

AN AUDIT OF CHANGE IN RATE AND INDICATIONS OF CAESAREAN SECTION IN A TERTIARY CARE HOSPITAL OF PESHAWAR

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ABSTRACT

Objective: To compare the changes in rate and indications for caesarean section after a gap of ten years i.e., in 1996 and 2006 respectively.

Material and Methods: This comparative study was conducted in the Department of Obstetric and Gynecology at Lady Reading Hospital Peshawar in December 2006. Record of all the patients who delivered in Gynae B unit in 1996 and 2006 respectively was obtained. Out of all the deliveries, the details of the patients who had Caesarean section were recorded on a semi structured proforma which included the demographic details, gravidity and indication for which caesarean sections were performed. Statistical analysis was done by using SPSS version 10. Chi square test was performed for the comparison and a p value of <0.05 was considered significant for the study.

Results: During 1996, the caesarean section rate was 10.26% as compared to 25.10% in 2006 with a p value of <0.01 which was statistically significant for the increase in caesarean section rate. In 1996, the number of caesarean sections performed in multigravida were $n=253$ (59.81%), followed by grandmultigravida $n=93$ (21.98%) while $n=77$ (18.20%) were performed in primigravida. In comparison, during 2006, highest number of caesarean sections were still performed in multigravida $n=680$ (47.61%) but it was followed by primigravidas $n=480$ (33.61%) and least $n=268$ (18.76%) in grandmultigravidas. During 1996, the commonest indications in order of frequency were dystocia $n=120$ (31.20%), previous caesarean section $n=71$ (16.78%), placenta praevia $n=56$ (13.23%) and fetal distress $n=48$ (11.34%) respectively while during 2006, they were dystocia 310 (21.70%), fetal distress $n=197$ (13.79%), previous caesarean section= 191 (13.37%) and breech presentation $n=180$ (12.60%) respectively.

Conclusion: A significant increase (14.84%) in the rate of caesarean section in the last ten years is observed and it has gone particularly high in primigravidas in 2006. The main indications mostly were similar but malpresentations emerged as an important indication in 2006.

Key Words: Caesarean section, Changing trends, Indications.

INTRODUCTION

Caesarean Section is one of the most commonly performed surgical interventions in modern obstetrics. Over the past 25 years, there has been a sustained rise in caesarean section rates in the developed world, with massive public interest and debate on both the causes and appropriateness of increasingly employing a surgical procedure to short circuit or entirely by pass labour and delivery¹. Various theories have

been put forward for the rising rates of caesarean section; fear of litigation, particularly in United States², lack of midwifery support³ and a reluctance to implement active management of labour^{4,5} are among these. At least two of the reasons for substantial increase in caesarean section rates are expectation and fear. Every patient and indeed every physician expects a perfect result from the pregnancy i.e., neither the child nor the mother should suffer damage.

CAESAREAN SECTION RATE

Year	Total deliveries	Total caesaren section	Percentage
1996	3449	423	10.26%
2006	5689	1428	25.10%

P VALUE <0.01 Table 1

Currently caesarean section rates in Canada and United States are close to 25%² and recent statistics for England show that the caesarean section rate rose from 9% in 1980 to 18.8% in 1997-1998 and again to 21.3% in the year 2006^{6,7}. World Health Organization reported that rates higher than 10-15% did not confer any additional health benefits or any benefits in relation to maternal or perinatal mortality⁸. The appropriate use of caesarean section like any other medical intervention should be based on evidence of risks and benefits. There is a known and inevitable increased risk of maternal death and morbidity following caesarean section and there is no evidence that maternal and child health has improved as a result. The World Health Organization pointed out in 1985 that the countries with some of the lowest perinatal mortality rates in the world have caesarean section rates under 10%⁸.

The study was conducted because of rising caesarean section rate in developing world particularly in primigravidas as it is worrying because of its adverse consequences in forthcoming pregnancies due to lack of antenatal and intranatal care by experienced medical staff.

