Published in final edited form as:

Int J Gynaecol Obstet. 2004 October ; 87(1): 54–58. doi:10.1016/j.ijgo.2004.05.013.

Management of the third stage of labor in an Egyptian teaching hospital

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Abstract

Objectives—The study describes normal labor practices in an Egyptian teaching hospital for the first time, where postpartum hemorrhage is the leading cause of maternal mortality. Third-stage management patterns are described and compared to evidence-based medicine. Reasons for third-stage practices observed are explored.

Study design—176 normal births were directly observed. Women were interviewed postpartum and study findings were shared with providers.

Results—Third-stage active management was correctly done for 15% of women observed. Most common deviations for the remaining 85% were: giving uterotonic drugs after placental delivery (65%) and without cord traction (49%). Passive management was not done for any observed delivery.

Conclusions—The preventive role actively managing the third stage can provide against postpartum hemorrhage was lost to the majority of the deliveries observed. Obstacles to adopting protocols shown to reduce hemorrhage should be explored, given the contribution of postpartum hemorrhage to maternal deaths in Egypt.

Keywords

Third stage; Active management; Postpartum hemorrhage; Egypt

1. Introduction

Worldwide, around 515,000 women die annually from maternal causes [1], many within 4 h of delivery, often from postpartum hemorrhage following uterine atony [2,3]. Postpartum hemorrhage deaths constitute 10–60% of all maternal deaths [2], making hemorrhage the leading cause of maternal death worldwide. Most deaths occur in developing countries where women may receive inappropriate care during labor, delivery or during the postpartum period [4].

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Maternal mortality and morbidity are avoidable with effective obstetric interventions [5]. The challenge is ensuring low-cost procedures of proven benefit as standardized guidelines. Relying on risk factors to identify women at risk for hemorrhage has not decreased postpartum hemorrhage mortality, as two-thirds of such cases globally occur in women with no identifiable risk factors [6]. The literature suggests where maternal mortality from hemorrhage is high, evidence-based practices that reduce hemorrhage incidence, such as active management of the third stage of labor, should always be followed [7].

Egypt has an improved but relatively high maternal mortality ratio of 84 maternal deaths per 100,000 live births [8], although 60% of births are medically assisted and 49% are facility-based [9]. Postpartum hemorrhage is the leading factor contributing to 27% of maternal deaths, with poor obstetric management cited as the most frequent avoidable factor, contributing to 43% of maternal deaths [8].

This is the first study documenting facility-based obstetric practices for normal labor in Egypt; overall study objectives included examining the extent to which observed practices were standardized and evidence-based; identifying barriers to adopting evidence-based guidelines for normal delivery, and exploring women's perceptions. This paper specifically examines the extent to which third-stage management matched practices shown to prevent postpartum hemorrhage. Other study findings are reported elsewhere [10,11]. The facility studied offers private and public care; recipients are representative of Egyptian women presenting for delivery.

In the Arab world, most research efforts and programmatic interventions have understandably focused on complicated deliveries. However, globally normal deliveries represent 85% of births. Few studies have documented routine facility practices for normal labor in developing countries [12,13]. Excepting data from Lebanon by interviewing providers [14] and observations of midwives in Morocco [15], little is known regarding facility-based normal labor in the Arab world. We were unable to find data regarding actual (vs. reported) third-stage management in Egyptian facilities.

Third-stage labor during which the uterine muscles contract and the placenta gradually separates from the uterine wall can be managed either passively or actively. The volume of blood loss depends on how quickly this occurs. If the uterus becomes atonic and does not contract normally, blood vessels at the placental site cannot constrict adequately and severe bleeding results [4]. Passive management depends on normal physiological processes to separate and deliver the placenta without interference. Active management involves giving a uterotonic drug within 1 min of the birth and before placental delivery, early clamping and cutting of the umbilical cord and applying controlled cord traction [4]. These three interventions hasten placental delivery by increasing uterine contractions, decreasing blood loss and preventing postpartum hemorrhage by averting uterine atony [4]. Active third-stage management is currently recommended as protection against postpartum hemorrhage [7]. Our study categorized third-stage management in 176 observed deliveries according to adherence to these steps.

