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Operative Deliveries: Indications and Post operative Complications at Mattu Karl Hospital, Oromia Regional State, south west Ethiopia

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Abstract

Introduction: The normal mechanism of labour leads to spontaneous vaginal delivery in many mothers. Under some circumstances cesarean section, vacuum assisted, use of forceps and destructive deliveries are helpful interventions in saving the lives of the mother and the new born. There is paucity of information on complication of operative deliveries and indications at Mattu Karl Hospital

Objective: The main objective of this study is to determine the proportion, indications and postoperative complications of operative deliveries in Mattu Karl hospital.

Methods: The records of all mothers who delivered operatively and with cards of full information during the period from January 2011 to Jan2013 were reviewed using pre-prepared checklist. Binary Logistic regression analysis was used to see the statistical association of the variables. The significant factors were declared at p-value <0.05.

Result: Out of the total 3346 deliveries during the study period there were 984 (29.4%) operative deliveries. Among 727 (73.9%) were cesarean section, vacuum 190(21.7%), Forceps 45(1.3%) and Destructive delivery 22(0.65%). The main indications for cesarean section were caphalopelvic disproportion 257 (26.1%). Mothers Who had malpresentation as an indication of operative deliveries are 65% less likely to have bad maternal outcome as compared to caphalopelvic disproportion with AOR: 0.35, 95% CI (0.144-0.856).

Conclusion: prolonged second stage & HDP of labour were major factors associated with immediate neonatal outcome. All stake holders should work to reduce high maternal mortality and morbidity rates by increasing ANC antenatal care follow up.

Keywords: Operative deliveries, Mattu Karl hospital, maternal outcome, fetal outcome

Introduction

Maternal death is a death of a woman while pregnant or within 42 days of termination of pregnancy, regardless of the site or duration of pregnancy; from any cause related to or aggravated by the pregnancy or its management. It varies between countries, regions, rich and poor, educated and non-educated. For instance, 450 per 100,000 live births in developing and about 30 per 100,000 in developed countries (1, 3, 5).

Forceps and vacuum are common procedures done in obstetric usually in 2nd stage of labour which is used to deliver the fetus with application pressure (3). The minimum threshold for a population and level c/s rate could be considered to lay b/n 5-10%. Best known recommended upper limit is 15% suggested by WHO in 1985 (5).

Worldwide nearly 600,000 women of reproductive age group die every year as result of complication arise from pregnancy, delivery, and puerperium on these 80% of the cases are as result of direct complication, live severe bleeding (PPH), infection, Obstructed labour, pregnancy induced Hypertension and unsafe abortion. Although operative vaginal delivery may be performed as infrequently as in 1.5% of deliveries in some countries, it may be as high as 15% in other countries (1, 6).

Caesarean section becomes a reasonable option for operative delivery towards the end of 19th century with the availability of anesthesia and procedures to control bleeding and prevent infection. The use of c/s has increased steady but variably in different country throughout the 20th century. The incidence of operative intervention has increased from less than 1% of deliveries historically to 10% at the end of 19th century and to 40% at the end of the 20th century. The continuing challenge for those responsible for the delivery of the obstetric patient is to continue to examine the indication and appropriate procedure for operative intervention (20).

Operative vaginal delivery is a vital component of basic emergency obstetric care worldwide remains an integral part of the obstetrician's duty. It may take the form of instrumental deliveries, employing obstetric forceps and vacuum extraction to shorten the second stage of labor is operative procedures destructive operations performed to achieve vaginal delivery in dysthocias with out a living fetus (21-23).

Materials and Methods

Data

Hospital records of all pregnant women who delivered in Mattu Karl hospital over the past two years period from January 2011 – January 2013 G.C were reviewed for this study. Cards of mothers who had delivered in Mattu karl hospital over 2 years period was obtained retrospectively. The data collection checklist was pre-tested before the start of actual data collection on 20 mother’s cards.

Method of Data Analysis

The data checked, cleared, and entered into SPSS version 16.0 for analysis. The descriptive analysis such as proportions, percentages, frequency distribution, and measures of central tendency were used. Initially, binary logistic regression was performed between dependent variable and each of the potential factors associated with dependent variable (independent variables), one at a time. Their odds ratios (OR) at 95% confidence intervals (CI) and p-values were calculated. Then multiple logistic regression was performed using variables that were significant at p-value<0.05 on simple binary logistic regression. Factors those were significantly associated with dependent variables.

