Caesarean morbidity and mortality in a tertiary health institution in Sokoto, North-West Nigeria

Original Article

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ABSTRACT

Background: Caesarean section is the most common major surgical procedure performed in obstetrics. There is a need to frequently assess the safety of this operation.
Objective: To determine the rate and complications of caesarean sections.
Patients and Methods: A retrospective review of the caesarean sections performed at Usmanu Danfodiyo University Teaching Hospital Sokoto from January 2007 to December 2010.
Results: During the study period, there were 7986 deliveries and 819 caesarean sections, giving a caesarean section rate of 10.3%. Six hundred and eleven cases were available for analysis. The major indication was previous caesarean section (19.7%), cephalo-pelvic disproportion (15.4%), pre-eclampsia and eclampsia (14.7%). One hundred and thirty-five patients (20.4%) had post-operative complications, sepsis (36.3%) being the most common complication. All were cases of emergency caesarean section in unbooked patients. There were 19 maternal deaths (287.4/100,000), and the major cause of death was sepsis (57.9%).
Conclusion: There is a high level of morbidity and mortality following caesarean section mainly due to sepsis.

Keywords: *Complications, eclampsia, foetal distress, illiteracy, maternal death, sepsis*

INTRODUCTION

The delivery of a baby through the abdomen has been known even before the period of written history. Often, but not always, the deliveries were performed as the mother was dying or already dead and so, maternal mortality from caesarean section was nearly 100%.[1] One of the features of modern obstetrics is the increasing caesarean section rate.[2] This practice poses a public health challenge. This is because caesarean section increases the health risk for mothers and babies as well as the cost of healthcare compared to normal deliveries.[3] Nigerian women generally have an aversion for caesarean section because of the general belief that it signifies reproductive failure.[4]

Caesarean section rates and indications vary in different centres and often give a reflection of the maternal health status in the environment.[5] The main indications in developed countries are previous caesarean section, foetal distress and breech presentation while in developing countries, the major indications include cephalo-pelvic disproportion, eclampsia, foetal malpresentations and ante-partum haemorrhage.[6] In Northern Nigeria, the major indications include obstructed labour, eclampsia, prolonged labour and foetal distress.[5]

Currently, there is a paucity of data as regards caesarean morbidity and mortality in Sokoto, North-West Nigeria. This informed the need for this study which main objective is to determine the pattern of complications following caesarean section at Usmanu Danfodiyo University Teaching Hospital (UDUTH) Sokoto over a 4-year period.

PATIENTS AND METHODS

The study population consisted of women who had caesarean section at the Usmanu Danfodiyo University Teaching Hospital, Sokoto, Nigeria, from 1st January 2007 to 31st December 2010. The University Teaching Hospital is located in North-West Nigeria with a catchment area including Sokoto, Kebbi, Zamfara and Niger States; it also receives referral from Niger Republic, a neighbouring country.

Relevant data were extracted from the case notes of the study subjects, labour ward and operating theatre registers. Only case records of 661 patients out of 819 were available for analysis which was done with Epi–Info statistical package. Test of association was done with chi-square table and the level of significance was set at $p < 0.05$.

In this centre, all cases of caesarean section had prophylactic ceftriaxone and metronidazole for five days post-operatively. A diagnosis of sepsis was made based on the presence of any one or more of the following:

1. Purulent discharge at the operation site, whether or not swab culture yielded bacterial growth
2. Post-operative temperature of 38^0C or more with bacterial growth from endocervical swab.

RESULTS

During the study period, 819 caesarean sections were performed out of 7986 deliveries giving a caesarean section rate (CSR) of 10.3%. Detailed analysis was limited to 661 cases that folders were available for study. The age and parity distribution, booking status and type of caesarean section are shown in Table1.

Table 1. Age, parity, booking status and type of caesarean section

Variable	No. of Patients	%
A. Age (yrs)		
<19	96	14.5
20-24	168	25.4
25-29	185	28
30-34	105	15.9
35-39	71	10.7
>40	36	5.5
Total	661	100
B. Parity		
0	276	41.8
1	101	15.3
2	73	11.0
3	48	7.3
4	35	5.3
≥5	128	19.4
Total	661	100
C. Booking Status		
Booked	344	52
Unbooked	317	48
Total	661	100
D. Type of C/S		
Emergency	571	86.4
Elective	90	13.6
Total	661	100

