ORIGINAL ARTICLE

MATERNAL MORBIDITY IN EMERGENCY VERSUS ELECTIVE CAESAREAN SECTION AT TERTIARY CARE HOSPITAL

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Background: In the past 30 years the rate of caesarean section (C/S) has steadily increased from 5% to more than 20% for many avoidable and unavoidable indications. The objective of this study was to compare maternal morbidity and determine its cause in elective and emergency caesarean section. **Method:** It was a cross-sectional comparative study conducted in Civil Hospital Karachi at Obs/Gyn Unit III. All mothers admitted through OPD or emergency during the study period, of any age or parity undergoing C/S were recruited in the study. Patients having previous myomectomy, hysterotomy or classical C/S were excluded from the study. Patients undergoing emergency C/S were placed in group A, and those delivered by elective C/S were included in group B. Study variables were general and obstetric parameters and complications observed intra-operatively. Any postoperative complications were recorded from recovery room till patient was discharged from the ward. **Results:** There were 50 patients in each group. In group A, 11 (22%) were booked and 33 (66%) were referred cases. In group B, 48 (96%) were booked. The mean age in both groups was 28 years. In both groups, multigravida compared to primigravida were 78% vs 22% in group A, and 92% vs 8% in group B. Indication for C/S was previous C/S in 10 (20%) patients in group A, and 39 (78%) patients in group B, placenta previa, chorioamionitis, obstructed labour (6, 12% each); pregnancy induced hypertension and eclampsia in 5 (10%) cases in group A only. Intra-operative complications in group A were 48 (96%) vs 15 (30%) in group B (p=0.000). Postoperative morbidity in group A was 50 (100%) and 26 (52%) in group B (p=0.000). Intra-operative complication was haemorrhage in 46 (92%) cases in group A and 11 (22%) in group B. Anaesthetic complications were 40 (80%); prolonged intubation 25 (50%), aspiration of gastric contents 8 (16%), and difficult intubation 7 (14%) in group A. Ten (20%) cases had anaesthetic complications in group B. Commonest postoperative complication in both groups was anaemia in 41 (82%) and 11 (22%) cases respectively. **Conclusion:** Maternal morbidity is significantly higher in emergency C/S. Haemorrhage is a frequent complication in C/S, emergency or elective.

Keywords: Emergency C/S, Elective C/S, Maternal, Caesarean Section, Morbidity and Mortality

INTRODUCTION

The incidence of severe maternal morbidity is significantly higher among women undergoing emergency C/S than those undergoing elective one[1], complications may be greater among women of higher-order repeat C/S[2] and among older women[3].

In the past 30 years the rate of caesarean section has steadily increased from 5% to more than 20% the reason being, avoidance of mid-forceps and vaginal breech deliveries, use of foetal monitoring during labour and the belief that C/S will reduce perinatal mortality.[4] The rates vary widely by country, health care facility, and delivering physician, partly because of differing perceptions of its benefits and risks by health care providers as well as by pregnant women.[5] After modification of guideline on vaginal birth after caesarean (VBAC) by ACOG[6] the rate of VBAC decreased to 13.5% from 24% before the change[7]. It is evident that C/S is doctor friendly, VBAC is not.[8]

The major threats to a women undergoing Emergency C/S (Em. C/S) are complications of anaesthesia and surgery. In Elective C/S (El. C/S) mother is well prepared preoperatively, and all criteria for surgery are tried to meet with availability of trained staff, and both maternal and foetal complications are undoubtedly less.[9] In Em. C/S there is lack of facilities to meet all the criteria of surgery, the procedure has to be done in deficient circumstances, and elective caesarean section adversely affects the outcome. Both maternal and foetal complication are understandably more common in emergency cases.[10–12] The objectives of this study were to compare maternal morbidity and determine the causes in emergency and elective Caesarean Section.