Ethical approval was obtained from the Ethical Review Committee of the College of Public Health and Medical Science, Jimma University, Ethiopia. Permission was obtained from the Hospital Administration before commencing the data collection. Any information accessed in due course was confidentially kept.

RESULT

Maternal age

There were a total of 3346 deliveries in the study periods, among this 984 were operative deliveries among which 32 (3.3%) were in group of <18 years, 925 (94%) in age between 18-35 years and 27 (2.7%) of them were in age >35 years. Among mothers who had operative deliveries 575 (58.4) were Pimi paras, 792 (80.5%) of mothers have ANC follow up. The gestational age in which operative deliveries were done was 37-41 weeks, 893 (90.8%) Most of the pregnancies were singleton 929 (94.4%)

Table 1: Parity, ANC follow up, Number of pregnancies and Gestational age distributions who had operative deliveries at MKH in between January 2011-January 2013.

Variables		Frequency(n=984)	%
Parity	Primipara	575	58.4
	Multiparous	409	41.6
ANC follow up	ANC follow up	792	80.5
	No.ANC follow up	192	19.5
Gestational age	<37	38	3.9
	37-41	893	90.8
	>41	53	5.4
No.of pregnancy	Singleton	929	94.4
	Twin	55	5.6

Low uterine C/S was done in 690 (94.9%) of mother, 650 (89.4%) of primary c/s. Emergency C/S was done in 690 (95.7%) of mothers.

Table 2 Type, frequency and condition C/S in MKH, Jan 2011-Jan 2013

C/S		Frequency (n=727)	%
Type	Low uterine	690	94.9
	Classical	18	2.47
	C/S hysterectomy	3	0.41
	Other*	16	2.2
Frequency	Primary	650	89.41
	Repeat	77	10.59
Condition	Emergency	696	95.7
	Elective	31	4.3

Indication of operative deliveries

Among mothers who had operative deliveries 575(58.4%) were Pimi paras, 792(80.5%) of mothers have ANC follow up. The gestational age in which operative deliveries were done were more on 37-41 weeks, 893 (90.8%), Most of the pregnancies were singleton 929(94.4%). The most frequent indication for C/S were CPD 257 (26.1%), fetal distress 117(11.9%) malpresentation 91(9.2%) Previous C/S 78 (7.9%). For vacuum the commonest indication was fetal distress 100(10.2%) followed by prolonged 2nd stage 71 (7.2%) & for Forceps

fetal distress 24(2.4%), prolonged 2nd stage 16(1.6%). IUFD for destructive delivery.

Table 3 Distribution of types operative deliveries by their indications: Mattu Karl Hospital Jan 2011-Jan.2013

Indication	Types of operative delivery				total
	C/S	Forceps	Vacuum	Destructive Delivery	
CPD	257(26.1%)	-	-	-	257(26.1%)
Fetal distress	117(11.9%)	24 (2.4%)	100 (10.2%)	-	241 (24.5%)
Pervious C/S	78(7.9%)	2 (0.2%)	1(0.1%)	-	81(8.2%)
APH	48(4.9%)	-	1(0.1%)	-	49(5%)
Cord prolapse	29(2.9%)	-	-	-	29(2.9%)
Failed induction	28(2.8%)	1(0.1%)	2(0.2%)	-	31(3.2%)
Malpresentation	91(9.2%)	-	-	-	91(9.2%)
Prolonged 2 nd stage	4(0.4%)	16(1.6%)	71(7.2%)	-	91(9.2%)
IUFD/still birth	1(0.1%)	-	-	22(2.2%)	23(2.3%)
HDP	74(7.5%)	2(0.2%)	15(1.5%)	-	91(9.2%)
Total	727(73.9%)	45(4.6%)	190(19.3%)	22(2.2%)	984(100%)

Immediate fetal outcome

Among 984 mothers who undergone operative delivery 644 (65.4%) has good fetal outcome, 834(84.5%) have good maternal out come. Mothers with forceps delivery as a type of operative delivery have 1.9 times more likely to have bad fetal out comes as compared to c/s as a type of operative deliveries with COR 1.9 95%CI: (1.067,3.575). Mothers with operative deliveries prolonged 2nd stage of labor as an indication have 50% times less likely to have bad fetal out comes as compared to CPD as an indication of operative deliveries with AOR 0.5 95%CI: (0.234,0.974). Mothers with operative deliveries hypertensive disorder of pregnancy as an indication have 50% times less likely to have bad fetal out come as compared to CPD as an indication of operative deliveries with AOR 0.5 95%CI:(0.25-0.8),p=0.008 (Table 5).

