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The Use of Active Management of Third Stage of Labor in Baghdad Teaching Hospital

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Abstract: Objective: To observe and document the practices and malpractices in the application of steps of AMTSL and explore factors associated such application to eliminate the risk of PPH in Baghdad teaching hospital. **Patients and Methods:** 200 women are randomly selected according to certain inclusion criteria were observed during the 3rd stage of labor in order to document practices and malpractices in the application of AMTSL according to FIGO/ICM definition using an observation checklist that record practices and malpractices documented 39 variables for each patient. **Result:** AMTSL appears to be widely applied in labor word in Baghdad teaching hospital according to FIGO/ICM definition as following: use of uterotonic drugs in 98%, CCT in89%, fundal massage immediately after delivery of the placenta and uterine palpation in the next 30min. after delivery of the placenta were applied for almost all women in our study i.e. 100%, with 23%of malpractices observed. **Conclusions:** In Baghdad teaching hospital, practices for management of third stage of labor were largely in accordance with the FIGO/ICM definition of AMTSL, and these can be applied &observed in other hospital& health centers.

Keywords: Active Management, Third Stage of Labor, Mternal and Fetal outcomes, Baghdad,

INTRODUCTION

Labor brings a great joy and happiness to majority of families, but maternal and fetal outcomes are not always good, and are frequently suboptimal. Maternal death is rare in western world, but remain frequent in many developing countries, in which complications of labor account for a significant proportion of maternal death , because in these countries ,child birth is often unattended. (Kean, L. *et al*., 2011)

Much effort has been directed at defining why women die? three quarters of maternal deaths are due to complications directly attributable to the pregnancy such as hemorrhage, HT, embolus, infection or anesthetic causes. The remaining quarter are due to conditions that may be worsened by the pregnancy such as heart disease. (Kean, L. *et al*., 2011)

According to the World Health Organization (WHO), maternal death is defined as the death of a woman while pregnant or within 42 days of termination of pregnancy, irrespective of the duration and site of the pregnancy, from any cause related to or aggravated by the pregnancy or its management but not from accidental or incidental causes. (Tharaux, C. *et al*., 2005; Collins, S. *et al*., 2008)

Generally, there is a distinction between a direct maternal death that is the result of a complication of the pregnancy, delivery, or management of the two, and an indirect maternal death that is a pregnancy related death in a patient with a pre-existing or newly developed health problem unrelated to pregnancy. Fatalities during but unrelated to a pregnancy are termed accidental, incidental, or non-obstetrical maternal deaths. (Tharaux, C. *et al*., 2005; Collins, S. *et al*., 2008)

Late maternal deaths: Deaths occurring between 42 days and 1 year after termination of pregnancy, miscarriage or delivery that is due to direct or indirect maternal causes. (Collins, S. *et al*., 2008)

Parenthood brings with it the strong desire to see our children grow up happily and in good health. This is one of the few constants in life in all parts of the world. Yet, even in the 21st century, we still allow well over 10 million children and half a million mothers to die each year, although most of these deaths can be avoided. Seventy million mothers and their newborn babies, as well as countless children, are excluded from the health care to which they are entitled. Even more numerous are those who remain without protection against the poverty that ill-health can cause. (Phumaphi, J. *et al*., 2005)

METHODS

Our study observed and documented practices applied to 200 women regarding the steps of AMTSL, according to FIGO/ICM definition in the labor ward in the 4th floor in Baghdad Teaching Hospital in Baghdad/ Iraq using an observation checklist that record practices and malpractices documented 39 variables for each patient.

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The protocol of the study was certified by Obstetrics and Gynecology committee of Arab Board for medical specialization.

The women in our study whom met our inclusion criteria were randomly selected between the 1st of July 2010 and the 1st of January 2011 at different time in days and nights.

Inclusion criteria of patient's selection are:

1. Singleton
2. Term pregnancy
3. Cephalic presentation
4. Patient delivered vaginally.
5. Alive baby
6. No medical risk like HT, DM, blood disease …….

Exclusion criteria:

1. Instrumental delivery as forceps or ventouse delivery.
2. Caesarian delivery.
3. Breach delivery.
4. Any medical disease of the mother.
5. Preterm labor.
6. Intrauterine fetal death.
7. Multiple pregnancies.

For each patient a specific questionnaire was filled and verbal consent was obtained from all included women.

A brief history was taken and the patient was examined to ensure that patient met our inclusion criteria.

After delivery of the baby, the woman included in our study, and the attendance of 3rd stage of labor observed without any notification.