2. Methods

Four obstetricians, a neonatologist, a public health physician, an anthropologist and a statistician developed a multi-faceted observational methodology to document routine normal labor practices. The study site is the largest public sector maternity teaching hospital in Egypt, with a caseload of 20,000 deliveries annually. The study aimed to observe 150–200 laboring women from arrival to discharge. After obtaining informed consent, labors and deliveries were individually observed and documented by 12 mid-level female obstetricians, not on the facility's staff, using a 163-question, 537-variable checklist [11], between

October 10th and November 6th, 2001. 176 labors were documented entirely and 12 in part, yielding 672 h of uninterrupted observations. To recruit women expected to experience a normal labor, women were included at arrival to the emergency room, if actively laboring with a 3–6 cm cervical dilatation, with a single, vertex-presenting full-term fetus and with complication-free obstetric histories. Observations were done in rotating 8-h shifts, for 28 consecutive days and nights. Neonatal resuscitation procedures and general ward activities were also documented. Timing, route and dosage of ecobolic administration in relation to birth of the baby and placenta delivery were recorded, as well as early clamping and cord traction if done. Appropriateness was categorized according to provider adherence to these steps. Women were interviewed postpartum using a semi-structured interview [11]. Findings were shared with the providers, and reasons for observed practices explored.

General statistics on patient load were copied from hospital registers. Observers were recruited from obstetric hospitals in Cairo, interviewed and trained prior to the study. A 3-day pre-test followed 5 days of training. Frequency distributions and cross-tabulations were done using the Statistical Package for the Social Sciences (SPSS).

3. Results

Postpartum hemorrhage was the most frequent cause of maternal death at the study site in the year preceding the study (facility records) (Table 1). Table 2 shows appropriateness of observed third-stage management. Passive management was never done. Active management was appropriately done for only 15% of women observed. Table 3 shows third-stage management deviations from standard guidelines for 85% of deliveries observed. The most common reasons were giving uterotonic drugs after rather than before delivery of the placenta (65%), without concurrent use of controlled cord traction (49%). Table 4 shows facility caseload during data collection. The mean number of cases managed per provider per day was 8. Table 5 shows parity of women observed.

Discussions with providers showed that several factors contributed to the inappropriate practices documented. First, the facility had written protocols in place for obstetric emergencies but not for normal vaginal delivery. Secondly, providers in training poorly understood steps of passive and active management. Some apparently believed that passive management meant not giving a uterotonic drug, even if early clamping and cord traction were done. Many providers were not aware of the contribution of postpartum hemorrhage to maternal mortality in Egypt, thus choosing to manage the third stage in what they believed was passive management (but which in fact included components of active management). This is substantiated by our observation that an ecobolic was not given to 19% of the inappropriately managed women (Table 3), while no women were actually managed passively. Some providers reported a misplaced fear of causing placenta retention if an ecobolic was given before its delivery, indicating a lack of understanding of active management's mechanism. Providers saw high case-load as the obstacle preventing quality care.

4. Discussion

We found no other studies comprehensively quantifying physicians' facility-based practices for normal labor from the Arab World or elsewhere. The practices described could not have been documented accurately without directly observing deliveries. While of value, interviews are subject to recall and reporting bias, thus needing cautious interpretation. Record audit is problematic where records are incomplete or lack the information required. Using a carefully designed observation checklist minimized these biases. The steps taken to avoid observation bias and inter-observer variability are described elsewhere [11].

The study's documentation of practices rather than clinical outcomes was deliberate. Documenting process measures is helpful in identifying healthcare deficiencies [16]. Where processes are supported by research-based evidence, their measurement provides a valuable indicator of quality of care. The benefits of evidence-based procedures for third-stage management are well-documented [7]. We therefore focused on recording the hitherto undocumented management pattern rather than its clinical consequences.

Several large-scale, randomized controlled studies have compared the outcomes of active and passive management of third-stage labor. These show that actively managed women experience significantly less postpartum hemorrhage, a shorter third stage, reduced postpartum anemia, less need for blood transfusion or therapeutic oxytocics [7]. Administration of oxytocin before delivery of the placenta, rather than afterwards, decreases incidence of postpartum hemorrhage, amount of blood loss, need for additional uterotonics and blood transfusion with comparable third-stage duration and with no increased incidence of retained placenta [17]. A recent Cochrane Collaboration review concluded that active management should be the routine management of choice for women expecting a vaginal delivery in a maternity hospital [7]. In our study, passive (expectant) placenta delivery was never done (Table 2). Some deliveries were managed in what the attending physician apparently believed was passive management but which in fact included components of active management; 19% of women whose third stage was inappropriately managed were not given ecbolics, although cord traction and early cord clamping were both done (Table 3). This suggests either provider preference for some active management components or poor understanding of internationally recognized procedures for active and passive management.