Table 5: Measures of association of fetal out come with type of operative delivery & indication of operative delivery in binary & multiple logistic regressions.

		fetal out come		Total	COR[95%CI]	AOR[95%CI]
		good out come	bad out come			
Types of operative delivery	c/s	488(67.10%)	239(32.90%)	727	1	
	Forceps	23(51.10%)	22(48.90%)	45	1.9[1.067,3.5] *	2.3[.1201, 4.6]
	Vacuum	133(70.00%)	57(30.00%)	190	.9[.619,1.238]	.9[.612, 1.6]
What was the indication for operative delivery?	CPD	171(66.50%)	86(33.50%)	257	1	
	Fetal distress	141(58.50%)	100(41.50%)	241	1.4[0.98,2.0]	1.305[.85, 2.0]
	previous c/s	62(76.50%)	19(23.50%)	81	.609[.343,1.083]	.6[.334, 1.1]
	APH	26(53.10%)	23(46.90%)	49	1.8[.498,3.263]	1.8[.9, 3.3]
	Cord prolapse	16(55.20%)	13(44.80%)	29	1.6[.7-3.5]	1.6[.7, 3.5]
	failed induction	20(64.50%)	11(35.50%)	31	1.1[.5,2.4]	1.1[.5, 2.3]
	IUFD/Stillbirth	0	23(100.00%)	23	-	-
	Malpresentation	63(69.20%)	28(30.80%)	91	.9[.5,15]	.9 [.5, 1.5]
	pro 2 nd	71(78.00%)	(22.00%)	91	.6[.3, 1].	.5[.2, .97]*
	HDP	74(81.30%)	17(18.70%)	91	.5 [.2,.8]*	.5[.25,.8]**

*and ** shows significant at 5% and 1% probability level resp.

Factors associated with maternal outcome

Mothers with operative deliveries IUFD/Still birth as an indication have 7.7 times more likely to have bad maternal out comes as compared to CPD as an indication of operative deliveries with COR 7.7 95%CI (3.15-19.025).But has no statistical significant association in multiple logistic regression. Mothers with operative deliveries C/S as a type of operative delivery 90.5% times less likely to have bad maternal out comes as compared to destructive delivery as a type of operative deliveries with COR 0.095, 95%CI (0.039-0.233). Mothers with operative deliveries Forceps as a type of operative delivery 74% less likely to have bad maternal out comes as compared to destructive delivery as a type of operative deliveries with COR 0.26, 95%CI (0.088-0.755).Mothers with operative deliveries Vacuum as a type of operative delivery 94% less likely to have bad maternal out comes as compared to destructive delivery as a type of operative deliveries with COR 0.06, 95%CI (0.022-0.162). Mothers Who had malpresentation as an indication of operative deliveries are 65% less likely to

have had maternal outcome as compared to CPD as an indication of operative deliveries with AOR 0.35 95%CI (0.144-0.856) (Table -6-)

Table 6: Measures of association of maternal out come with type of operative delivery& indication of operative delivery in binary & multiple logistic regressions.

		maternal out come		Total	COR[95%CI]	AOR[95%CI]
		good out come	bad out come			
Types of operative delivery	c/s	623(85.7%)	104(14.3%)	727	.1[.03, .2]**	-
	Forceps	31(68.9%)	14(31.1%)	45	.3[.1, .8]*	-
	Vacuum	172(90.5%)	18(9.5%)	190	.1[.02, .2]**	-
indication	destructive delivery	8(36.4%)	14(63.6%)	22	1	-
	CPD	214(83.30%)	43(16.70%)	257	1	-
	Fetal distress	204(84.60%)	37(15.40%)	241	0.9[0.6, 1.5]	8(.4 , 1.4)
	previous c/s	69(85.20%)	12(14.80%)	81	.9[.4, 1.7]	8(.4, 1.7)
	APH	36(73.50%)	13(26.50%)	49	1.8[0.9, 3.7]	1.8(.9, 3.7)
	Cord prolapse	25 (86.20%)	4(13.80%)	29	0.8[.3, 2.4]	.8(.3, 2.44)
	failed induction	29(93.50%)	2(6.50%)	31	.3[.1, 1.5]	.3(0.74, 1.4)
	IUFD/Stillbirth	9(39.10%)	14(60.90%)	23	7.7[3.2, 9.0]**	-
	malpresentation	85(93.40%)	6(6.60%)	91	.4[.1, .9]*	.351(.1, .7)*
	pro 2 nd	83(91.20%)	8(8.80%)	91	.480[.2,1.1]	.381(.1, 1.0)
	HDP	80(87.90%)	11(12.10%)	91	.7[.3, 1.4]	.7(.3, 1.4)

*and ** shows significant at 5% and 1% probability level resp.

