Optimality of the diagnosis for common indications in emergency Caesarean delivery at Kenyatta National Hospital, Nairobi, Kenya

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Abstract

Background: Caesarean delivery is associated with greater morbidity than vaginal delivery. Care should therefore be taken to ensure that each decision for an emergency cesarean delivery is carefully considered to ascertain that the operation is warranted.

Objective: To determine the proportion of sub optimal diagnoses for the common indications of emergency caesarean delivery.

Methods: Cross sectional study at the Kenyatta National Hospital. Case notes of patients undergoing emergency caesarean section for the six common indications (dystocia, non reassuring fetal status, previous uterine scar, breech presentation, hypertensive disease in pregnancy and third trimester bleeding) were reviewed to determine how each diagnosis was arrived at. We compared this to predetermined diagnostic criteria and evaluated for optimality.

Results: One thousand and eighty women were delivered during the study duration, 409 (37.9%) through caesarean section. Of the 327 women, for whom a decision to undergo caesarean section was made, 306 were recruited. When evaluated against the diagnostic criteria, 156 (51%) had a sub optimal diagnosis. Prior uterine scar and presumed fetal compromise were the indications that contributed most (72%) to the sub optimal diagnoses.

Conclusions: Strategies should be devised to improve optimality of diagnosis by paying attention to the six commonest indications.

Key words: Optimality of diagnosis, emergency caesarean section, Kenyatta National Hospital

Introduction

Caesarean section is one of the oldest surgical operations dating back to the 17th century (1). Under modern conditions of surgery, the mortality of Caesarean Delivery (CD) has greatly reduced. It has blinded us to the fact that mortality after vaginal delivery has fallen more precipitously (2). Caesarean delivery, when compared to vaginal delivery, is associated with a higher mortality and morbidity rate - both for the mother and neonate (3). It is reasonable to conclude that the risk of death following CD is at least twice the risk following vaginal delivery (4). Approximately 1.5 million unnecessary CD are done in Latin America, contributing to 100 maternal deaths,

40,000 neonatal respiratory morbidity, and increased incidence of preterm births and neonatal mortality (5). Patient characteristics may account for only 21% of the variation in Caesarean Section Rate (CSR). Therefore the rise in rates may be due to physician and institutional behaviour (6).

At the Kenyatta National Hospital (KNH), various studies, between 1982 to date have found a CSR that ranges between 17.8% and 35%. The trend has been for an increase in the rate over time. None of them have attempted to establish the optimal rate for the facility (7-9). An unnecessary caesarean section would not justify the increased morbidity and cost associated with the operation when compared to vaginal deliveries. Some women, who are scheduled for

emergency caesarean delivery, inadvertently deliver vaginally. In many cases, the outcome of these deliveries are good thereby indicating a possibility that the surgery would have been unnecessary.

A good obstetric unit strives to ensure that all emergency surgery done is warranted. The decision for a patient to undergo a caesarean delivery is thus arrived at after a careful consideration of her history, examination findings, progress of labour, previous medication and interventions given, and, if indicated, laboratory and radiological findings. The diagnosis for the indication for cesarean is thus arrived at optimally.

In this study, the manner in which the diagnosis for the common indications for emergency cesarean delivery is arrived at, is evaluated and assessed against set diagnostic criteria. The aim of the study was to determine the proportion of caesarean sections that had a sub optimal diagnosis.

Materials and methods

This was a cross sectional study conducted at Kenyatta National Hospital (KNH), Nairobi between 18th January and 23rd February, 2009. The six commonest indications for emergency caesarean delivery at KNH (prior uterine scar, presumed fetal compromise, dystocia, hypertensive disease in pregnancy, breech presentation and third trimester bleeding) were determined

by studying the indications for caesarean delivery as entered in the theatre register for twelve months preceding the study period. For each of these indications, diagnostic criteria were made based on literature search of recommended best practices. The diagnostic criteria underwent a validation process. Based on previous studies in the region, we used 26.6% as the proportion of women with suboptimal diagnoses for caesarean section (13). We therefore required to study 301 women to achieve a 95% precision with a type 1 error of 0.05.

All consenting women who delivered during the study period for whom a decision to undergo emergency caesarean delivery for the six commonest indications had been made, irrespective of the subsequent mode of delivery were included. A questionnaire was completed with details from their case notes. The primary diagnoses were compared with the predetermined diagnostic criteria and assessed for optimality. A diagnosis not meeting the set criteria was considered sub optimal.

