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Prevalence and Outcome of Caesarean Section in Attat Hospital, Gurage Zone, SNNPR, Ethiopia

Ayano Moges[1], Beyene Wondafrash Ademe[2] Geremew Muleta Akessa[3]

1 Gynecology and Obstetrics Unit, Bulle hora hospital, Bulle hora, Ethiopia
2 Department of Medical Laboratory Sciences, Jimma University, Jimma, Ethiopia
3 Depatement of Statistics, Jimma University, Jimma, Ethiopia

Corresponding Author: Geremew Muleta

Department of Statistics, Jimma University, Jimma, Ethiopia

yohager@gmail.com

Tel: 251910206536

Abstract

Background: Cesarean delivery has played a major role in lowering both maternal and perinatal morbidity and mortality rates. Rates of cesarean section are of concern to both developed and developing countries. The global Cs rate is distributed very unevenly and results 15% of abdominal delivery. The four most common indications for cesarean delivery include: failure to progress during labor, previous hysterectomy, no reassuring fetal status and fetal mal-presentation.

Objective: The study attempts to determine the prevalence, common indications, outcomes and complications of cesarean section in Attat Hospital, Ethiopia.

Methodology: Cross-sectional retrospective study was conducted in Attat Hospital, Gurage zone SNNPR, Ethiopia from January/2011–December/2013GC. Data was collected using structured questioners by trained data collectors. The collected data was checked for its completeness, entered, edited, cleaned and analyzed by SPSS Verssion20. Chi- square test, 95% CI and P-value <0.05 were used to examine association between dependent and independent variables.

Result: The prevalence of cesarean section is 27.6%. The age of the patients ranged between 16-45 years with a mean age of 28.12 ± 5.14 years. The leading indications for cesarean birth were, Cephalopelvic Disproportion (CPD) (38.1%), previous Cs (18.9%), fetal distress (12.5%), mal-presentation and malposition (7.1%), and Antepartum Hemorrhage (APH) (6%) accounting for 82.6% of the indications for cesarean section. Maternal indications constituted 68% whereas fetal indications accounted for 32%.

Conclusion: Cesarean sections performed for appropriate medical or obstetric indications are life saving for both the mother as well as the new born. Therefore to reduce the high prevalence of Cs, each case should be thoroughly evaluated to determine the possibility for vaginal delivery.

Keywords: Prevalence, Caesarean section (cephalopelvic disproportion, mal-presentation and malposition)

Introduction

Cesarean section refers to the delivery of a fetus, placenta and membrane through the abdominal and uterine incision after 28 weeks of gestation [1].

Cesarean delivery has played a major role in lowering both maternal and perinatal morbidity and mortality rates during the past century. The initial purpose of the surgery was to preserve the life of the mother with obstructed labor, but indications have expanded over the years to include delivery for a variety of more subtle dangers to the mother or fetus. Contributing to its more frequent use is its increased safety, which is largely a result of better surgical technique, improved anesthesia, effective antibiotics, and availability of blood transfusions [2].

Rates of cesarean section are of concern both in developed and developing countries. The global cesarean section rate is distributed very unevenly and results 15% of abdominal delivery. Latin America and Caribbean shows the highest rate (29.2%) and

Africa shows the lowest (3.5%). In developed countries the proportion of cesarean birth is 21.1% whereas in least developed countries only 2% of deliveries are by cesarean section. The analysis suggests a strong inverse association between cesarean section rates and maternal, infant and neonatal mortality in countries with high mortality levels. In many developed countries, cesarean sections are increased and attention has focused on strategies to reduce its use do to the concern that higher cesarean section rates do not confer additional health gain but may increase maternal risk, have implications for future pregnancies and have resource implications for health service [3-5].