The following were observed and put in a check list:

*The steps of 3rd stage of labor were recorded which include:

- Use of uterotonics; type, dose, route &time of administration.
- CCT
- Uterine massage immediately after placental delivery.
- Uterine palpation over the next 30min.to assesses the need for further massage.

*Malpractices as fundal pressure, cord traction without uterine support and uterine massage before placental delivery.

*Complications like PPH and retained placenta.

*Who manage the 3rd stage of labor; doctor, midwife or both of them share the management and care of the women.

All of the above recoded again without any notification to the doctor or midwife.

RESULTS

The ages of women in which most deliveries occurred were as expected; within 20- 34 yr. old, the mean age 25 yr.; the range from 14 to 45yr. The mean parity was 1.4, and nulliparous made about 31% of observed women.

Although not all of the steps of AMTSL were applied, but all women observed in our study received at least 2 steps of the proper practices of AMTSL in order to reduce the risk of PPH and its related morbidities and mortalities, especially the use of uterotonics (mainly oxytocin), fundal massage immediately after placental delivery and uterine palpation in the 1st 30min. of placental delivery.

The main type of uterotonic used in the 3rd stage of labor is oxytocin in about 84.2 % of women, even in different doses ; 5 , 10 , 15 , 20 or 40 units ,and different modes of administrations (Infusion, I.V,I.M) and also in different timing, while misoprostol was not used at all during the time of study.

Methergin was used instead of oxytocin in 16% of patients; there were no specific indications for its use instead of oxytocin.

Malpractices in AMTSL as: no use of uterotonics, cord traction without uterine support, fundal pressure and fundal massage before placental delivery observed and documented in 2%, 6%, 7% and 25.5% of cases respectively. Such malpractices noted mostly when joiner staffs of doctors or midwives managed the 3rd stage of labor.

There was more than one malpractice applied at the same patient, so the total number of malpractices for the 200 deliveries was 47 patients (23.5), observed in junior staff of doctors and midwives.

But 3% of cases i.e. 6 out of 200, develop PPH, all of them were without risk factor, fife cases due to uterine atony, need added uterotonics and further uterine massage without need for blood transfusion, all of these fife cases were managed inappropriately in the 3rd stage of labor, and only one case needs examination under GA to repair a

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cervical tear with need for one unit of blood transfusion.

Epidemiological data

Table 1: Age of women observed (N=200)

Age	Number	%
<20 year	41	20.5
20-34 year	119	59.5
>35 year	40	20
Total	200	100%

Table 2: Parity of women observed (N=200)

	Number	%
0	61	30.5
1	59	29.5
2-4	54	27
>5	26	13
Total	200	100%

Table 3: History of PPH in women observed (N=200)

	Number	%
Yes	16	8
No	184	92
Total	200	100%

Table 4: AMTSL practices applied

	Yes		NO	
	Number	%	Number	%
1- Use of uterotonic drugs	196	98	4	2
2- CCT	178	89	22	11
3-Fundal massage immediately after placental delivery	200	100	0	0
4-Uterine palpation after placental delivery in the 1st 30 min.	Once	61	30.5	
	2 +	139	69.5	
Total	200			

Table 5: Types of uterotonic drugs

	Oxytocin		methergin		Misoprostol		
	Number	%	Number	%	number	%	Total
Used for observed women	165	84.5	31	15.8	0	0	196
Mode of administration							
*IV bolus	15	9.1%	3	9.7%			
*IV infusion	118	71.5%					
*both routes in same patient	32	19.4%					
*IM			28	90%			
*Oral, rectal or vaginal							
Timing of administration							
*in 1min.of delivery	115	69.7%	2	6.5%			
*in 3min. of delivery	36	21.8%	2	6.5%			
*after placental delivery	14	8.5%	27	87%			
Total	165	100	31	100	0	0	

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Table 6: Malpractices in application of AMTSL in the observed women (N=200)

	Yes		No	
Malpractices	Number	%	Number	%
1.No use of uterotonics	4	2%		
2.Cord traction without uterine support	12	6%	188	94%
3.Fundal pressure	14	7%	186	93%
4. Uterine massage before placental delivery.	51	25.5%	149	74.5%

Table 7: Who conducted the 3rd stage of labor? (N=200)

	Number	%
Midwife	72	36
Doctor	9	4.5
Both of them	119	59.5
Total	200	100

Table 8: Complications of the 3rd stage of labor in the observed women (N=200)

Complications	Number	%
PPH	6	3
Retained placenta	1	0.5

DISCUSSION

The AMTSL according to FIGO/ICM definition appears to be widely applied in labor ward in the 4th floor in Baghdad teaching hospital, in which about 900 women delivered monthly and 110 doctors trained in the obstetric and gynecological department annually.