Data from the questionnaires were coded and analysed using SPSS® version 11.0 for Windows™. (IBM, Chicago IL). It was analyzed by proportion and frequency tables. Chi square test was used, where applicable to compare means. Ethical clearance to perform this study was obtained from the Kenyatta National Hospital ethics and research committee.

Figure 1: Outlines of deliveries
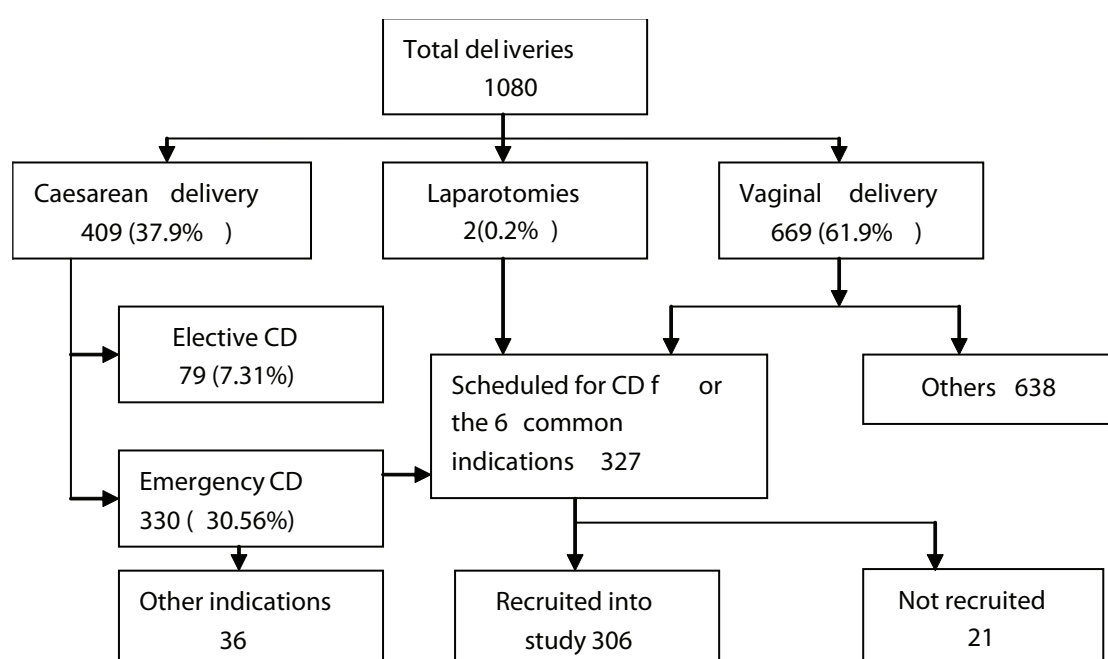
Enrolment was done at least 24 hours after delivery. A total of 306 women consented to participate in the study and were recruited, 14 declined, 3 were discharged before 24 hours elapsed and 4 absconded from the hospital.

Table 1: Socio demographic characteristics of study participants

VARIABLES	N =306 No. (%)
Age (years)	
0-19	21 (07)
20-24	75 (24)
25-29	127 (41)
30-34	54 (18)
35-39	21 (07)
≥40	8 (03)
Parity	
Primi	103 (34)
Para 1-4	187 (61)
Para ≥5	15 (05)
Not indicated	1 (0)
Education	
Primary	91 (30)
Secondary	115 (38)
Tertiary	63 (21)
None	23 (08)
Not indicated	14(4)
Marital Status	
Single	39 (13)
Married	264 (86)
Divorced or separated	1 (0.3)
Not indicated	2(0.7)
Occupation	
Unemployed	140 (46)
Self Employed	78 (25)
Salaried Employment	69 (23)
Student	15 (05)
Not indicated	4(01)

Of the 306 recruited, more than half (50.98%) had a sub optimal diagnosis when evaluated against the diagnostic criteria. The proportion of sub optimal diagnosis within each indication is shown in Table 2. There is an increased risk of having a sub optimal diagnosis for emergency caesarean delivery if one has a prior uterine scar, or presumed fetal compromise (p < 0.001)

Discussion

The Caesarean Section Rate (CSR) (37.9%) found is much higher than 17.8% in 1982, and 20% in 1991.