The age of the patients ranged between 14 and 44years. Majority of the patients 67.9% were less than 30years of age, teenagers accounted for 14.5% of the cases. Most of the

patients 276 (41.8%) were primigravidae and 128 (19.4) were grand-multigravidae. The influence of formal education among the booked and unbooked patients who had caesarean section showed that 367 (55.5%) were illiterate while 294 (44.5%) were literate. Among the booked patients who had caesarean section, 282 (82.0%) were literate and 62 (18.0%) were illiterate, while among the unbooked patients 305 (96.2%) were illiterate. There were more illiterate mothers among the unbooked patients (83.1%) than among booked patients (16.9%). Among the booked patients, 256 (74.4%) had emergency caesarean section while 88 (25.6%) had elective procedures, whereas 315 (99.4%) had emergency caesarean sections and only 2(0.6%) had elective caesarean sections among the unbooked cases.

Table 2. Indications for caesarean sections

Indications	No. of Patients	%
Previous caesarean section	130	19.7
Obstructed Labour	102	15.4
Pre-eclampsia/eclampsia	97	14.7
Cephalopelvic disproposion	66	9.9
Fetal distress	54	8.2
Malposition	43	6.5
Antepartum haemorrhage	36	5.4
Multiple Pregnancy	28	4.2
Transverse lie	27	4.1
Failed induction	25	3.8
Mapresentation	18	2.7
Fetal macrosomia	14	2.1
Cord prolapsed	7	1.1
Retained second twin	6	0.9
Previous VVF repair	5	0.8
HIV positive	3	0.5
Total	**661**	**100**

The indications for the caesarean sections performed are illustrated in table 2. Some patients had more than one indication for the caesarean section; as such the primary indications were chosen. Spinal anaesthesia was employed in all the elective cases and general anaesthesia was employed in almost all the emergency cases.

Table 3. Complications of emergency caesarean sections (n= 135)

Complications	No. of Patients	%
Sepsis	49	36.3
Malaria Fever	15	11.1
Anaemia	10	7.4
Post-partum Haemorrhage	10	7.4
VVF	10	7.4
Obstetric Palsy	9	6.6
Puerperal Hypertension	8	5.9
Wound infection	8	5.9
Urinary tract infection	7	5.2
Puerperal Psychosis	7	5.2
Aspiration Pneumonia	1	0.7
HELLP syndrome	1	0.7
Total	**135**	**100**

There were 102 peri-natal deaths recorded giving a peri-natal mortality of 154 per thousand total birth. Amongst the peri-natal deaths 83(81.4%) were from unbooked emergency cases x=55.4308, p=0.0000 ($p<0.05$), these were mainly peri-partum and immediate neonatal deaths. The single most frequent cause of perinatal death was prolonged obstructed labour. Table 3 shows the frequency of maternal morbidity.

Overall, 135 patients had complications, giving a complication rate of 20.4%. Some complications were part of the pathology that led to the procedure. These complications were significantly higher in unbooked 100 (75%) than booked cases x=85.2083, p= 0.0000 ($p<0.05$). During the period under review, there were 19 maternal deaths giving a maternal mortality of 287.4 per 100,000 amongst the 19 maternal deaths, 18 (94.7%) were from unbooked emergency cases x=14.7425, p=0.0001 ($p<0.05$). Obstructed labour accounted for 8 (42.1%) maternal deaths, and maternal sepsis, was the leading cause of death 11(57.9%) in this series. The microorganisms isolated in the 49 cases of sepsis include: escherichia coli 14(28.6%), klebsiella 10(20.4%), staphylococcus aureus, 8(16.3%), no organism (was cultured in) 7 (14.3%), B-haemolytic streptococcus 6 (12.2%) and pseudomonas 4 (8.2%).

DISCUSSION

The rate of caesarean section in this study (10.3%) is within the range (6.4 - 32.1%) reported by previous authors in Nigeria and Ghana.[6,7,8,9,10,11] The high increase in caesarean section rates is not only due to high rate of repeat caesarean sections (19.7%), but also due to higher primary caesarean section rates. Unbooked emergencies contribute most significantly to the rate of primary caesarean section.

Similar to earlier studies from other parts of Nigeria, majority of the caesarean sections were emergency cases (86.4%) because of a large number of unbooked and 'defaulting' previous caesarean sections presenting in labour, many of them presenting with severe ante-partum haemorrhage and obstructed labour.[6,9,11] Almost all unbooked cases that underwent caesarean section were emergency cases (55.2%). Majority of the caesarean sections were performed on primigravidae due to cephalo-pelvic disproportion (41.8%), thereafter, caesarean section decreased with increasing parity till the parity of five or more when there was a sharp rise. The age and parity distribution, therefore, identified the young age group, primigravidae and the multiparous woman as the focus group for interventional measures aimed at reducing caesarean section rate.

