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Original Research Article

Maternal and neonatal complications associated with caesarean section in the second stage of labour at Omdurman maternity hospital during 2012-2013

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Abstract

Caesarean section (C/S) in the second stage of labour is associated with many maternal and neonatal complications, inspite of that little has been paid to its rise in obstetrical practice. This is a hospital- based study conducted at Omdurman maternity hospital (OMH) during the period from January 2012- December 2013 to assess maternal and neonatal complications associated with C/S performed in the second stage of labour. Records of all patients delivered by emergency C/S at full dilatation of cervix over two years were reviewed (10988). Women delivered by emergency C/S during second stage of labour included in this study were 470 out of 10988 (4.3%). All had term singleton pregnancy; of them 256 (54.5%) were primigravida. Labour started spontaneously in 428 (91.1%), 300 (63.8%) were augmented by oxytocin and decision for C/S was made by resident registrars for 427 (90.9%). Failure to progress in second stage of labour was the commonest indication for second stage C/S, in 459 women out 470 (97.7%). Unsuccessful instrumental delivery was 56 (11.9%). Intra-operative complications developed for 240 (51.1%), including; extended uterine tear, intra-operative bleeding, bowel, bladder, ureter and baby injuries. Post-operative complications reported in 142 (30.2%), mainly due to puerperal infection, post partum haemorrhage (PPH), paralytic ilius, wound dehiscence and one maternal death. Twenty three (4.9%) had fresh still birth (FSB) and seven (1.5%) perinatal deaths, 138 (29.4%) were admitted to neonatal unit. C/S in the second stage of labour carries a high maternal and neonatal mortality and morbidity, which necessitates involvement of senior obstetrician in decision – making and delivery.

Keywords: Caesarean section, maternal and neonatal complications, second stage of labour, Sudan

INTRODUCTION

Caesarean section is usually performed when vaginal delivery is not safe for the mother or the baby, however, it carries a potentially life threatening complications to both mother and fetus. An emergency caesarean section is performed when there is immediate threat to the life of woman or fetus or when the patient is planned for elective caesarean section and came in labour. Elective caesarean section is planned at a time to suit the patient and maternity team (NICE, 2004). Inspite of the rapid rise of C/S over the last two decades, little has been paid to the rise of emergency C/S in the second stage of labour (Black et al., 2005). Although second stage C/S may be necessary, many of them could be avoided by the attendance of skilled senior care provider and implement-

Table 1. Distribution of patients delivered at OMH during 2012-2013 according to mode of delivery

Mode of delivery	N= 70438	%
Spontaneous vaginal delivery	49974	70.9%
Emergency C/S	10988	15.6%
Elective C/S	09275	13.2%
Assisted forceps delivery (AFD)	00138	00.2%
Assisted ventouse delivery (AVDA)	00063	00.1%
Total	70438	100.0%

tation of proper instrumental delivery.

In second stage C/S, delivery of the fetus will be difficult due to deeply impacted head in the pelvis, particularly when instrumental delivery is attempted and failed (Blickstein, 2004). Second stage C/S is associated with obstetric haemorrhage, bladder injury, extended uterine tear leading to broad ligament haematoma, infection and longer hospital stay (Allen et al., 2005). In this context, decision made by a senior obstetrician, may determine whether second stage C/S is optimal for delivering of a woman with delayed second stage of labour or not (Olah et al., 2005). As a result, the Royal College of Obstetricians and Gynecologists (RCOG) recommended the presence of a consultant obstetrician whenever C/S is performed in the second stage of labour (RCOG 2001).

Women who deliver by C/S in the second stage of labour, will have less chance for vaginal birth after caesarean section (VBAC) in subsequent pregnancy, as they request elective C/S to avoid the same tragedy (Bahl et al., 2004). Commonly repeat C/S are associated with higher rates of placenta previa and morbidly adherent placenta (Umbeli et al., 2013).

