



THIRD STAGE OF LABOUR: EXPECTANT VS ACTIVE MANAGEMENT

Dr. Vaibhav Patole

Department of Obstetrics and Gynaecology, B. J. G. M. C. & S. G. H. Pune

Dr. Uma N. Wankhede*

Department of Obstetrics and Gynaecology, B. J. G. M. C. & S. G. H. Pune
*Corresponding Author

ABSTRACT

Introduction: The present study aimed to assess the effect of active management of the third stage of labour on blood loss, post-partum haemorrhage and other maternal complications of third stage of labour as compared to routine expectant management of third stage of labour.

Materials & Methods: A hospital based comparative study was conducted at Department of Obstetrics and Gynaecology, B.J. Government Medical College and Sassoon hospital, Pune, for a duration of 1 year (Feb 2015 to Feb 2016). A total of 200 consecutive females undergoing vaginal delivery at our hospital were taken in the study after informed consent. The study subjects were randomized into either of the two groups: Study Group (100 subjects): women who received 10 units of pitocin IM immediately after the delivery of the head of the baby as active management; and control group (100 subjects): women who received 10 units of pitocin IM after delivery of placenta and membranes. Comparison between the groups were made in terms of blood loss, post-partum haemorrhage and other maternal complications.

Results: Mean blood loss and duration of third stage was significantly lesser in subjects of active group (167.5 ml vs 193.4 ml; 12.2 vs 17.6 mins; $p < 0.05$). No difference was observed between two groups on the basis of birth weight, placenta weight and APGAR score at 5 minute ($p > 0.05$). Incidence of PPH was observed as 2% and 3% in active and expectant management group ($p = 0.89$). Oxytocin requirement of > 10 IU after placenta expulsion, was observed in 2% subjects in active group and 7% subjects in expectant group ($p = 0.08$).

Conclusion: The active management of the third stage of labor decreases blood loss and also duration of third stage of labor as compared with expectant management, however no difference was seen in respect to incidence of PPH. It is thus reasonable to advocate the active management of the third stage of labor, especially in a developing country like our, where prevalence of anaemia among females is very high.

KEYWORDS : Active management, Expectant Management, Post-partum haemorrhage, Third stage of labour

INTRODUCTION

The third stage of labour is that period from delivery of the baby until delivery of the placenta. After delivery of the baby and cessation of umbilical cord pulsation the placenta separates from the uterine wall through the decidua spongiosa and is delivered through the birth canal. The placenta separates as a result of capillary haemorrhage and the shearing effect of uterine muscle contraction. The degree of blood loss associated with placental separation and delivery depends on how quickly the placenta separates from the uterine wall and how effectively uterine muscle contracts around the placental bed during and after separation¹.

There are two quite different approaches to the clinical management of the third stage - expectant management and active management, and these have been the subject of a number of recent critical reviews^{2,5}.

Expectant management involves waiting for signs of separation and allowing the placenta to deliver spontaneously or aided by gravity or nipple stimulation. In contrast, with 'active' management the clinician chooses to intervene in this process by using the following interlocking interventions: (i) Administration of a prophylactic oxytocic after delivery of the baby, and usually also; (ii) Early cord clamping and cutting, and; (iii) Controlled cord traction of the umbilical cord. These interventions may be implemented routinely and prophylactically in an attempt to reduce the blood loss associated with the third stage of labour and to reduce the risk of post-partum haemorrhage (PPH) (> 500 ml) or severe PPH (> 1000 ml).

Haemorrhage is the main cause of maternal death in India. It has been estimated that at least one third of the maternal deaths are due to haemorrhage - the majority due to postpartum haemorrhage^{6,7}. PPH is therefore the most important complication of the third stage of labour. It is perhaps surprising that, as yet, no consensus exists amongst clinicians concerning the best way to prevent post-partum haemorrhage, i.e. the optimum routine prophylactic management of the third stage of labour.

The present study was thus planned to assess the effect of active management of the third stage of labour on blood loss, post-partum haemorrhage and other maternal complications of third stage of labour as compared to routine management of third stage of labour.

MATERIALS AND METHODS

Study Design: A hospital based comparative study

Study Duration: February 2015 – February 2016

Study Area: Department of Obstetrics and Gynaecology, B.J. Government Medical College and Sassoon hospital, Pune.