PATIENTS AND METHODS

This was a cross-sectional comparative study conducted in Obstetrics and Gynaecology Unit III, Civil Hospital Karachi from 1st September 2006 to 28th February 2007 on 100 pregnant women undergoing C/S. Non probability purposive sampling was used. All expecting mothers admitted through OPD or emergency, of any age or parity undergoing C/S were recruited in the study. Patients having previous myomectomy, hysterotomy or classical C/S were excluded from the study. Patients were divided into two groups, group A was delivered by emergency C/S, and group B underwent elective C/S. Studied variables were age,

parity, clinical presentation, booked status, referral status, gestational age, past medical, surgical and obstetrical history, Complications observed intra-operatively included anaesthetic accidents, haemorrhage, PPH, transfusions, extension of tears and lacerations obstetrical hysterectomy, visceral injuries, and maternal death. Postoperative complications were recorded from recovery room till patient was discharged from the ward. Postoperative complications recorded were PPH, anaemia, transfusion, blood reaction abdominal distension, wound dehiscence, burst abdomen, reopening of abdomen, prolonged hospital stay, admission to ICU, prolonged catheterisation, UTI, infection, chest problems, VVF, DVT, DIC, and maternal death. Descriptive statistics and comparison of proportions using Chi-square were carried out.

RESULTS

In group A, out of 50 only 11 (22%) cases were booked, 33 (66%) were referred, 41 (82%) were emergency admission. In 50 group B patients 48 (96%) were booked and 44 (88%) were OPD admissions. The age group in group A and group B was highest between 20–30 years in both group A and group B (80%, 92% respectively). Multiparous women compared to primipara were 78% vs 22% respectively in group A, and 65% vs 35% in group B.

In group A, commonest indication was previous 2 C/S with labour pain and scar tenderness (7, 14%) followed by obstructed labour, placenta previa, chorioamnionitis (6, 12% each). Other indications in group A were foetal distress (3, 6%), dystocia (1, 2%), CPD (2, 4%), breech in labour (2, 4%), previous 1 C/S (2, 4%), and 3 C/S (1, 2%), eclampsia and uncontrolled PIH (5, 10%), ruptured uterus (4, 8%), retained 2nd twin and transverse lie (2, 4% each).

In group B, most common indication was previous 2 C/S (20, 40%), followed by previous 1 C/S (10, 20%). In group B previous 1 C/S was done with various indications like big size foetus, CPD, malpresentations, BOH etc. Other indications in group B were previous 3 or more C/S (9, 18%), CPD (4, 8%) breech (3, 6%), and BOH (1, 2%). Statistical difference was found between the two groups (Table-1, 2).

Higher rate of intra-operative complications were found in group A (48, 96%) compared to group B (15, 30%) (p=0.000). All 50 (100%) in group A had postoperative morbidity, versus 24 (48%) in group B (p=0.000). Commonest intra-operative complication was haemorrhage in 46 (92%) cases in group A and 11 (22%) in group B (p=0.000). Reasons for haemorrhage were extension of tears and lacerations 28 (56%) vs 3 (6%) (p=0.000), morbidly placed or adherent placenta and atonic uterus. Other complications were PPH in 18 (36%) vs 4 (8%) cases (p=0.001), anaesthetic complications in 40 (80%) vs 10 (20%) cases (p=0.000), need of transfusion in 46 (92%) vs 10 (p=0.000), and obstetrical hysterectomy (p=0.014). Commonest postoperative complication in both groups was anaemia in 41 (82%) and 12 (24%) cases respectively (p=0.000). Other problems were abdominal distension (p=0.001) infection, and need to admission to ICU etc.

Table-1: Demographic status of the patients

Mode of Admission	Em. C/S n (%)	El. C/S n (%)
OPD	9 (18)	44 (88)
Emergency	41 (82)	6 (12)
Booking Status		
Booked	11 (22)	48 (96)
Non-booked	39 (78)	2 (4)
Referral Status		
Referred	33 (66)	00
Non-Referred	17 (34)	50 (100)
Age of Patients		
20 yrs	2 (4)	1 (2)
20–30yrs	40 (80)	46 (92)
30 yrs	8 (16)	3 (6)
Parity of Patients		
P 0	11 (22)	4 (8)
P 2–3	17 (34)	27 (54)
P 4–5	11 (22)	15 (30)
P >5	11 (22)	4 (8)

Table-2: Indications of C/S (n=100)

