes and were obese. Fifteen patients underwent caesarean section due to placenta praevia, only one patient had primary PPH due to placenta acreta. Which then managed conservatively following massage and administration of an oxytocin infusion.

DISCUSSION

The caesarean section is one of the commonly performed surgical procedures in obstetrics and is certainly one of the oldest operation in surgery¹⁵.

One of the most dramatic features of modern obstetrics is the relentless increase in the caesarean section rate¹⁶. This escalating caesarean section rate is a major public health problem because caesarean section increase the health risk for mother and babies as well as the cost of health care compared with normal deliveries¹⁷.

Actual caesarean section rates in developing countries including South East Asia are largely unknown because of a lack of reliable data.

Our results shows increasing rate of caesarean section 27% in 1997 and 42.6% in 2008 higher than the WHO recommended rates of between 5 and 15 percent⁷. This may be attributable to the fact that this hospital is referral centre, means a proportion of women with complication previous one caesarean section and Medical disorders have

been sent to this hospital and secondly it reflects the trend of rising caesarean section seen in recent years, due to factors that were not significant, like patient's request is major factor, patient load as evidenced by increased number of deliveries over the year.

The frequency of caesarean section depends on the inherent characteristic of the obstetric population, referral role of the hospital. Departmental policies regarding management of dystocia, breech, and fetal distress. The caesarean section rate generally is quite high in the developed world. There are many reasons but the foremost is fear of litigation.¹⁹ Once a caesarean section is carried out always a possibility of another one in the subsequent pregnancy. Fortunately, c-section rate is very low in developing countries but it is catching fast Which as increase the caesarean section rate even in the developed world although it is used to be significantly lower than developing world.

The main indication of caesarean section in present audit were foetal distress (290/726:39.9%) of all caesarean section and cephalo pelvic disproportion (70/726:9.64%). This was higher than 19% reported from Zaire 13-16-17. This higher value may not be unrelated to the use of intermittent auscultation and nature of amniotic fluid as a mean of fetal monitoring during labour because no facilities for fetal blood acid base study.

It is well known that CTG abnormalities lead to an over diagnosis of fetal distress. The most accurate parameter of intrauterine hypoxia is a "PH sample" of fetal scalp blood. But lack of the necessary skill and facilities for fetal scalp blood samples. The diagnosis of fetal distress largely depends on clinical signs (fetal heart rate abnormalities) meconium staining of the liquor which might be associated with incorrect diagnosis some times.

In fact, higher rates of C-section were associated with higher rates of maternal and neonatal mortality and morbidity.³ Barros et al.¹⁰ showed that between 1982 and 2004, the C-section rate in one city in southern Brazil increased from 28% to 43%¹⁰

The 2nd most common indication of C/section was CPD as also seen in study. Most clinicians would agree that the diagnosis of CPD can only be

made in labour. However in our audit some patient operated as primigravida with contracted pelvis and underwent both elective caesarean section and emergency caesarean section but some patient underwent elective caesarean section due to previous one caesarean section for CPD. So in our audit it was 9.64% which is lower 15.5% in study conducted teaching hospital of Nigeria²⁰. Because nutritional factors have dominant influence on pelvis size and shape and malnutritional especially during childhood results in pelvis contraction and general stunting.²¹ This high incidence of CPD may not be unrelated to the malnutrition that is still rampant in developing countries including Nigeria for C-Section.

In this audit the patient's choice for caesarean section contributed 7.7% while in¹⁸ maternal request for caesarean section was 8.7% which is higher. Similarly 7.3% operated due to failure to progress. In this audit maternal request for caesarean section is 7.7% This might reflect the rising trend in recent years for women to request caesarean section.

A national audit conducted in the U.K has shown that maternal request (7%) is now fifth most common reason given to performing a caesarean section, after fetal compromise (22%) failure to progress (20%) and breech presentation (11%). In our audit a similar rate of (7.7%) was found for caesarean section on request, fetal distress was significantly higher at a rate of 39.9% of primary and previous one caesarean section.