MATERIAL AND METHODS

This study was conducted at Department of Obstetrics and Gynaecology B unit, Lady Reading Hospital, Peshawar in December 1996. The department maintains a very precise record of all deliveries in registers as well as computers. The records of all patients who delivered in the unit in 1996 and 2006 respectively were obtained. All the patients who had emergency and elective caesarean sections were included in the study. A semi structured Performa was devised to collect information about demography, gravidity and indications for performing caesarean section. Only the main indication was included in patients with two or more indications. Dystocia was defined as failure to progress of labour and included all cases of obstructed labour due to foetal or maternal causes. Grand multigravidity was defined as women having delivered five or more than five children after 28 weeks of pregnancy. The percentages of caesarean sections attributable to specific indications were computed for the year 1996 and 2006 respectively and caesarean section

GRAVIDITY OF PATIENTS

Year	Primigravida	Multigravida	Grand multi gravida
1996	77 (18.20%)	253 (59.81 %)	93 (21.98%)
2006	480 (33.61%)	680 (47.61)	268 (18.20%)
PVALUE	<0.01	<0.01	

Table 2

rate was calculated for both years. For statistical analysis, chi square test was applied and p value was calculated using SPSS version 10.

RESULTS

During 1996, a total number of deliveries were 3449 out of which 423 patients underwent caesarean section thus giving a rate of 10.26% compared to 5689 deliveries in 2006 with 1428 caesarean sections at a rate of 25.10%. Statistical analysis showed a significant rise in caesarean section rate ($p < 0.01$) in 2006. (Table No 1) In 1996, the Caesarean section rate was highest in multigravida 59.81 % ($n=253$), followed by grandmultigravida 21.98% ($n=93$) and then primigravida 18.20% ($n=77$). In 2006, the caesarean section rate was still the highest in multigravidas 47.61 % ($n=680$), followed by primigravidas ($n=480$) 33.61% and then grandmultigravidas 18.20 % ($n=268$). Statistical analysis showed a significant rise of caesarean section in primigravidas ($p \text{ value} < 0.01$) in 2006. (Table No 2).

During 1996, the main indication for caesarean section was dystocia 28.36 % ($n=120$), followed by previous caesarean section 16.78 % ($n=71$), placenta praevia 13.23 % ($n=56$) and fetal distress 11.34 % ($n=48$). During 2006, the main indications for caesarean section were dystocia 21.70 % ($n=310$) followed by fetal distress 13.79% ($n=197$), previous caesarean section 13.37% ($n=191$), Breech presentation 12.60% ($n=180$), placenta praevia 9.3% ($n=134$), neglected transverse lie 6.86% ($n=98$), abruption 4.27% ($n=61$) and intrauterine growth restriction 4.27% ($n=60$). Less common indications are listed in the table No 3.

In 2006, $n=33$ (2.3%) caesarean sections were performed because of patients request as compared to $n=5$ (1.18%) in 1996 thus showing more patients demanding caesarean section or perhaps more obstetricians agreeing to perform caesarean section on maternal request. The main indication for both years stays as dystocia, followed by more caesarean sections being performed for fetal distress and breech presentation in 2006 as compared to 1996. In 1996 $n=16$ (3.78%) caesarean sections were performed for breech presentation as compared to

INDICATIONS FOR CAESAREN SECTION

Indications	2006	1996
Dystocia	310(21.70%)	120(28.36%)
Fetal distress	197(13.79%)	48(11.34%)
Previous C.Section	191(13.37%)	71(16.78%)
Breech	180(12.60%)	16(3.78%)
Placenta Praevia	134(9.37%)	56(13.23%)
Neglected T.lie	98(6.86%)	46(10.87%)
Abruption	61(4.27%)	7(1.65%)
IUGR	60(4.27%)	6(1.41%)
Multiple pregnancy	56(3.92%)	5(1.18%)
Chorioamnionitis	54(3.78%)	21(4.96%)
Failed induction	54(3.78%)	22(5.20%)
Maternal request	33(2.31%)	5(1.18%)

Table 3

n=180(12.60%) in 2006. The percentage of caesarean sections performed for previous caesarean section has shown a decline in 2006 n=191(13.37%) as compared to n=71(16.78%) in 1996. This could be because of careful selection and counseling of patients wishing to undergo trial of vaginal delivery. Caesarean section for placenta praevia has also shown a downward trend in 2006 n=134(9.3%) as compared to n=56(13.23%) in 1996.