Inspite of widely used C/S, according to our knowledge, there is no much documentation or reports on impact of second stage C/S in this hospital or other hospitals in Sudan. This study aims at assessing maternal and perinatal complications associated with C/S performed at full dilatation of the cervix, including intra and post operative maternal and neonatal complications.

MATERIALS AND METHODS

Omdurman maternity hospital (OMH) is a tertiary hospital with huge number of deliveries per year, receiving mostly high risk patients particularly those with long second stage of labour or even obstructed labour. All patients delivered by emergency C/S at OMH in the second stage of labour with singleton term pregnancy were included in the study after an informed consent. Patients who refused were excluded from the study, without affecting management they received. An ethical clearance was obtained from the hospital ethical review committee. All C/S were performed under spinal anaethesia (SA), unless contra-indicated and operated on by a registrar or a consultant, through transverse abdominal incisions and received prophylactic antibiotics and heparin.

Women were monitored during operation and closely followed during first 24 hours and till time of discharge. After discharge, patients were contacted for two weeks by telephone to identify any late problems arising at home. Data was collected by trained group of registrars using a structured format including socio-demographic data, relevant obstetric history, indications, intra-operative and post operative complications, fetal outcome and hospital stay.

Data edited by trained personnel and analyzed using SPSS version 20. For the purpose of this study, second stage of labour was defined as full dilatation of the cervix for two hours or more.

RESULTS

Total number of patients delivered by emergency C/S during second stage of labour included in this study were 470/ 10988 (4.3%), (Table 1). Of them; 287 (61.1%) were rural citizens and 183 out of 470 (38.9%) were urban, 256 (54.5%) were primigravida. Labour started spontaneously at home in 428 out 470 (91.1%), 42 (8.9%) had induced labour, 300 (63.8%) were augmented by oxytocin, 400 (85.1%) delivered within 24 hours. Decision for C/S was made by resident registrars for 427 (90.9%), 43 (9.1%) by a consultant. SA was used for 455 (96.8%), seven cases (1.5%) converted to general anaesthesia (GA), and eight were anaesthetized by GA from the start of the operation.

Most of women, 380 (80.9%) had no significant obstetric history, 73 (15.5%) had previous C/S scar, 21 (4.4%) with history of intra-partum fetal death and eleven (2.3%) had history of instrumental vaginal delivery. Failure of progress in second stage of labour was the main indication for second stage C/S,459 (97.7%), 56 (11.9%) of them presented with obstructed labour and eleven (2.3%) had ruptured uterus in the second stage of labour. In 56 cases (11.9%); instrumental delivery was attempted, but failed.

Intra-operative complications occurred for 240 out

Table 2. Intra-operative complications associated with emergency C/S in second stage of labour, at OMH 2012-2013

Intra-operative Complications	N= 240	%
Intra-operative bleeding	109	23.2%
Extended uterine tear	107	22.7%
Bowel injury	013	02.8%
Complications of anaesthesia	007	01.5%
Bladder injury	003	00.6%
Ureteric injury	001	00.2%
Total	240	100.0%

Table 3. Postoperative complications associated with emergency C/S in second stage of labour, at OMH 2012-2013

Postoperative complications	N= 142	%
Puerperal infection	78	54.9%
PPH	49	34.5%
Paralytic ilius	13	09.2%
Wound dehiscence	01	00.7
Maternal death	01	00.7
Total	142	100.0%

of 470 (51.1%), mainly; extended uterine tear, intra-operative bleeding, bladder, ureter and baby injury (Table 2). Post-operative complications reported in 142 (30.2%), mainly due to puerperal infection, post partum haemorrhage (PPH), paralytic ilius, wound dehiscence and one maternal death (Table 3). The median hospital stay was five days (3-8 days). Twenty three (4.9%) had fresh still birth (FSB) and seven (1.5%) perinatal deaths. APGAR score was less than five at five minutes in 31 (6.6%), 138 (29.4%) of the neonates admitted to nursery, seven early neonatal deaths.