Table 2: Proportion of sub optimal and optimal diagnosis per indication

Indication	Sub Optimal No. (%)	Optimal No. (%)	Total N
Previous scar	66 (66)	34 (34)	100
Presumed fetal compromise	47 (65.28)	25 (34.72)	72
Hypertensive disease	8 (42.11)	11 (57.90)	19
Antepartum haemorrhage	4 (36.63)	7 (63.64)	11
Labour dystocia	23 (30.26)	53 (69.74)	76
Breech presentation	8 (28.57)	20 (71.43)	28
Total	**156 (50.98)**	**150 (49.02)**	**306**

Table 3: The proportion of optimal and sub optimal diagnoses against mode of delivery

Mode of delivery	Diagnosis				Total (N=306) No. (%)	
	Suboptimal (N=156)		Optimal (N=150)			
	No.	(%)	No.	(%)	No.	(%)
Cesarean delivery	140	(90)	140	(93)	280	(91.4)
SVD	15	(9.6)	5	(3)	20	(7)
Breech delivery	1	(0.4)	3	(2)	4	(1)
Lap	0	(0)	2	(1)	2	(0.6)
	156	**(100)**	**150**	**(100)**	**306**	**(100)**

SVD =Spontaneous Vertex Delivery   Lap =Laparatomy

The 2003 Kenya Demographic Health Survey (KDHS) found a national population rate of 4% with Nairobi having 10.3% (7, 8, 10).

The optimal CSR to balance quality of care for women and their babies is elusive. The appropriate range for caesarean section rate should be defined through an outcome based approach (Lowest attainable maternal and perinatal morbidity and mortality) (5). If risks are adjusted for various hospitals, thereby allowing prediction of the facility's optimal CSR, it is envisaged that facilities that have a higher or lower than the predicted CSR would have worse perinatal outcomes (11). In this study we have estimated the rate of sub optimal diagnoses for common indications of caesarean section. It is assumed that elective caesareans are more likely to have an optimal diagnosis as the time afforded before surgery allows for adequate diagnostic preparation. Therefore, if due attention is paid to the common indications of emergency caesareans, a hospital is more likely to attain its optimal caesarean rate with consequent improved outcomes.

Emergency caesareans contributed 80.68% of the 409 cases. The six common indications we sought accounted for 84.85% of the emergency sections. An evaluation of the Decision to Delivery Interval (DDI) at KNH found these indications to account for 95.3%. Other studies have described a similar scenario (12 - 14).

It can therefore be concluded that these indications are representative of emergency cesarean sections, and findings from their evaluation can be extrapolated to all emergency caesarean deliveries.

We did not come across a study that, prior to this one, had reviewed optimality of diagnosis at KNH. Unpublished work by Mselenge (13) assessed the rationality of the five commonest indications viz; repeat CS; presumed fetal compromise; obstructed labour; failure to progress and Cephalopelvic Disproportion (CPD) at Muhimbili Teaching and Referral Hospital. There was an overlap between the last three; which in our case are encompassed in the diagnosis of dystocia. The study reported a sub optimal rate of 30.1% (13). In a cesarean audit, a teaching hospital in the Netherlands, found that almost 7% of the operations were unnecessary with dystocia and presumed fetal compromise being the leading causes of sub optimal diagnoses in emergency cases and breech presentation leading for elective cases (15).

It should not be assumed that all the sub optimal diagnoses were undeserving and unnecessary cesarean deliveries; some cases were indications for elective caesareans (as opposed to emergency cesarean) and others required either more investigation, or time to arrive at the optimal diagnosis. Prior uterine scar and presumed fetal compromise seem to be the biggest contributors of diagnostic dilemma in the unit. This is in contrast to the Muhimbili study where prior cesarean section scar had the highest rate of optimality, presumed fetal compromise being the leading contributor to sub optimal diagnoses (13).

The increased risk of sub optimal diagnosis seen amongst those diagnosed to have previous scar and presumed fetal compromise ($p < 0.001$), requires that they be given keen attention. That 24 of the women (who were scheduled to have emergency caesarean) had vaginal deliveries - most with a sub optimal diagnoses - points to the possibility of the current rate being higher than optimal. This is lent credence by the finding that 90% of them had babies with 5-minute APGAR scores of 8 or higher, and a similar proportion not needing NBU admission. Only one had a complication, prematurity, this not being dependent on mode of delivery, similar findings are documented elsewhere (13).

Conclusions

Whereas a CSR of 37.9% may seem to be high, a scientifically based effort should be made to calculate the optimal rate for KNH taking into consideration the optimality of the pre-operative diagnosis and indication. The diagnosis of the six indications should be improved as this was found to be suboptimal in our study. The use of evidence based guidelines and care path ways could ensure this is accomplished.

Acknowledgements

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