DISCUSSION

Caesarean section, one of the oldest operations in surgery, which used to be performed mainly for maternal reasons, is now frequently performed for fetal reasons and obstetrician preference mainly because of defensive obstetrics and fear of litigation. Being a major surgical intervention it is associated with significant immediate and remote maternal morbidity and mortality. There is increased maternal morbidity associated with intraoperative blood loss, infections, prolonged hospital stay, adhesion formation leading to chronic pelvic pain, infertility and higher risk of abnormal placental adherence and ectopic pregnancy in subsequent pregnancies. The increase in puerperal morbidity is about five to ten times that for vaginal birth⁹. Elective caesarean sections performed before onset of labour inevitably leads to the baby being born earlier and of lower weight with transient tachypnoea and respiratory distress¹⁰. In terms of cost to the health care system, Banta and Thacker estimated the net additional cost of doing a caesarean section in 1977 to be \$2300¹¹. These figures are much higher today because of increased cost of medical care. In addition to the cost of medical care a physician fee for doing a caesarean

section is roughly a third higher than that for a vaginal delivery¹². Many studies have found clear positive association between socioeconomic indicators and the proportion of caesarean section^{13,14} and the proportion of caesarean section in private hospitals was higher than that in public or social security hospitals.

The proponents of caesarean section are of the view that caesarean sections are increasingly safe for women and children, and the rate of pelvic floor problems particularly urinary incontinence is substantially higher in women who had vaginal deliveries than in women who had caesarean sections^{15,16}.

The caesarean section rate in our study has increased from 10.26% in 1996 to 25.10% in 2006. There has been a steady rise in caesarean section rate throughout the world. A study conducted in Latin American countries has shown that 12 countries had caesarean section rates below 15%, while the remaining 12 countries had rates above 15% (range 16.8% to 40%)¹⁷. A study conducted in tertiary care hospital in Pakistan, has shown caesarean section rate of 21.07%¹⁸.

Another important aspect of study is that increasing number of caesarean sections were performed for primigravidas in 2006 as compared to 1996, 33.61% as compared to 18.20%. This would be leading to higher number of women presenting in successive years with scarred uteri and its complications of repeat caesarean section, ruptured uterus, and abnormal placental adherence. A possible explanation of rising caesarean section rates in primigravida is relative reduction in grandmultiparous women delivering, and a more liberal policy of delivering primigravidas with breech presentations as elective caesarean sections, and a lower threshold to perform caesarean section in women with mild to moderate CPD. It must be remembered with concern that any decision to carry out a caesarean section in a primigravida has implications for the future caesarean section rates, as 67% of those who return in future pregnancies will have further caesarean sections¹⁹.

The four commonest indications were dystocia, previous caesarean section, fetal distress and placenta praevia, although more caesarean sections were performed for breech presentation in 2006, 12.60% as compared to 3.78% in 1996. The main indication in both years was same i.e. dystocia or failure to progress although its contribution to overall caesarean section rate has fallen from 31.20% in 1996 to 21.70% in 2006. These results were in comparison with the results of a study comparing 1962 and 1992 statistics in a teaching hospital in Glasgow, UK. Showing 42.2% versus 36.7% of caesarean being

performed for failure to progress.⁽¹⁹⁾ Another study from Pakistan has also shown dystocia to be the main indication responsible for 28.2% of deliveries⁽¹⁸⁾In a study conducted in united states, dystocia was responsible for 39.1% of the 151.2% overall increase in caesarean deliveries at the study hospital followed by repeat caesarean deliveries (30.1%), fetal distress(8.7%) and breech presentation (3.5%)²⁰.