In Ethiopia the cesarean section rate of the country based on 2010 report is only 1% [6]. The Cs rate in some specified hospitals of the country such as Black Lion Teaching Hospital is around 10% in 1992 [7]. The reason for undertaking this research study is based on the fact that in areas with a high rate of maternal mortality and morbidity from poor access to CEMOC, knowing the prevalence, indications and pregnancy outcomes of operative delivery particularly Cs is crucial. Therefore this study is aimed at providing information on the prevalence, indications and outcomes of CD in Attat Hospital that plays a vital role in reducing maternal mortality and morbidity resulting from complications related with pregnancy that needs urgent surgical intervention. In addition to this the shortage of complete and adequate data on prevalence, indication and outcome of cesarean section at this Hospital as well as in the country level makes me to study on this topic at this specific Hospital. As a result the information on this issue will help the hospital Staff to know the trends, common indications and outcomes of pregnancy after Cs as well as the managers to allocate their resources on the most common priority areas. The study result will also help other stakeholders (NGO's) working in this line. The best practices in the Hospital may also help other researchers, Zonal health departments, SNNPR and the country at large. This study conducted to investigate the prevalence and outcome of Cesarean delivery.

Materials and Methods

Study area

The study was conducted at Attat hospital. Attat Hospital integrated service is located 187 km south west of Addis Ababa along the Jimma road in the Southern region of Ethiopia. The service has been operative since 1969. The Hospital has 65 beds. In addition, there are 48 beds in the Maternity Waiting Area, 13 beds in the Nutrition Rehabilitation Unit, 3 Labour Beds and 2 Delivery Beds that are often used as overflow beds. Normal deliveries return home within 24 hours or stay in the Postnatal Room of the MWA when necessary. The obstetric/gynecology post-operative cases go to the Surgical Ward. Maternity and Gynecological services are the main surgical procedures done. Elective and emergency surgical services are performed. There are 1 obstetrician/gynecologist, 1 surgeon, 3 GPs, 2 Health officer, 1 health coordinator, 2 pharmacists, 4 druggists, 44 nurses, 7 lab technicians and 14 other health professionals. There are 87 support staff members.

Study design

Hospital based cross-sectional retrospective study was conducted from January 2011 – December 2013 GC.

Inclusion criteria

All cesarean deliveries performed after period of viability (28 weeks) including elective, emergency, primary and repeat cases are included in the study.

Exclusion criteria

Cesarean deliveries which lack full information.

Data collection procedure

The data for the study was collected using pre-tested structured questionnaire which have socio-demographic variables, obstetric history and outcome of cesarean section. The questionnaire was prepared in English. Information obtained from theatre records, labor ward records, and neonatal ward records using structured questionnaire.

Statistical analysis

After data collection was completed, the data were entered into SPSS software version 20. It was checked for its completeness, cleaned and analyzed accordingly. Frequencies and graphs were used to describe some variables. Bivariate analysis and chi- square test were used to examine association between dependent and independent variables. A 95% CI and p-value of <0.05 were considered to be statistically significant. In addition crude/adjusted odd ratios were calculated. To assess the effects of each independent variable on the outcome variables multivariate logistic analysis was carried out and fit to the final model.

Ethical consideration

Ethical clearance was obtained from Research Ethics Committee of Jimma University. And Letter of permission was obtained from Attat hospital administration office, Obstetrics and Gynecology department. After information was provided, informed consent was taken from study participants (laboring mothers), anonymity and confidentiality of respondents was kept.

Results

During the period of study, there were 5,611 deliveries at Attat Hospital, of which 1,547 were by C/S, an incidence of 27.6%. The age of the patients ranged between 16-45 years with a mean age of 28.12 years with SD ± 5.14. Majority of the patients were between 20-35 years 236 (84%), the rest were younger than 20 age years 27 (9.6%) and older than 35 years 18 (6.4%), 87 (31%) of the mothers were primipara, 179 (63.7%) were between Para one and Para four and 15 (5.3%) were grand multipara. **Table 1** shows patients who had Cs were categorized according to age, parity and residence. 32 (11.4%) of mothers with C/s did not have ANC follow up in any health institution. 59 (21%) and 260 (79%) of the women were from urban and rural respectively **(Table 1).**

193 (68.7%) of the mothers had primary Cs while 88 (31.3%) had repeat cs. The majority of Cs were emergencies-254 (90.4%),

Table 1. Distribution of cesarean section cases by socio-demographic characteristics, parity and ANC follow up in Attat Hospital.