Indications	Em. C/S n (%)	El. C/S n (%)	p
Previous 1 C/S	2 (4)	10 (20)	0.014
Previous 2 C/S	7 (14)	20 (40)	0.003
Previous 3 or more C/S	1 (2)	9 (18)	0.008
Placenta Previa	6 (12)	3 (6)	0.295
Chorioamionitis	6 (12)	0 (0)	0.012
Obstructed Labour	6 (12)	0 (0)	0.012
Eclampsia + PIH	5 (10)	0 (0)	0.022
Ruptured Uterus	4 (8)	0 (0)	0.041
Foetal Distress	3 (6)	0 (0)	0.079
CPD	2 (4)	4 (8)	0.400
Retained 2nd Twin	2 (4)	0	0.153
Transverse Lie	2 (4)	0	0.153
Non progress of labour	1 (2)	0	0.315
Abruptio Placetae	1 (2)	0	0.315
BOH	0 (0)	1 (2)	0.315
Breech	2 (4)	3 (6)	0.646

Table-3, and Table-4 give details of intra-operative complications with statistical differences. Need of blood transfusion both intra-operatively and postoperatively was higher in group A compared to group B (p=0.000).

Table-3: Intra-operative maternal complications of CS (n=100)

Complications	Em. C/S n (%)	El. C/S n (%)	p
Difficult intubations	7 (14)	0	0.006
Prolong intubations	25 (50)	10 (20)	0.002
Gastric content aspiration	8 (16)	0	0.003
Haemorrhage	46 (92)	11 (22)	0.000
PPH	18 (36)	4 (8)	0.001
Blabber injury	4 (8)	0	0.041
Bowel injury	1 (2)	0	0.315
Tear extension and laceration	28 (56)	3 (6)	0.000
Obstetrical hysterectomy	8 (16)	1 (2)	0.014
Thrombo-embolism	0	0	-
Transfusion	46 (92)	10 (20)	0.000
Maternal death	0	0	-
No complication	2 (4)	35 (70)	0.000

Table-4: Postoperative maternal complications of CS, (n=100)

Complications	Em. CS n (%)	El. CS n (%)	*p*
PPH	9 (18)	2 (4)	0.025
Anaemia	41 (82)	12 (24)	0.000
Abdominal distension	17 (34)	4 (8)	0.001
Reopening of abdomen	3 (6)	1 (2)	0.307
Burst abdomen	1 (2)	0	0.315
Wound dehiscence	11 (22)	4 (8)	0.050
Prolong maternal stay	31 (62)	7 (14)	0.000
VVF	1 (2)	0	0.315
Infection	16 (32)	3 (6)	0.001
Chest problem	20 (40)	7 (14)	0.003
Transfusion	31 (62)	8 (16)	0.000
Blood reaction	6 (12)	1 (2)	0.050
DVT	3 (6)	0	0.079
DIC	14 (28)	2 (4)	0.001
Maternal death	1 (2)	0	0.315
Admission to ICU	16 (32)	3 (6)	0.001
UTI	33 (66)	9 (18)	0.000
Prolong catheterization	31 (62)	4 (8)	0.000
No complication	0	26 (52)	0.000

Two types of healing failure was seen wound dehiscence and burst abdomen. Total intra-operative morbidities in group A were 48 (96%) and in group B 15 (30%) (p=0.000) while postoperative morbidity was 50 (100%) and 24 (48%) respectively (p=0.000). One patient of placenta prevea of group A expired after C/S in postoperative period due to massive haemorrhage resulting in DIC.

DISCUSSION

Complex deliveries including Caesarean Section require presence of senior medical personnel and support the case for more consultants in the labour wards. This may impact on lowering the C/S rate and should improve safety for mother and baby.[5] A hospital based prospective study at 12 centres of 9 counters showed that maternal complications were increased by C/S but elective C/S may reduce neonatal complications.[13] A Finland study showed that about 27% women had complications, 10% had severe. Significant independent risk factors for maternal morbidity are emergency C/S and crash Em. C/S vs El. C/S.[14] All types of maternal complications were seen in our study. Complications were more common in emergency compared to elective C/S.