Similarly to offering VBAC, and ECV should be offered to all women with breech presentation to reduce the rate of caesarean section. The NICE guideline suggest ECV as an intervention to reduce high caesarean section²²

The high rate of caesarean section in our audit is probably a reflection of the trend of increased caesarean section rate. The major indication of the caesarean section over the years did not reveal any significant trend that can be responsible for the audit caesarean section rate except for increasing trend of fetal distress as an indication. Another probable reason might be attitudinal change of the doctors, most likely because of the increasing patients load as evidenced by increased in number of deliveries over the year.

In 1992, 27% of deliveries in Hong Kong

were by caesarean section. This high rate of caesarean section prompted Leung et al.²³ to explore the consequences of caesarean delivery for the infant's health, with results presented in this issue. Repeat caesarean section was the commonest indication. This was lower than other studies conducted by Farhana Yousaf, Gulfreen Haider et al.²⁴

Caesarean section alters the management of subsequent pregnancies.²⁵ The commonest cause of morbidity following caesarean section hemorrhage and sepsis.

CONCLUSION

The rate of caesarean section in our study is 42.6% which is quite high then WHO which is between 10% and 15% of all birth. In 2004, the caesarean section rate was 20% in U.K, while the Canadian rate was 22.5% in 2001-2002. The rising trend over the years is worrisome. If unchecked, the rate might reach unacceptable levels. The major indication was the foetal distress, labour dystocia, repeat caesarean section, patient's request, breech presentation.

It is recommended that use of cardiotocography for continuous fetal heart rate monitoring in labour with confirmation of suspected fetal distress through fetal blood acid-base study. Partogram should be maintained for all cases in active labour, trial of vaginal birth after one caesarean section should be encouraged in appropriate cases and ECV in uncomplicated cases. There is the need for a prospective study to evaluate the reasons for the increasing caesarean section rate in our environment.

If cephalopelvic disproportion and failure to progress were the indication for the previous caesarean section, the chances of vaginal delivery are reduced in subsequent pregnancy.

REFERENCES

1. Onsrud L, Onsrud M: Increasing use of caesarean section, even in developing countries. *Tidsskr Nor Laegeforen* 1996, 116: 67-71.
2. National Collaborating Centre for Women's and Children's Health: *Caesarean section: Clinical Guideline*. London: RCOG Press; 2004.
3. Villar J, Valladares E, Wojdyla D, Zavaleta N, Carroli G, Velazco A, Shah A, Campodonico L, Bataglia V, Faundes A, Langer A, Narvaez A, Donner A, Romero M, Reynoso S, Simonia de Padua K, Giordano D, Kublickas M, Acosta A, for the WHO 2005 global survey on maternal and perinatal health research group: Caesarean delivery rates and pregnancy outcomes: the 2005 WHO global survey on maternal and perinatal health in Latin America. *Lancet* 2006, 367:1819-29.
4. Althabe F, Sosa C, Belizán J, Gibbons L, Jacquerioz F, Bergel E: Caesarean section rates and maternal and neonatal mortality in low-, medium- and high-income countries: an ecological study. *Birth* 2006, 33:270-77.
5. Stanton C, Holtz S: Levels and trends in caesarean birth in the developing world. *Stud Fam Plann* 2006, 37:41-8.
6. World Health Organization. Appropriate technology for birth. *Lancet* 1985, 2:436-37.
7. World Health Organization: Indicators to monitor maternal health goals. In: *Report of a Technical Working Group*. Geneva: WHO; 1994.
8. Hofmeyr G, Say L, Gulmezoglu A: WHO systematic review of maternal mortality and morbidity: the prevalence of uterine rupture. *BJOG* 2005, 112: 1221-28.
9. Oladapo O, Lamina M, Sule-Odu A: Maternal morbidity and mortality associated with elective caesarean delivery at a university hospital in Nigeria. *Aust N Z J Obst Gynaecol* 2007, 47:110-14.
10. Barros FC, Victora CG, Barros AJ, et al. The challenge of reducing neonatal mortality in middle income countries: findings from three Brazilian birth cohorts in 1982, 1993 and 2004. *Lancet*. 2005; 365: 847-54.
11. Ronsmans C, Holtz S, Stanton C: Socioeconomic differentials in caesarean rates in developing countries: a retrospective analysis. *Lancet* 2006, 368:1516-23.
12. Snyman, L. Is the high caesarean section rate