Oxytocin was given to 98% of the 148 women receiving ecbolics. Fifty (34%) were given the ecbolic at the point specified by active management protocols, i.e., before the delivery of the placenta and within 1 min of delivery. However, for the remaining 98 women, it was given incorrectly, either after delivery of the placenta (97 women) or more than 1 min after delivery (1 woman) (Table 3).

Observations revealed that cord traction and early clamping were not done in spite of administration of uterotonic drugs in 49% and 7%, respectively, of observed deliveries where third-stage management was not appropriately followed (Table 3). Early clamping and cord traction are associated with a shorter third stage, lower mean blood loss [18] and lower incidence of retained placenta [19]. Early clamping reduces mother-to-baby blood transfusion. Giving uterotonic drugs without early clamping accelerates this transfusion, and may disturb the physiological equilibrium of the blood volume within the feto-maternal unit and causing a variety of undesirable effects in the neonate [20].

5. Conclusions and recommendations

Providers perceived caseload as the leading challenge to quality care. The caseload observed included obstetric emergencies, high-risk cases and C-sections, in addition to normal deliveries. Moreover, physicians are responsible for many nursing tasks (cannula insertion, etc.). Cases are not equally distributed over the day, causing staff overloading at peak intake. While the heavy caseload is, to an extent, a compelling explanation for some observed practices, the research team nevertheless concludes that the presence of written protocols for normal labor, efficient task distribution and stringent training of junior providers would largely eradicate the inappropriate third-stage management observed.

The practices described here are relevant beyond the study site. The global incidence of post-partum hemorrhage and the possibility that providers are not following established guidelines in uncomplicated labor and deliveries are powerful incentives to examine routine

practices and explore obstacles preventing adoption of stringent protocols for normal labor in general, and third-stage management in particular, in similar developing countries.

Directly observing providers allows for documentation of practices that are difficult or impossible to quantify by other means. This approach revealed an unexpected level of third-stage mismanagement, with loss of the protective value that active management provides against postpartum hemorrhage, in the majority of the deliveries observed in an influential teaching facility. The absence of written guidelines for normal labor in general and third-stage management in particular, poor understanding of providers, particularly junior staff, regarding significance and sequence of active management steps and a misplaced fear of causing placenta retention may all have played a role. If similar mismanagement pervades other obstetric facilities (currently unexplored), this could partially explain postpartum hemorrhage incidence in Egypt.

Maternal deaths due to hemorrhage are a global problem and are not particular to Egypt. Conveying the importance of active third-stage management and emphasizing the sequence, mechanism and contribution of each of the steps would encourage providers to follow evidence-based best practice. Written protocols should be available in the labor ward. It is hoped that this quantification of inappropriate practice would serve as an impetus to large-scale adoption of standardized guidelines for third-stage management in Egypt.

Acknowledgments

The study was funded by the Ford Foundation, the American University in Cairo's Social Research Center, the Reproductive Health Working Group and The Population Council.

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Table 1

Causes of maternal death at the facility, 2001

Cause of maternal death	Number of deaths
Postpartum hemorrhage	4/21,052 ^a
Ruptured uterus	2/21,052 ^a
Eclampsia	1/21,052 ^a
Pulmonary embolism	1/21,052 ^a
Abruptio placentae	1/21,052 ^a
Total	9/21,052 ^a

^aTotal number of deliveries at facility (2001).

Table 2**Management of the third stage of labor**

Active management	26/176	(15)
Passive management	0/176	(0)
Inappropriately managed	150/176	(85)

Table 3

Reason for categorizing third-stage management as inappropriate

		(%) ^a
No uterotonic drugs given	28/150	(19)
Cord traction not done	74/150	(49)
Early clamping of cord not done	10/150	(7)
Uterotonic drugs given after delivery of placenta	97/150	(65)
Uterotonic drugs given later than 1 min following delivery of baby	1/150	(1)

^aThese do not add up to a 100 as some cases had more than one reason (41% had two reasons).

Table 4

Average caseload per provider and by bed per day

Hours (shift)	Average number of patients	Average number of patients per provider	Average number of patients per bed over the entire shift
08:00–16:00	38	3.2	2.1
16:00–00:00	31	2.6	1.7
00:00–08:00	25	2.1	1.4
Total 24	94	7.9	5.2

Number of beds: 18.

Number of providers: 12.

Table 5

Parity of women observed

		(%)
0	64/188	(34)
1-2	99/188	(53)
3-5	21/188	(11)
6-8	2/188	(1)