

MATERNAL MORBIDITY ASSOCIATED WITH CAESAREAN SECTION IN SECOND STAGE OF LABOR

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ABSTRACT

Objective: To determine the maternal morbidity associated with caesarean section done in second stage of labor.

Material and Methods: This prospective cross sectional study was done at Gynae Department of Khyber Teaching Hospital, Peshawar, Pakistan from January 2015 to December 2016. All pregnant women of any age or parity with singleton pregnancy, who delivered by caesarean section in their second stage of labor were included. Any intraoperative or postoperative complication was taken into account by following them till discharge and for two weeks after discharge.

Results: Total caesarean sections performed at full cervical dilatation were 130, out of these, 114 (87.69%) subjects were primigravidae and 16 (12.3%) were multigravidae. Seven (5.38%) patients were <20 years, 56 (43%) were in 21-30 years age range, 52 (40%) were 31-40 years and 15 (11.53%) were more than 40 years age. Average age was 29.53 $\pm$ 6.3SD. Sixty one (47%) caesareans were done for deep transverse arrest, 39 (30%) for cephalopelvic disproportion and 30 (23%) for nonreassuring fetal status. All the patients were followed for intraoperative complications i.e., uterine incision extension (14.6%), postpartum haemorrhage (11.54%), blood transfusions (10.76%), gut injury (1.53%) and postoperative complications i.e., prolonged catheterization (91.5%), fever (32%), prolonged hospital stay (31.5%), paralytic ileus (22%), haematuria (21.5%), wound sepsis (13%).

Conclusion: Considerable maternal morbidity is associated with second stage caesarean section. Adequate supervised training opportunities and consultant input is necessary for these challenging surgeries.

Key Words: Caesarean section, Maternal morbidity, Postpartum haemorrhage, Venous thromboembolism, Haematuria, Paralytic Ileus.

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INTRODUCTION

The incidence of caesarean section has increased tremendously over the recent years¹. The rate of caesarean deliveries continues to increase despite efforts to constrain operative abdominal deliveries. This is a cause for concern because caesarean section is associated with higher likelihood of adverse outcomes for both mother and fetus as compared to vaginal delivery².

Second stage of labor begins when cervical dil-

atation is complete and ends with fetal delivery. Second stage interventions are the methods to facilitate delivery of the fetus in the form of assisted vaginal delivery or instrumental delivery. Worldwide 10-20% of deliveries require some form of intervention which is usually caesarean section. Second stage caesarean is a challenging procedure with high maternal and fetal morbidity rates³.

A rising trend in caesarean sections done at full cervical dilatation has been observed if operative interventions are evaluated for second stage of labor^{4,5}. The caesarean section can be avoided in the second stage of labor by application of instruments, thus keeping overall maternal morbidity low^{6,7}. There are multiple etiological factors for this increasing trend of second stage caesareans; there are pitfalls in the supervision of junior staff in second stage decision making, a loss of technique associated with difficult assisted delivery and increasing litigious issues related to maternal morbidity⁸. Primary caesarean section has many important

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implications for future pregnancies and subsequent labor and delivery. A caesarean done at full cervical dilatation has significant association with maternal and fetal morbidity^{9,10}.

Royal College of Obstetricians and Gynaecologists reported the incidence of second stage cesarean sections to be 6% or in other words 8,000 deliveries each year¹¹. The morbidity related to a prolonged second stage is directly correlated with the incidence of extension of uterine angles and prolonged surgical time¹² bladder injury¹³ and increased incidence of postpartum haemorrhage¹⁴ and hospital stay¹⁵. The aim of our study was to evaluate the maternal morbidity associated with caesarean section in second stage, whereas secondary outcomes were rates of second stage caesarean sections, their indications, the pitfalls in senior's supervision and documentation deficits.

MATERIAL AND METHODS

This prospective cross sectional study was conducted at Gynae Department of Khyber Teaching Hospital, Peshawar, Pakistan from January 2015 to December 2016. Sample size was 130 and sampling technique was consecutive (non probability) sampling. The data was collected from the labor room, both booked as well as nonbooked patients were included. Inclusion criteria was pregnancies that resulted in delivery of single alive fetus at term (37-42 weeks) to a woman of any parity requiring caesarean section at full cervical dilatation in second stage of labor. Pregnancies were excluded if there was anomalous fetus, presentation other than vertex presentation, preexisting or pregnancy related maternal medical disease, fetal growth restriction, pre labor rupture of membranes and prior attempted instrumental delivery.

Ethical approval was obtained from Ethical committee of Khyber Teaching Hospital. Written informed consent was taken from subjects before including them in the study. Detailed history, general physical and bimanual examination was performed upon admission and routine investigations were sent, followed and were found to be normal. Baseline ultrasound was performed. Maternal demographic data included maternal age, weight, period of gestation, antibiotic use, labor characteristics like induction/augmentation of labor and total duration of labor. Patients were followed through labor with the help of partogram. Parameters of maternal morbidity included intraoperative complications like blood transfusion requirement, hysterectomy, Postpartum haemorrhage, intraoperative trauma to the surrounding viscera like urinary bladder and gut and lateral extension of uterine incision. Postoperative complications included puerperal pyrexia, wound sepsis, paralytic ileus, prolonged catheterization, blood stained urine, venous thromboembolism and length of stay in hospital. Second stage of labor was considered as full dilatation of cervix for two hours or more.

Women were monitored during the caesarean and closely followed during the first 24 hours and till time of discharge. After discharge, they were contacted for two weeks for any complication. Data was collected in a predesigned structured proforma along with findings on per abdominal and vaginal examination. Data was edited by trained personnel and analyzed using SPSS version 20.0. All data was presented in the form of tables.

