Predictors and Outcomes of Prolonged Third Stage of Labor in the Community Setting: Preliminary Findings

Carol A. Snapp, DNSc, CNM

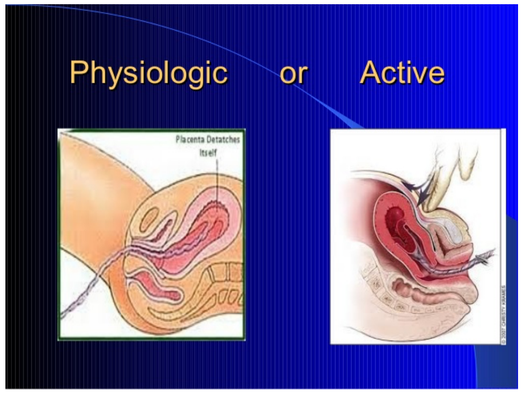
American Association of Birth Centers Research Committee

Introduction

- Prolonged third stage of labor increases the risk for retained placenta and postpartum hemorrhage
- Postpartum hemorrhage occurs in 3% US births but may be as high as 10% worldwide
- The World Health Organization recommends active management of the third stage as an effort to reduce postpartum hemorrhage
- The most important aspect of the active management of the third stage of labor is the administration of a uterotonic after delivery of the baby but may also include controlled traction of the cord and massage of the uterine fundus after the placenta was delivered
- Physiologic management of the third stage is characterized by spontaneous detachment of the placenta
- Limited literature exists to the management of the third stage of labor in community birth settings
- Midwives are less likely to use Active Management of the Third Stage in low risk women
- Women may consider physiologic management of the third stage to be an important part of a normal or natural birth
- Families seek birth centers for a variety of reasons including fewer medical interventions, a more supportive environment, comprehensive, personalized health care, and improved health outcomes

Objectives

- Identify personal and environmental variables associated with normal and prolonged third stage of labor
- Identify the use of uterotonic agents and other methods of active management of the third stage to facilitate separation and delivery of the placenta in the community setting
- Identify outcomes associated with prolonged third stage of labor in the community setting



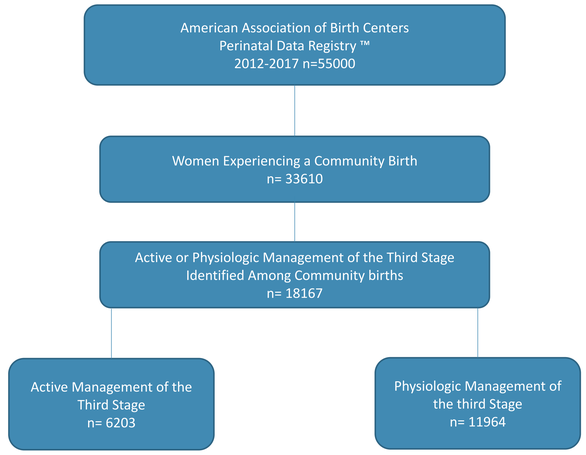
The Third Stage of Labor

- Begins with the birth of the fetus and ends with the delivery of the placenta
- Duration is usually 5-10 minutes
- Prolonged third stage is greater than 30 minutes
- Signs of physiologic placental separation include lengthening of the umbilical cord, change in shape of the uterus and a gush of blood
- Normal blood loss is <= 500 ml for a vaginal birth and <= 1000 ml for a cesarean birth
- Blood loss is typically underestimated
- Risk factors for prolonged third stage of labor include: history of retained placenta, nulliparity, increased duration of the first stage of labor, preterm birth, preeclampsia, and augmented labor

Methods

- Descriptive study using secondary data analysis
- Data Source: American Association of Birth Centers Perinatal Data Registry (AABC PDR)
  - Online data registry from AABC to collect comprehensive data on process and outcomes of midwifery care
  - Participation by subjects is voluntary
- Designed to be used by providers in all settings
- Includes data from 55,001 women 2012-2017
  - Analysis limited to community births
  - Duration of third stage identified by providers and categorized according to closest minutes
- Definitions
  - Prolonged third stage is defined as greater than 30 minutes
- Analysis using SPSS v.27