Observing doctors and midwives affects performance and introduces bias. In our study, observation bias was offset by randomly selected women for observation of steps of AMTSL at different times at days and nights over six months.

In our study, the 3rd stage of labor managed by both doctors and midwives in 60% of the observed women. Doctors are mainly senior house officer. Doctors attended 3rd stage of labor alone in 5%, while midwives attended 3rd stage of labor alone in 36% of observed cases.

In Stanton, C. *et al*., 2009; study in seven developing countries; Benin, Ethiopia, United Republic of Tanzania, Indonesia, El Salvador, Honduras and Nicaragua in2005-2006, found that physicians or medical interns manage most deliveries (70%-92%) in Central American countries, while midwives and nurses are responsible for most deliveries in countries of sub-Saharan Africa (61%-94%).

In our study , 8% of observed women had a history of PPH, while the application of AMTSL is for all women ,not only for patients at high risk of PPH ,and practices of AMTSL applied in table no. 4 confirm this ,in which 98% received uterotonic drugs , CCT applied correctly in 89%, fundal massage immediately after delivery of the placenta and uterine palpation in the 1st 30 min. following placental delivery applied for almost all of women i.e. 100%,suggesting sufficient surveillance of women during the hours when most maternal deaths occur worldwide (Stanton, C. *et al*., 2009), but 3% of cases i.e. 6 out of 200, develop PPH, all of them were without risk factor.

In Stanton, C. *et al*., 2009; study in seven developing countries, the use of AMTSL appears to vary greatly between countries studied, but AMTSL not to be selectively practiced for women considered at high risk, as prophylactic use of uterotonic drugs, generally oxytocin, is nearly universal, it is lowest in El Salvador. But correct use of AMTSL was found in only 0.5% to 32% of observed deliveries. In fife countries less than 5% of deliveries met FIGO/ICM definition. Few women are benefiting even from the correct use of uterotonics and fewer still from the additional components of AMTSL. Great variation in the use of CCT is present worldwide, it was lowest in Nicaragua 17.9%. The practice of fundal massage immediately after delivery of the placenta and follow up palpation is low in most countries. Several counties have uncleared polices including contradictory or outdated treatment making 1.4 million deliveries do not receive correct AMTSL and lost opportunities to prevent PPH.

In Penney G.*et al* study in Scotland in 2005, 209 cases examined, 96% received oxytocin as prophylactic in the 3rd stage of labor in order to prevent PPH. These results are comparable with our study.

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In Cherine, M. *et al*., 2004; study in Egypt in 2005, AMTSL applied correctly for only 15% of cases, although PPH is the first cause of maternal mortality in the same hospital, in a study done 1yr. before by Khalil, K. *et al*., (2005)

In Turan, J.M., (2006) Study in three maternity hospitals in Istanbul, Turkey in 2006, documented the use of oxytocin in all of deliveries during the 3rd stage of labor. This result is comparable with our study.

Guidelines from around the world have varied widely in their selection of oxytocic agent, early cord clamping, cord traction, uterine massage, and cord drainage. (Winter, C. *et al*., 2007)

In Aflaifel, N. *et al*., 2012; study in 2012 although It has taken 50 years since AMTSL was first described for it to become clear that the oxytocic agent has the greatest effect, this study showed that during AMTSL, cord traction has little, if any, part to play in reducing severe PPH. It also showed that in sites using oxytocin alone for prophylaxis, cord traction reduced the length of the third stage by six minutes but had no effect on manual removal rates.

The most common mode of administration of oxytocin in the observed deliveries in the 3rd stage of labor is the intravenous infusion in about 72% of cases, and this may be due to that the patient already on I.V fluid with oxytocin either for augmentation or induction of labor, or on IV fluid alone for maintaining rehydration of patients especially in multipara women. while 9%and19% of cases receive oxytocin by bolus I.V and in both (IV bolus and infusion at the same time) respectively, the later used mostly for cases at risk of developing PPH as multiparas, induction of labor, history of PPH, prolonged labor, or it may be due to practices differences, preferences or experiences of person who manage the 3rd stage of labor.

Regarding the time of administration of oxytocin, it was given correctly in 1min. of delivery in 70% of cases and if extended for 3min. of delivery, it added 22%, so collectively 92% of women observed in our study receive oxytocin in the correct time, but only 8.5% women receive oxytocin after placental delivery.

Methergin used as 2nd utero-tonics for AMTSL in our hospital, used for 16% of cases receiving uterotonic.

In our study the oxytocin seems to be preferable on methergin because of its safety with fewer side effects. Methergin has side effects as nausea, vomiting and hypertension and it experienced in most of women with methergin use in our study.