Variables	NO of CS	Percentage
Age (Years)		
<19	8	2.8
20-34	218	76.6
≥35	55	19.6
Total	281	100
Parity		
Primigravida	88	31.3
Para (1-4)	178	63.3
Grandmulti	15	5.4
Total	281	100
LNMP		
Yes	114	40.6
No	167	59.4
Total	281	100
ANC Follow up		
Yes	249	88.6
No	32	11.4
Total	281	100
Residence		
Urban	59	21
Rural	222	79
Total	281	100
Marital status		
Married	277	98.6
Single	4	1.4
Total	281	100

whereas 27 (9.6%) were elective. All of uterine incisions were lower uterine segment transverse cs. Bilateral Tubal Ligation (BTL) was done for 36 (12.8%) of the mothers. Out of the total BTL cases, 19 (52.8%) of BTL was done for repeat C/s cases while 17 (47.2) was done for primary C/s cases. Preoperative hemoglobin was done for the majority of Cs cases 270 (96.1%). Most Cs cases were done under Spinal anesthesia 225 (80.1%). Out of the 281 Cs cases 244 (86.8%) were term pregnancies, 28 (10%) were preterm and 9 (3.2%) were posterm **(Table 2).**

The leading indications for cesarean birth were, Cephalopelvic Disproportion (CPD) 107 (38.1%), previous Cs 53 (18.9%), fetal distress 35 (12.5%), mal-presentation and malposition 20 (7.1%), and Antepartum Hemorrhage (APH) 17 (6%) accounting for 82.6% of the indications for cesarean section. **Figure 1** below shows graphical representation of indications of cesarean section.

From **Table 3** observe that post-operative maternal complications, the most common of which was respiratory tract infection 7 (2.5%), followed by post op fever 6 (2.1%). Mothers with ANC follow up have good post-operative outcome than those who didn't have follow up (P-value=0.024, AOR=0.295, 95%CI =0.102, 0.849) and those mothers whose pre operation hemoglobin ≥ 11 have good post op outcome than mothers with pre operation hemoglobin <11 (P-value=0.034, COR=3.168, 95%CI=1.06, 9.41).

Table 2. Type of Cs, anesthesia and preoperative hemoglobin status of cesarean sectioned cases in Attat Hospital.

Variables	No. of CS	Percentage
Type of CS		
Elective	27	9.6
Emergency	254	90.4
Total	281	100
Primary	193	68.7
Repeat	88	31.3
Total	281	100
Bilateral tubal ligation		
Yes	36	12.8
No	245	87.2
Total	281	100
PREOP HGB		
7-11gm/dl	22	7.8
>11gm/dl	248	88.3
Not done	11	3.9
Total	281	100
Type of anesthesia		
General anesthesia	56	19.9
Spinal anesthesia	225	80.1
Total	281	100
Gestational Age in weeks		
<37	28	10
37-42	244	86.8
≥42	9	3.2
Total	281	100
Duration of labour		
<12	99	35.2
24-Dec	100	35.6
>24	50	17.8
Not in labour	32	12.4
Total	281	100

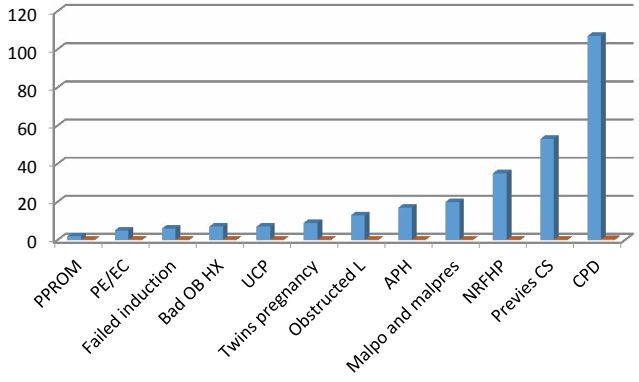

Figure 1 Indication of CS in Atat hospital during the stud period.