- a cause for concern? *Obstet Gynaecol Forum* 2002; 12: 8-13.
13. Holtz S, Stanton C: Assessing the quality of caesarean birth data in the Demographic and Health Surveys. *Stud Fam Plann* 2007, 38:47-54.
 14. Huskins WC, Ba-Thike K, Festin MR, Limpongsanurak S, Lumbiganon P, Peedicayil A, Purwar M, Shenoy S, Goldmann DA, Tolosa JE, Global Network for Perinatal and Reproductive Health: An international survey of practice variation in the use of antibiotic prophylaxis in cesarean section. *Int J Gynaecol Obstet* 2001, 73: 141-15.
 15. Kwawukume EY. Caesareans section. In: Kwawukume EY, Emuveyan E, editors. *Comprehensive obstetrics in the tropic*. Asante and Hittcher Printing Press Limited, 2000. p. 321-9.
 16. Tunar MJ. Delivery after one previous caesarean section. *Am J Obstet Gynaecol* 1997; 176: 741-4.
 17. Naymi RS, Rehan N. Prevalence and determinants of caesarean section in a Teaching Hospital of Pakistan. *J Obstet Gynaecol* 2000;20:479-83.
 18. Naidod RP, Moodley J. Rising rates of caesarean sections: an audit of caesarean sections in a specialist private practice. *S A Fam Pract* 2009; 51: 254-58.
 19. Najmi RS. An audit of cesarean sections carried out in tertiary care maternity unit. *J Coll Physicians Surg Pak* Jan 2000; 10: 24-6.
 20. Ado D Geidam, Bala M Audu, Bello M Kawuwa, Jessy Y Obed. Rising trend and indications of caesarean section at the university of Maiduguri teaching hospital, Nigeria.
 21. Myerscough P. Cephalopelvic disproportion. In: Chamberlain G, Turnbull SA, editors. *Obstetrics*. 1st ed. Churchill Livingstone Publication; 1993. p. 813-21.
 22. National Institute for clinical excellence (NICE). Clinical Guideline 13. Caesarean section. London. NICE 2004.
 23. Leung GM, Ho LM, Schooling CM, et al. Health care consequences of caesarean birth during the first 18 months of life: the 1997 Hong Kong Birth Cohort. *Epidemiology*. 2007; 18: 479-84.
 24. Farhana Y, Gulfareen H, Ghazala S, Ambreen H, Muhammad N. An audit of cesarean sections in a teaching hospital. *Pakistan Armed Forces Med J* 2009 December.
 25. Enkin M. Labour and delivery following previous cesarean section. In: *Effective care in pregnancy and childbirth*. Chalmers I, Enkin M, Keirse MNJC eds. Oxford: Oxford University Press, 1989; 1196-1215.
- The Authors:**
- Shafqat Mukhtar
Senior Registrar
Department of Obst/Gynae
Shaikh Zayed F.P.G.M.I & Hospital
Lahore
- Yasmeen Shah
Associate Professor
Department of Obst/Gynae
Shaikh Zayed F.P.G.M.I & Hospital
Lahore
- Muhammad Ikram
Assistant Professor
Department of Obst/Gynae
Shaikh Zayed F.P.G.M.I & Hospital
Lahore
- Muhammad Saeed
Professor & Head Department of Obst/Gynae
Shaikh Zayed F.P.G.M.I & Hospital
Lahore
- For Correspondence:**
- Shafqat Mukhtar
Senior Registrar
Department of Obst/Gynae
Shaikh Zayed F.P.G.M.I & Hospital, Lahore
042-35865731-38 Ext. 2236, 2231
E-mail: obgysz@hotmail.com