Unbooked status, *per se,* is not a direct cause of increased caesarean section rate but there is increased morbidity associated with caesarean section in such group of patients. Unbooked emergencies constitute the main high risk group of maternal mortality in Nigeria, making up no fewer than 70% of all hospital maternal deaths in the country.[12,13] These women, who did not receive ante-natal care, arrive at the hospital for the first time when life is already endangered by difficult labour, advanced pregnancy complications, or co-incidental disease. The late arrival is usually due to any of these constraints – cultural, financial, social, transportation and telecommunication barrier and most importantly, illiteracy.[12,13,14,15]

Seven indications accounted for about 79.6% of the caesarean sections. A repeat caesarean section formed the major indication in this series 130 (19.7%). Repeat caesarean section is undertaken in many of our women with one previous section when there is a recurrent factor like cephalo-pelvic disproportion. Previous caesarean section was said to constitute the highest single indication for repeat section because obstetricians still regard vaginal birth after previous caesarean section as a high risk option.[6]

The fact that caesarean section is a potent tool for averting life threatening problems of pregnancy and labour, does not mean that it is unassociated with problems and dangers, as this was confirmed in this study with a 20.4% complication rate, though lower than 44.4% reported elsewhere in Nigeria.[9,16] This is however, not surprising as most of the caesarean sections were performed as emergencies with many patients admitted in obstructed labour, dehydration, intra-partum genital sepsis and anaemia, all of which further enhanced post-partum infections. Sepsis ranked higher (36.3%) than other complications just as in other series.[9,17] In this series, most of the infections were recorded in the unbooked emergency cases. The most common infecting organisms were Escherichia coli and Klebsiella spp. which accounted for 28.6% and 20.4% of the isolates, respectively. These infections still occurred despite the routine prophylactic use of newer generation broad spectrum antibiotics and this was corroborated by previous studies.[9,11]

Other complications recorded include malaria, which is not surprising because malaria is endemic in this country and immunity to malaria falls in pregnancy, and patients admitted in emergency without previous antenatal care may have exacerbated attack post-operatively. Puerperal psychotic

disorders were more frequently diagnosed than before, but this may have to do with earlier detection as the incidence of puerperal blues has been reported as high as 50%.[18] Ten patients (7.4%) developed vesico-vaginal fistulae following obstructed labour which accounted for most of the causes (79%) of urogenital fistula in our centre.[19]

The maternal mortality following caesarean section in this series was 287.4 per 100,000, a rate which is unacceptably high. However, it reflected the general trend reported in the developing countries though lower than 83.1 per 100,000 reported from Niger State, Nigeria.[13,14,23] Harrison quoted one death per 20,000 caesarean sections in Sweden.[20] The peri-natal mortality, maternal morbidity and mortality were all significantly higher in unbooked than in booked cases, because most unbooked cases arrive late and in septic state.

Almost all the deaths (94.7%) were from unbooked emergency cases. This has been reported separately by Adeleye and Megafu. The latter reported a maternal mortality rate of 8 per 1000 in booked hospital patients compared to 40 per 1000 when both booked and unbooked patients in the same hospital were reviewed.[21,22] Just like earlier reported in previous studies, the major cause of death in this series was sepsis 57.9%.[9,11,14,23] All these indicate the need for rigorous attention to asepsis during surgery, meticulous observation of sterile surgical techniques and judicious use of antibiotics in order to reduce this problem.

The peri-natal mortality rate of 154 per 1000 associated with caesarean section in this review was lower than 72.2 per 1000 and 63.8 per 1000 reported in Maiduguri and Anambra, respectively but lower than 228 per 1000 reported in Niger State.[6,11,23] Unbooked emergencies from obstructed labour accounted for most of the peri-natal death. Routine ante-natal care, early referral to the hospital and skilled birth attendance at delivery could have averted most of the peri-natal deaths.

CONCLUSION

This study showed a high complication rate following caesarean section in UDUTH. Ante-natal care should be properly organised and made affordable; the significance of early referral of cases to tertiary health institutions should be emphasised. This will, consequently, reduce the number of unbooked mothers and hence their disproportionate contributions to maternal and peri-natal complications.

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