Unfavorable neonatal outcomes, 7 (2.5%) still births and 10 (3.6%) early neonatal deaths, only were reported from cases with emergency C/D except 1 (0.4) case reported from elective c/d. But the association was not statistically significant between type of C/s and neonatal outcome.

Table 3. Binary logistic regression performed to show the association between dependent variables with maternal outcome in Attat Hospital.

Variables	Maternal Outcomes		COR 95%CI	P-value	AOR 95%CI	P-value
	Good	Bad				
ANC Follow Up						
No	22	10				
Yes	232	17	0.16(.06,0.935)	<0.001	0.343(0.102,1.15)	0.082
Labour duration						
>24hrs	42	8				
<24Hr or not in labour	212	19	0.47(0.19,1.14)	0.097	0.8(0.26,2.39)	0.68
Type of anesthesia						
GA	46	10				
SPA	208	17	2.66(1.14,6.18)	0.023	1.35(0.51,3.61)	0.546

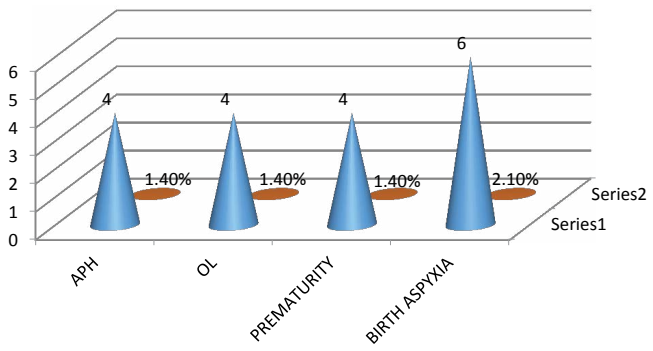

Figure 2 Cause of prenatal death in Attat hospital during the stud period.

The cause of prenatal death was, birth asphyxia 6 (2.1%), obstructed labour 4 (1.4%), APH 4 (1.4), and prematurity 4 (1.4%) **(Figure 2).**

Discussion

The cesarean section rate of 27.6% in this study was approximately similar to 23.1% reported from Sagamu, Southern Nigeria, 24.1% reported from Pakistan and 27.1% from Brazil, developing countries like Ethiopia. But the figure is lower than the rate of cesarean section in Chile (40.5%) and most developed countries like USA 32% [8-12]. This cesarean section rate was significantly higher as compared with cesarean section rates in other parts of the country like 10% in Tikur Anbessa Hospital, 8% in Jimma Hospital and 18% reported from the national review of cesarean delivery in Ethiopia but similar to 26.2% reported from another study in Ethiopia [7,13-18]. This rate was above 15% recommended by the World Health Organization. The frequency of cesarean section depends on the inherent characteristics of the obstetrics population, socio-demographic pattern, referral role of the hospital, departmental policies regarding management of cases of dystocia, breech, fetal distress, and previous cesarean section, physician factor and medico legal aspects, and consideration of maternal choice and wishes [19-26]. The higher rate of cesarean section in this study might be because of use of electronic fetal heart rate monitoring devices, less time given for conservative management of fetal distress (intervention with a single episode of fetal distress), increased number of repeat cesarean section with limited number of VBAC, more than three scars were allowed without BTL and acceptance of mothers at risk referred mainly from health institution. Each case should be thoroughly evaluated to determine the possibility for vaginal delivery [27-31].

Similar to an earlier study from other parts of Ethiopia (Tikur Anbessa Hospital) and other developing countries (Ilorin, Nigeria) the majority of Cs in this study (90.4%) were performed as an emergency. Surprisingly 88.6% of the patients had ANC follow up. One hundred ninety three (68.7%) of the mothers had primary cesarean section which was similar to study done in Tikur Anbessa Hospital, Ethiopia (67.6%) [7,15,32].