DISCUSSION

Operative delivery rate during the last two year at MKH was 29.2% which higher than study done in Addis Ababa 20 %(16).The possible reason for this discrepancies may be attributed to difference in accessibility and availability of obstetric care in Addis than Mattu and its surroundings . With regard to Cesarean section the current study findings (21%) is almost comparable with acceptable standard range which WHO 20% (14), lower than national rate in private clinics (46%) and a slightly higher than national institutional C/S rate (18%)(24). The discrepancies could be due to individual preferences as indication in private clinics and sample size difference between the current study and the national figure. Different reports has also shown that there is variation of C/S rate between urban and rural, developed and developing countries as for example China (25 .9%) and Brazil 45% (13). Although, rate of vacuum and destructive is not changed over year, forceps rate has decrement when compared with the previous year which can be attributed to preference to other operative deliveries and variation in indication (13).

C/S rate in Mattu Karl Hospital was 21%, vacuum 5.6%, forceps 1.3%, destructive deliveries 0.65%. At Tikur Anbessa Hospital C/S (10%), vacuum (6.4%), forceps (3.1%), destructive delivery (0.4%) (16).

Operative deliveries were more common in primiparas (58.4%) than multiparous (41.6%) this may be due to the fact that primiparas are associated with complications like CPD. The result seen in Jimma specialized hospital was 59.79% of operative Deliveries were among primigravidas. In Nigeria, Ahmedu Bello University, Nigeria (78.6%) of operative vaginal deliveries was among primiparas (14).

Operative deliveries were common in mothers following ANC follow up than those who didn't. In this study (80.5%) of them had ANC follow up. This may be due to the fact that high risk mother are picked during follow up and advised to deliver in health institutions and most operative procedures are used more in mothers who have ANC follow up. Study done in Gonder also showed that mothers who had no. ANC followed up been only 8.7%.

Most of mothers with operative deliveries were age groups were between 18-35(94%) at Jimma specialized hospital 72.58% of mothers were at age rate of (18-35) (14), at Tikur Anbessa Hospital 57% of mother were at age rate 20-35 years. (16)

The leading inductions in this study were CPD (26.1%), fetal distress (11.9%), malpresentation (9.2%), HDP (7.4%) previous C/S (7.9%) APH (4.9%), cordprolapse (2.9%). Study in Jimma University hospital, CPD(24.1%), Fetal distress (22.1%), malpresentation (16.1%), previous C/S(14.6%), APH (10.5%) in Tikur Anbessa regeat C/S 32.4%, CPD 29.1%, APH 14.6% at Gonder CPD (54.3%), APH(14.3%). The most common indications of operative vaginal deliveries for vacuum were Fetal distress (10.2%), prolonged 2nd stage (7.2%), , HDP (1.5%) and for forceps fetal distress (2.4%), Prolonged 2nd stage (1.6%) as well study done in Nigeria, Ahmed Bullo University hospital ,the most common indication for operative vaginal deliveries were prolonged 2nd stage of labour followed by Pre eclampsia /Eclampsia (14).

The most common maternal post operative complication were maternal post operative pyrexia (42%), PPH (34%), Genital laceration (16.7%) which is mostly in destructive delivery while Most fetal complications were low APGAR (34.5%) followed by scalp laceration (0.09%). In Tikur Anbessa PPH (11%), infection (10%), PPH is higher when we compare to Tikur Anbessa and Jimma ,the reason for this could be most mothers were referred from peripheries after they develop obstructed labour/ CPD which predisposes for infection and uterine atony which is a risk for PPH and post operative pyrexia.

The study also find out that malpresentation as indication of operative delivery has negative on maternal out come as compared to CPD because it has additional effect to all the complication of CPD. On the other hand prolonged second stage and HDP as an indication of operative delivery has negative effect on fetal out come as compared to CPD because the HDP has poor oxygenation effect(fetal distress) due to early placental detachment, risks of prematurity, growth restriction, or still birth (2).

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Authors' contributions

All authors read and approved the final version.

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