DISCUSSION

In this study, the overall C/S rate of 28.8% is relatively high, compared to WHO suggested rates (5-15%), however, it is consistent with rates in many developed countries, where it ranges between 20-25% (Cynthia and Sara, 2006). According to Royal College of Obstetricians and Gynecologists (RCOG) audit, about 35% of C/S performed for singleton babies were due to failure of progress in labour, with 25% of it occurring at full dilatation of the cervix (Fasubaa et al., 2002). This high rate of C/S resulting in high second stage C/S rate (4.3%) is due to the fact that OMH is a tertiary referral hospital, especially for patients with conditions requiring special maternal or neonatal care, including high risk patients or even obstructed labour. However, in this hospital, the rate of C/S may also be affected by an increased rate of multiparity, multiple pregnancy, preterm labour referred for nursery, increased previous scars, and litigation; especially in breech presentation and wide use of cardiotocography- CTG which is not supported by scalp vein PH or C/S on demand.

In this study, decision for C/S was made by resident registrars for 427 out of 470 (90.9%). Many factors affecting decision for vaginal delivery or C/S in the second stage of labour may need experience, including position and station of fetal head. A senior obstetrician performing a vaginal examination assessment is more likely to change a decision made by a trainee for a C/S and proceed safely to instrumental vaginal delivery (Olah, 2005). Without increasing junior doctors' experience and involvement of senior obstetricians into the specialty, the problem of second stage C/S will rise resulting in more maternal and neonatal mortality and morbidity and further increase in elective C/S (Murphy et al., 2001).

Good training on ventouse and forceps by senior obstetrician and improvement of second stage delivery techniques, such as manual rotation of the head, use of effective dose of oxytocin and proper selection for ventouse or forceps delivery may help reduce C/S at full dilatation of the cervix. In this study, instrumental vaginal delivery (forceps: 0.2% and ventouse; 0.1%) rate is very low, reflecting low threshold for C/S among attending registrars. Not only that, there are 11.9% cases where forceps delivery had been attempted but failed, which will make delivery of the head more difficult. This is consistent with that found by Mckelvey et al., where they

reported 40% attempt of instrumental delivery failed in patients delivered by 2nd stage C/S (Mckelvey et al., 2010).

This study has shown a high rate of maternal and neonatal morbidity associated with 2nd stage C/S. Second stage C/S is a difficult procedure associated with extended uterine tear, broad ligament haematoma and greater blood loss. Intra-operative fetal hypoxia is a serious complication associated with 2nd stage C/S, which may be due to strong uterine contraction or longer duration of C/S resulting from deeply engaged head with difficult delivery. A retrospective study from Canada has shown that women delivered by C/S at full dilatation of the cervix were 2.6 times likely to have intraoperative traumatic complications (Allen et al., 2005).

For prevention of complications associated with 2nd stage C/S, instrumental delivery is best practiced by experienced hands to reduce 2nd stage C/S when the head is no more than one fifth palpable above the symphysis pubis. Operation should be performed or supervised by an experienced obstetrician. Difficult delivery of impacted head may be facilitated by an assistant pushing from below or by using a reverse breech delivery (Fasubaa, 2002). Fetal hypoxia may be reduced by decreasing uterine contraction using tocolytics while waiting for C/S with oxygen supplementation before delivery of the head.

When the baby is delivered, intensive resuscitation may be needed as reflected by high number of babies with low Apgar score and admission to neonatal care unit and delivery must be attended by nursery staff. A low rate of forceps and ventouse is noticeable in this study with resulting low threshold for C/S, which may be due to lack of experience of resident registrars or absence of senior obstetrician at time of admission to perform proper assessment before embarking on C/S. It may also be influenced by repeated litigation for maternal or neonatal complications following instrumental vaginal delivery.

This study showed that; C/S in the second stage of labour carries a high maternal and neonatal mortality and morbidity, which necessitates involvement of senior obstetrician in decision – making and delivery.

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Conflict of Interest

Authors declare that they have no financial or non-financial competing interest.

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