RESULTS

Total number of patients delivered by emergency caesarean section during the time span of this study were 2417/8633 deliveries, giving a caesarean section rate of 28%. Of them, caesarean sections performed in second stage were 130(5.37%). One hundred and fourteen (87.69%) were primigravidae and 16(12.3%) were multigravidae. Seventy nine (60.76%) belonged to rural areas whereas 51(39.23%) were urban citizens. Regarding the age distribution, we divided our patients into four age groups and allocated women into each group, the most common age group i.e., 56(43%) patients were in age group of 21-30 years. The average age of this study population was 29.53 ± 6.3 SD with maximum age of 45 years and minimum age of 15 years. Status of booking was 17(13.07%) were booked and 113(86.92%) were non booked patients including referrals from other hospitals. All maternal demographic data is presented in Table 1.

Deep transverse arrest in second stage of labor was the most common indication for caesarean section comprising 61(47%) patients. This was followed by women having cephalopelvic disproportion in 39(30%) and non reassuring fetal status in 30(23%) cases. Outcome variables of maternal morbidity in the intraoperative and postoperative period are presented in Table 2. Decision for caesarean section was made by 4th year resident registrar who has completed four years of postgraduate training in 114(87.6%) cases and in only 16(12.3%) it was a consultant's decision.

Table 1: Maternal demographic characteristics (n=130)

Booking Status	No. of patients & %ages
Booked	17(13%)
Non booked	113(77%)
Age Distribution	
<20 years	7(5%)
21-30 years	56(43%)
31-40 years	52(40%)
>40 years	15(12%)
Gravidity	
Primigravidae	114(88%)
Multigravidae	16(12%)

Table 2: Complications

Intra operative complications	Frequency & percentage
Uterine Incision extension	19(14.6%)
Postpartum Haemorrhage	15(11.54%)
Blood Transfusion	14(10.76%)
Bladder Injury	7(5.38%)
Hysterectomy	6(4.6%)
Gut Injury	2(1.53%)
Post operative complications	
Prolong Catheterization	119(91.5%)
Fever	42(32%)
Prolong Hospital Stay	41(31.5%)
Paralytic Ileus	29(22%)
Blood Stained Urine	28(21.5%)
Wound Sepsis	17(13%)
Venous Thromboembolism	5(3.84%)

DISCUSSION

With increasing caesarean section rate, those caesarean sections which are being performed in the second stage are also increasing. The reason for this increasing trend may be hesitancy of junior staff to perform difficult instrumental deliveries and also perceived safety of caesarean sections¹⁹.

Our rates of caesarean section are almost comparable to other studies. Babre VM et al²¹ in their study in 2014 reported a caesarean section of 28.8% which is almost same as our caesarean section rate of 28%¹⁷. Similarly close rates of 32.4% were obtained by Davis G et al in their study at Australia⁸. Regarding the caesarean sections at full cervical dilatation, we observed the rate of 5.4%, which is quite close to the study done by McDonnell S et al at London where 5.1% caesareans were done in second stage¹⁸, and Loudon et al who reported incidence of 5.3% caesarean sections in the second stage¹³.

According to study conducted by Allen VM et al and Malathi et al, the commonest age group undergoing caesarean section at full cervical dilatation was 21-30 years^{17,18}, which is the same age group where our majority of patients fell. Regarding the gravidity of women, 88% of ours were primigravida, whereas this rate was 87.2% in the study conducted by Davis G et al⁸ and 74% in Babre et al²¹.

Nearly half of our patients i.e., 47% underwent caesarean section in second stage of labor for the indication of deep transverse arrest followed by cephalopelvic disproportion in 30%, same were the commonest indications for caesareans in the study done by Jain N

et al⁸. Non reassuring fetal status was the indication in 23% patients, Babre et al reported this incidence to be 31%²¹.

Caesarean sections performed in the second stage are technically difficult surgeries with fetal heads that are deeply impacted in the pelvis²⁰. Major obstetric haemorrhage of >1000ml was observed in 11.54% patients, Belay T et al reported 10% patients who developed postpartum haemorrhage of this volume at second stage caesarean²², Jayaram J et al²⁵ reported 26% of their patients undergoing second stage caesarean went into PPH 25.50% of our patients stayed for more than 5 days at hospital postoperatively, whereas 49.2% patients stayed for the same duration in a study 8.10.76% of our patients requires blood transfusion, this rate was 8.3% in a study done at Australia⁸. Blood transfusion rate was 10.76% in our study, whereas it was 21% in another study²³. Uterine incision extension was a common complication occurring in 14.6% of our patients and it occurred at the rate of 17% in a study done by Chopra S et al²⁶. Our postoperative complications profile was very much similar to the one studied by Baloch S et al in their study²⁴.

LIMITATIONS

Less consultant supervision, more decision making by trainees and resident registrars and poor documentation standards, all the three factors leading to bias in results. Documentation standards need to be improved. The abdominal palpation, cervical dilatation, position and station of fetal head were poorly documented. Caput, moulding and asynclitism were mentioned infrequently. Prior attempt at instrumental delivery has to be documented if patient has ended up in a second stage caesarean in order to plan future prospects of labor and delivery.

CONCLUSION

Caesarean sections at full cervical dilatation are showing increasing trends and are associated with significant psychological and physical maternal morbidity.

RECOMMENDATIONS

Expert opinion on techniques and a consensus on interpretation of well designed, non experimental, descriptive studies are required in order to formulate acceptable management guidelines. Till a guideline is created, trainee doctors should have supervised training and access to senior obstetric consultants at all caesarean deliveries at full dilatation.

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AUTHOR'S CONTRIBUTION

Following authors have made substantial contributions to the manuscript as under:

Qadir M: Idea concept bibliography data collection.

Amir S: Literature review results compilation.

Authors agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.