Majority of women were multipara as compared to primipara, 78% vs 22% in group A and 92% vs 8% in group B, against 50.8% primipara in a study conducted at Rawalpindi.[15]

The changing patterns in C/S rate have not been affected by change in the indications over these years. Maternal and foetal morbidity and mortality is largely dependent on the indications for which the operation is performed. It is comparatively high in placenta previa, severe PIH, eclampsia and ruptured uterus.[14–16] Emergency C/S is usually performed for foetal distress, prolonged rupture of membranes, obstructed labour, severe PIH, eclampsia, ruptured uterus.[14–16] Same indications were found in our study. Most common indication in present study in group A and group B was previous 2 C/S (14% and 40% respectively). In group A patients presented with labour pain, scar tenderness and impending rupture for which complications like extension of tears, lacerations, haemorrhage and bladder rupture were seen. This was not so frequent in group B. Second highest indication was obstructed labour, chorioamnionitis and placenta previa. There were other indications like ruptured uterus, foetal distress, CPD, breech, transverse lie, retained second twin, and no progress of labour. Compared to a study at Isra University repeat C/S (19.2%), dystocia (13.4%), foetal distress (12.6%) and APH (16, 11.8%). An international study showed that a women is likely to go into C/S if she is having a breech presentation 90%, or APH 85% or previous C/S 71%.[5] In group B section were done on previous 1, 2, 3 or more C/S making 78% others were CPD 8%, breech and placenta previa 6% each, and BOH 2% comparable with Rawalpindi study.[15]

Overall intra-operative complications were 96% in group A and 30% in group B, it was comparable with other local studies stating 81.12% for emergency C/S and 18.9% for elective C/S, while postoperative complications were 100% in group A and 48% in group B, which was comparable to 92.6% in emergency cases in the same study.[9] Although the number of patients was limited in our study the results were statistically significant (p=0.000).

The main intra-operative complications were haemorrhage 92% and transfusion 92% in group A and only 22% and 20% respectively in group B. In a local study on 526 patients 93.2% of emergency and 6.8% elective cases needed transfusion.[9] A study from Lahore showed that intra operative haemorrhage was the most common complication in C/S being responsible for two maternal deaths in that series.[17] Haemorrhage is common even in low risk planned caesarean delivery.[18] Reasons for haemorrhage were extension of tears and lacerations, adherent placenta and atonic uterus found more in group A than group B.

Intra-operative PPH were 36% in group A, and 8% in group B. In a study on 494 patients 59.46% showed intraoperative PPH.[19] Total 9 (18%) obstetric hysterectomies were performed after failure of internal iliac artery legation. Eight (16%) in group A vs 1 (2%) (p=0.014). Due to atonic uterus 4 (8%) placenta previa 2 (4%) ruptured uterus 1 (2%), DIC 1 (2%) in group A. Group B patient had massive haemorrhage due to adherent placenta previa leading to DIC. All these patients were multipara or grand multipara except a 32 week primi with twins and eclampsia of group A had hysterectomy because of atonic uterus and DIC, compared to 6/889 in local study.[15]

Other intraoperative complications like injury to adjacent viscera, difficult intubations, aspiration of

gastric contents were found only in group A, might be the result of poor surgical techniques by junior doctors. The early availability of blood was a serious setback towards early intervention and outcome; usually the attendants were reluctant to donate their blood. None of the group A operation was performed in a standard time of 30 minutes[20], reason could be delay in induction of anaesthesia or the type of anaesthesia. Pulmonary aspiration of gastric contents and oesophageal intubation has high incidence in patients undergoing anaesthesia in late pregnancy.[11,12,20]

The commonest postoperative complication was anaemia in both groups as 82%, and 24% respectively, compared to 18.6% and 4.74% in a local study[15] Second was UTI 66% vs 18% respectively (p=0.000), as compared to 67% in Em C/S in a Nigerian study.[21]

Other important post operative complications in group A were blood transfusion, prolonged maternal stay and prolonged catheterisation 62% each verses significantly low in group B (p=0.000). Postoperative infection was 32% vs 6% (p=0.001), febrile morbidity reported in a local study was 22%.[17] Wound dehiscence was 22% in group A vs 8% in group B (p=0.050). A Nigerian study on 205 women showed 44.4% had one or more intra and postoperative complications, sepsis were the commonest 70.4% only in emergency C/S[21], in this study sepsis was 38% in 100 patients.

An international study showed that planned C/S had less endometritis 2.2% vs planned vaginal delivery17.2%[22], in another international study post operative morbidity were 35.7%, most frequent was fever 24.6% blood loss 4% haematoma 3.5% and UTI 3%. Among these PPH remains the major cause of maternal mortality[23].

CONCLUSION

Maternal morbidity is significantly higher in emergency C/S in terms of anaemia requiring blood transfusions, hospital stay, and prolonged catheterisation. Haemorrhage reveals an important complication in C/S whether emergency or elective.

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