Inclusion Criteria

1. 34-41 weeks of gestation
2. Maternal age between 18 and 45
3. Singleton pregnancy
4. Vaginal Delivery

Exclusion Criteria

1. Women who enter delivery room during the active phase of labor (cervical dilatation greater than 5 cm)
2. Coagulation defects
3. VAS score > 3 (pain score)
4. Women with early PPH
5. Suspected placental abruption
6. Multiple Gestation

Sampling Technique & Sample Size:

Based on past literature⁸, rate of PPH in active and expectant management is 9% and 23%.

Sample size formulae: $n = \frac{(Z_{\alpha} + Z_{\beta})^2 * 2PQ}{d^2}$

Z_{α} - alpha error at 95% confidence Interval (1.96)

Z_{β} - beta error at 95% power of study (1.64)

$P = (p_1 + p_2/2)$; where $p_1 = 23\%$ and $p_2 = 9\%$; so, $P = 15.5\%$

Q – (100-p)% i.e. 84.5%

D – Clinically relevant effect size (taken as 10% difference)

By applying values in the formulae:

$$-\frac{(1.96 + 1.64) * 2(0.155)(0.845)}{(0.1)^2}$$

n – 92 (approx.); so, by rounding off, n – 100

So, final sample size is 100 subjects in each group i.e. 200 subjects in total. A total of 200 consecutive patients satisfying the inclusion criteria were taken in the study after informed consent. The study subjects were then randomized into either of the two groups: **Study Group (100 subjects):** Women who received 10 units of pitocin IM immediately after the delivery of the head of the baby as active management and; **Control Group (100 subjects):** Women who received 10 units of pitocin IM after delivery of placenta and membranes.

Methodology

The following parameters were noted for every pregnant female:

- Blood loss (ml)
- Maternal haemoglobin and haematocrit in both antepartum and post-partum period.
- Need for any blood transfusions
- Duration of 3rd stage
- Manual removal of placenta
- Hospital stay
- Secondary PPH (after 24 hours and before 6 weeks)

Statistical Analysis

All the collected data was entered in Microsoft Excel Sheet 2007. The data will then be transferred and analyzed using SPSS ver. 17. Qualitative data was represented in the form of frequency and percentage while quantitative data was represented using Mean +/- S.D. Appropriate statistical evaluation was carried out as per the type and distribution of data. A p-value of < 0.05 was taken as level of significance.

RESULTS

Over half of the study subjects in both the groups were between 21-25 years of age (p-0.053). Out of 100 subjects, 48% subjects in active group and 38% subjects in expectant group were primi-para (p-0.12). Duration of 2nd stage of labor was between 30 to 60 minutes in 80% subjects of active group and 68% subjects of expectant group (p-0.125). Mean blood loss and duration of 3rd stage was significantly lesser in subjects of active group (167.5 ml vs 193.4 ml; 12.2 vs 17.6 mins; p<0.05). No difference was observed between two groups on the basis of birth weight, placenta weight and APGAR score at 5 minute (p>0.05) (Table 1). Incidence of PPH was observed as 2% and 3% in active and expectant management group (p-0.89). Oxytocin requirement of >10 IU after placenta expulsion, was observed in 2% subjects in active group and 7% subjects in expectant group (p - 0.08) (Table 2).

DISCUSSION

Worldwide and especially in the under developed countries PPH is the most important cause of maternal mortality. In 2007 WHO recommended Active management of third stage of labor (AMTSL) as the most important step in the prevention of PPH⁹. Different studies have been done to compare active vs. expectant management of third stage of labor. In present study we also aimed to compare outcome based on active and expectant management of third stage of labour.

In present study, mean duration of third stage of labour was significantly less in active management group (12.2 vs 17.6 mins; p<0.05). Hoffman M et al. in their study have shown the duration of third stage of labor to be decreased by active management (7.6 vs. 9.6 min.; p<0.1)¹⁰. Begley CM in their systematic review has shown that AMTSL was associated with a decreased blood loss as

compared to expectant management. Regarding mean length of third stage of labor, this study showed no statistically significant difference¹¹. Jangsten et al. in their randomized control trial, observed the mean duration of 3rd stage as 14.6 mins and 16.2 mins in active and control group respectively (p<0.01)¹². Similarly the difference in the duration of third stage was statistically significant between the two groups in study by Karim et al. (p<0.001)⁸.