The indications for cesarean section can be maternal or fetal, Maternal indications constituted 68% of the caesarean section in this review, the most common of which is cephalopelvic disproportion (38.1%) which is similar to the reports from other parts of the country [7,10,32,33] and other developing countries [32,33]. Because nutritional factors have dominant influence on pelvic size and shape and malnutrition especially during childhood result in pelvic contraction and general growth stunting; this high incidence of cephalopelvic disproportion may be related to the malnutrition that is still rampant in developing countries including Ethiopia. Previous caesarean section was the other most common maternal indication [15].

Fetal distress was the leading fetal indication and it accounted for 12.5% of all cesarean sections performed in this study. This was higher than 6% reported from Jimma Hospital, Ethiopia [14] and lower than 26.6% reported from a comparative study in Tikur Anbessa Hospital, Ethiopia [18]. This variation might be attributed to less priority given for conservative management of fetal distress in Attat Hospital.

Even though the risk of maternal death after cesarean section is 5 times higher than normal vaginal delivery, there was only one death (0.4%) which is low, compared to study done in tikur anbesa (1.6%) [18]. But, the overall maternal morbidity rate was 27 (9.7%) which is slightly lower than 20% reported from Jimma

Hospital, Ethiopia. Mothers with ANC follow up have good post-operative outcome as compared with ladies with no DNC follow up (P<0.001, COR=0.16, 95% CI=(0.06, 0.935) which is similar to other studies [14].

The most common post-operative complications were respiratory tract infection 7(2.5%) and post op fever 6(2.1%) which were also the leading complications reported from a study done in Sultan Qaboos University [32], Oman. The reduction of post-operative complication might be because of routine use of prophylactic antibiotics associated with clinically important reduction in post-partum febrile morbidity, wound infection and other serious infections. The patients with postpartum hemorrhage were successfully managed with uterotonics. And there was 4(1.4%) mothers transfused with cross-mated blood in this study which is relatively very much low when compared to study done in Tikur Anbesa (19%) [14]. Low morbidity from anesthesia could be due to the use of spinal anesthesia for the majority of Cs cases. The gross Perinatal Mortality Rate (PNMR) of 64/1000 live births was not statistically higher than the rate for all deliveries, which was 73/1000 live births. This figure is lower than 120/1000 live births reported from Jimma University, but similar to 62.4/1000 live births from Tikur Anbessa Hospital, Ethiopia [14,18]. The common causes of perinatal mortality were, birth asphyxia (2.1%), APH (1.4) and prematurity (1.4%), obstructed labor (1.4) which are in similar with other studies [18].

Conclusion

Although the cesarean section rate of 27.6% observed in this review is above the 15% recommended by World Health Organization (WHO) for developing countries, the perinatal outcome is not improved. If unchecked, the rate might reach unacceptable levels. Cesarean sections performed for appropriate medical or obstetric indications are life saving for both the mother as well as the new born. But the high prevalence of Cs is not associated with improved perinatal outcome and it has risks for the mother and the neonate. Therefore to reduce the high prevalence of Cs, each case should be thoroughly evaluated to determine the possibility for vaginal delivery. As a result, this study confirms that even though the cesarean is of the most commonly performed surgical procedures today; it is not without risks. The result of this study agrees with the other authors that the routine use of prophylactic antibiotics helps reduce the morbidity associated with cesarean sections.

Recommendation

Because the previous cesarean section was the major maternal indication, it is recommended that trial of vaginal birth after cesarean section should be encouraged in appropriate cases. In addition, for those cases with more than three scars, Bilateral Tubal Ligation (BTL) should be done after appropriate counseling. Use of cardio topography for continuous fetal heart rate monitoring in labor with confirmation of suspected fetal distress through fetal acid-base study is also recommended if resource is available.

Furthermore, time has to be given for conservative management of fetal distress rather than rushing to operation theatre with a single episode of fetal heart rate abnormality. There is a need for a prospective study to evaluate the reasons for the increasing cesarean section rate in this Hospital. Since cephalopelvic disproportion is the common indication associated with increased Cs rate, the woreda, Zonal and National management bodies are responsible to prevent this problem through avoidance of malnutrition and poverty by enhancing food security.

Authors' Contributions

Authors carried out the study and participated in the design of the study, statistical analysis and the drafting of the manuscript. All authors read and approved the final version.

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