Previous caesarean section and fetal distress are the next commonest indication for performing caesarean section. The number of caesarean sections performed for previous caesarean section has fallen in from 16.68% in 1996 to 13.36% in 2006. This could be because more women were allowed and counseled regarding trial of vaginal delivery as safety of vaginal delivery has improved because of better monitoring techniques. Previous caesarean section was the leading cause of caesarean section in study conducted in tertiary care hospital in India, contributing to 27% of caesarean sections²¹. The Glasgow study showed largest relative increase in previous caesarean section group 4.5% in 1962 to 15.2% in 1992¹⁹. The study conducted in Lahore, previous one caesarean contributed to 5.64% and previous two caesarean contributed 7.52% to total caesarean and it was one of the leading cause for elective caesarean sections¹⁸. Two studies conducted in USA, has shown a decline in the percentage of patients having another caesarean delivery from 96.6 in 1981 to 85.5 in 1990^{20,22}.

The number of caesarean sections performed for breech presentation has increased from 3.78% in 1996 to 12.60% in 2006, which is a significant rise in caesarean section rate. The policy to perform caesarean sections for term breech presentation particularly in primigravidas was advocated mainly after the results of Canadian trial were published. The trial strongly supported planned caesarean section versus planned vaginal delivery as perinatal mortality, neonatal mortality or serious neonatal morbidity was significantly lower for planned caesarean section group than for the planned vaginal birth group²³. The Glasgow study also showed largest relative increase in the malpresentation group (10.8% VS 16%)¹⁹.

More caesarean sections were performed in 2006 for fetal distress as compared to 1996(13.79% as compared to 11.34%) Fetal distress was the second indication for performing caesarean section in 2006, and it was the fourth commonest indication in 1996. In Glasgow study, it was second commonest indication for year 1962 and 1992(18.1% versus 18.9%)¹⁹. In a study, carried out in a tertiary care hospital in India, it was also the second leading cause for caesarean sections,

about 22.2%²¹. In a study conducted in Warsaw, fetal distress was the leading indication for caesarean section in 1985-1986 and 2000-1.(14.35% and 18.57%)²⁴. The study in tertiary care hospital in Pakistan has shown fetal distress to be second leading cause for caesarean delivery.(22.18%)¹⁸. This rise in caesarean section could be attributed to fetal monitoring facilities in labour. Haverkamp and colleagues and Leveno and co workers have shown a higher caesarean section rate for fetal distress when the use of continuous electronic fetal monitoring is compared with intermittent auscultation of fetal heart^{25, 26}. The relationship between rising caesarean section rates and the perinatal mortality is not consistent, questioning whether caesarean section benefits the new born baby²⁷. Cerebral palsy has not been shown to fall as a result of increasing caesarean section rate²⁸. Brain damage can occur without difficult labour or perinatal hypoxia and caesarean section is no guarantee against it.

Placenta praevia was the third leading indication for caesarean section in 1996, responsible for 13.23% of caesarean section. It was the fifth leading indication in 2006 responsible for 9.3% caesareans in 2006. In Warsaw study, index of placenta praevia decreased from 2.49% in 1985-86 to 0.57% in 2000-1²⁴. A study conducted in Singapore General Hospital, comparing two time periods in 1998 and 2001 has shown that increase in caesarean section rate in 2001 was attributed to statistically significant increase in caesarean section for previous caesarean section and placenta praevia major²⁹. World wide the incidence of placenta praevia is increasing, and we would expect the number of caesarean sections performed for placenta praevia to increase as well.

CONCLUSION

There has been a statistically significant rise in caesarean section rates during the past 20 years. A portion of this may be justified and may be associated to some extent with the reduction in perinatal mortality. The hospitals should be constantly auditing their caesarean section rates and discussing them on a case to case basis to determine whether an alternate route of delivery would have resulted in accomplishing the same goals of maternal and fetal safety. The recommended measure to bring down these soaring caesarean section rates are a more careful diagnosis of dystocia, not putting time limits for duration of labour, an increased number of vaginal births after caesarean sections, selective vaginal delivery of term breech, external cephalic version of term breech, and a careful and accurate diagnosis of fetal distress. The measures to reduce caesarean section rates would not be successful

unless well planned trials are taken comparing caesarean section with vaginal delivery as currently there is very little evidence.

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