In present study, mean blood loss was significantly lesser in subjects of active group as compared to expectant group (167.5 ml vs 193.4 ml; p<0.05). Jangsten et al. in their randomized control trial has demonstrated that there was only 10% significant blood loss (>1000 ml) in woman who received AMTSL as compared to 16.8% blood loss in the woman who didn't. Mean blood loss was 535 ml in the actively managed group and 680 ml in the expectantly managed group (p<0.001). Also multiple logistic regressions resulted that for every five minutes duration before delivery of the placenta, bleeding increased by 40 ml.¹² Karim R et al. in their study observed mean blood loss in the active group as 72.5 ± 36.83 ml and expectant group was 177.4 ± 59.65 ml (p value<0.01)⁸.

Incidence of PPH in present study was observed as 2% and 3% in active and expectant management group (p-0.89). Hoffman M in their study have shown 8.8% incidence of PPH in the AMTSL group as compared to 22.5% in the expectantly managed group with p value <0.05¹⁰. Similarly other studies have also demonstrated the role of AMTSL in the prevention of PPH¹³⁻¹⁶. Although there is some variation across AMTSL guidelines but a Multi-centre clinical trial showed that the most important AMTSL component was the administration of an uterotonic agent¹⁷.

In a Cochrane review by Begley CM et al.¹¹, studies were included. Four of the trials were of good quality. Compared to expectant management, active management (in the setting of a maternity hospital) was associated with the following reduced risks: maternal blood loss (weighted mean difference -79.33 ml, 95% confidence interval -94.29 to -64.37); post-partum haemorrhage of more than 500 ml (relative risk 0.38, 95% confidence interval 0.32 to 0.46); prolonged third stage of labour (weighted mean difference -9.77 minutes, 95% confidence interval -10.00 to -9.53)¹⁴. In another review, Prendiville et al. observed that active management reduced the average risk of maternal primary haemorrhage (more than 500 ml) (risk ratio (RR) 0.34, 95% confidence interval (CI) 0.14 to 0.87, three studies, 4636 women) and of maternal haemoglobin less than 9 g/dl following birth (RR 0.50, 95% CI 0.30 to 0.83, two studies, 1572 women) for women irrespective of their risk of bleeding¹⁵.

According to the new WHO recommendations uterotonic agents (oxytocin) is the most important step of the active management of third stage of labour (AMTSL). While the other two steps i.e., controlled cord traction (CCT) and uterine massage can be adopted depending on the availability of the staff and expertise¹⁸. Although WHO trial has reported that there was a small difference in the amount of blood loss in the woman who delivered their placenta by CCT as compared to spontaneous delivery of placenta, the blood loss was 10 ml less in the CCT group. The important difference, however, was the duration of third stage of labor, which was about six minutes longer in the woman who delivered their placenta spontaneously without CCT. This difference can be important for busy delivery unit with large number of patient input, although not very important for the individual woman.

Oxytocin requirement of >10 IU after Placenta expulsion, was observed in 2% subjects in active group and 7% subjects in expectant group (p-0.08). Similar observations were also made by other studies^{12,19,21}. Jangsten et al. in their study found that, out of 1768, 154 (8.7%) women required additional treatment with ergometrine, 57 who were managed actively and 77 who were managed expectantly (P <0.05)⁸.

CONCLUSION

The active management of the third stage of labor decreases blood

loss and also duration of third stage of labor as compared with expectant management. The number of women with PPH did not differ significantly between the groups, and the birth weight, placenta weight and APGAR score values were also similar. So, it is reasonable to advocate the active management of the third stage of labor, especially in primi-parous women. It should also be emphasized that the reduction of blood loss has a much greater impact on women's health in low-income countries like India, as compared with high-income countries because of the higher prevalence of anemia in pregnancy.

TABLES

Table 1. Mean comparison of study variables between the two groups

Variables	Group	Mean	SD	p- value
Birth Weight	Active	3600	445.8	0.62
	Expectant	3553	459.8	
Blood Loss (ml)	Active	535.4	414.3	< 0.05
	Expectant	680.0	486.7	
Placenta weight	Active	660.0	130.4	0.121
	Expectant	672.0	133.3	
APGAR at 5 min	Active	9.2	1.3	0.176
	Expectant	8.9	1.7	
Duration of 3rd stage of Labour	Active	12.2	1.8	< 0.05
	Expectant	17.6	2.9	

Table 2. Association of PPH and Oxytocin requirement with type of Management

Variables	Group		Total	Total
	Active	Expectant		
PPH	2	3	5	0.89
	2.00%	3.00%	2.50%	
Oxytocin > 10U	2	7	9	0.08
	2.00%	7.00%	4.50%	

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