Methergin was given IM and IV injection in 90% and 10% of observed women receiving methergin only, respectively in a dose of 0.4mg; as in table no. 5, with 87% receive it in inappropriate timing i.e., after placental delivery and no deliveries were managed in the correct dose (0.2 mg). One of the cases receiving methergin IV complicated by retuned placenta which need removal of placenta under GA.

In Stanton C.*et al* study (Stanton, C. *et al*., 2009) in seven developing countries it was found that oxytocin is preferable on methergin because of side effects of methergin and found that for example in Tanzania 0.5 mg of methergin was considered as correct dose as it is the only type of ampule available, so no deliveries were managed in the correct dose 0.2 mg and also the incorrect use of uterotonics takes the form of incorrect timing like after placental delivery. 98-100 % of women who receive uterotonics during the 3rd or 4th stage of labor receive oxytocin alone or in addition to methergin.

In Cherine, M. *et al*., study in Egypt (Cherine, M. *et al*., 2004) the 3rd stage of labor managed by methergin in 14% of observed women and it associated with nausea, vomiting, headache, and raised blood pressure. This result is comparable with our study.

In our study, misoprostol was not available in our hospital at time of the study and even when it is available from other resources , it is not used in management of 3rd stage of labor at all, but used for high risk patient with obstetrical complication as twin pregnancy , PET, DM, ... And in combination with oxytocin, and those patients are already excluded from our study, syntometrin is not available and other types of PG.

InStanton C.*et al* study (Stanton, C. *et al*., 2009) in seven developing countries; misoprostol used minimally in Benin and Indonesia, and it was rarely available or restricted in some setting because of its use as abortificient. Syntometrine and other prostaglandins were not available in any of the seven countries. This result is comparable with our study.

In Joy SD, *et al*., study (Joy, S. D. *et al*., 2003) and Gülmezoglu, A.M. *et al*., (2001) suggested that the observed less efficacy of misoprostol compared

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with injectable uterotonic may be due to the later achievement of peak plasma levels with oral and sublingual administration of misoprostol: 30 minutes versus 1 to 2 minutes for IM or IV administration of oxytocin. All of the reviews concluded that misoprostol was not as effective as oxytocin for the prevention of PPH and that maternal pyrexia was a significant adverse effect.

But in 2007, Parsons SM *et al* study (Parsons, S. M. *et al*., 2007) comparing 800 micrograms of misoprostol administered rectally with 10 IU of oxytocin administered IM found these two agents to be equally effective in minimizing blood loss during the third stage of labor. There was more pyrexia in the misoprostol group.

In Aflaifel N.*et al* study in 2012, the second choice after oxytocin will be misoprostol, which, although slightly less effective than oxytocin, has the benefits of stability and the option of oral or sublingual administration.

So our study suggest ensuring the availability of misoprostol in our hospital to make our training doctors get experience in using misoprostol for low risk pregnancies and its outcome because they will serve later in their medical life in places where oxytocin is not available or not properly stored.

In our study, malpractices in AMTSL observed in 23.5% of cases, noted mostly when joiner staffs of doctors or midwives managed the 3rd stage of labor.

In Stanton C.*et al* study (Stanton, C. *et al*., 2009) in some countries cord traction without uterine support and the application of fundal pressure following the delivery of the fetus were common. At least one of these two harmful practices was seen in 48-94 % of the observed deliveries in the seven developing countries.

In Cherine M *et al* study in Egypt (Cherine, M. *et al*., 2004) fundal pressure was performed in 36% of observed deliveries with uterine exploration, which can cause infection and shock was performed routinely in 11% of observed deliveries.

So, malpractices in our study appear to be lower than in other developing countries.

Although Baghdad teaching hospital is a central referral teaching hospital, but the application of AMTSL would not be representative for other hospitals, health centers and communities in Iraq.

The above study &questionnaire may be used for observation of the application of AMTSL & will reveal areas of defects or deficiencies which can be corrected in different hospitals, health centers and midwives home deliveries in order to eliminate the risk of PPH.

CONCLUSION

In Baghdad teaching hospital, practices for management of third stage of labor were largely in accordance with the FIGO/ICM definition of AMTSL.

RECOMMENDATIONS

Our study recommends encouraging proper practices, completely eliminating malpractices, training of junior doctors and midwives, and insisting on never to leave women in the 3rd stage of labor alone. Also, we would like to suggest ensuring availability of misoprostol in hospitals.

We think our study can be applied in other hospitals & health centers, in order to observe the steps of AMTSL applied to women in hospitals other than tertiary center to document practices and malpractices in order to decrease the risk of PPH, mothers' morbidities and mortalities.

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