Prolonged Third Stage of Labor Sampling Frame



Results

Personal Characteristics Among Women Experiencing a Community Birth

Variable	Variable categories	<= 30 min n (%)	>30 min n (%)	Statistics
Maternal age (n=23376)	<20 yrs 21-25 yrs 26-30 yrs 31-35 yrs >=36 yrs	532 (95.9) 3862 (96.3) 8241 (95.5) 7124 (94.6) 2493 (94.3)	23 (4.1) 150 (3.7) 390 (4.5) 410 (5.4) 151 (5.7)	X^2 = 23.461 p <.001
Race (n=23373)	White Black American Indian/Eskimo Asian Other	18324 (95.2) 1195 (94.8) 184 (97.9) 402 (94.4) 2145 (95.3)	924 (4.8) 66 (5.2) 4 (2.1) 24 (5.6) 105 (4.7)	X^2 = 4.188 p = .381
Ethnicity (n=13333)	Hispanic/Latino Not Hispanic	1938 (95.3) 10745 (95.1)	96 (4.7) 554 (4.9)	X^2 = 0.125 p = 0.724
BMI (kg/m^2)	<18.5 18.5-24.9 25-29.9 >=30	766 (95.3) 12746 (95.1) 4461 (95.2) 2242 (95.3)	38 (4.7) 661 (4.9) 227 (4.8) 111 (4.7)	X^2 = 0.262 p = 0.967
Parity (n=17517)	Primiparous 1-4 previous births >=5 previous births	2088 (93.3) 14034 (95.8) 606 (95.9)	149 (6.7) 614 (4.2) 26 (4.1)	X^2 =27.736 p<.001
Previous CS (n=23377)	No Yes	22020 (95.2) 233 (95.5)	1113 (4.8) 11 (4.5)	X^2 = .048 p=0.826
Previous PPH (n=23377)	No Yes	21552 (95.1) 701 (98.0)	1110 (4.9) 14 (2.0)	X^2 = 13.090 p<.001
Retained Placenta (n=23377)	No Yes	22120 (95.2) 133 (92.4)	1113 (4.8) 11 (7.6)	X^2 = 2.537 p=.111

Results (continued)

Outcomes Associated with Prolonged Third Stage of Labor in the Community Setting

Variable	Variable categories	<= 30 min n (%)	>30 min n (%)	Statistics
Prolonged 1st Stage of Labor (n=23377)	No Yes	21681 (95.2) 572 (93.3)	1083 (4.8) 41 (6.7)	X^2 = 4.863 p= .027
Prolonged 2nd Stage of Labor (n=23377)	No Yes	21889 (95.3) 364 (89.0)	1079 (4.7) 45 (11.0)	χ^2 = 34.898 p<.001
Postpartum Hemorrhage (n=23377)	No Yes	20550 (95.4) 1703 (92.4)	984 (4.6) 140 (7.6)	χ^2 = 33.982 p<.001
Postpartum Maternal Fever (n= 23377)	No Yes	22198 (95.2) 55 (94.8)	1121 (4.8) 3 (5.2)	Fisher's Exact Test significance = .758
Postpartum Retained Placenta (n=23377)	No Yes	21978 (95.7) 275 (66.4)	985 (4.3) 139 (33.6)	χ^2 = 762.016 p< .001
Postpartum Manual Removal of the Placenta (n= 23377)	No Yes	21978 (95.7) 275 (66.4)	985 (4.3) 139 (33.6)	χ^2 = 762.016 p< .001
Postpartum maternal transport (n= 23071)	No Non-emergent Emergent	21546 (95.8) 319 (83.7) 113 (56.5)	944 (4.2) 62 (16.3) 87 (43.5)	χ^2 = 792.724 p< .001

Use of Active Management of the Third Stage of Labor in the Community

Variable (n=18161)	Variable Category	Frequency	Percent
Active management of the third stage	No Yes	11964 6203	65.9 34.1
Controlled cord traction	No Yes	3044 3159	49.1 50.9
Cord clamped	No Yes	6048 155	97.5 2.5
Pitocin after body or anterior shoulder	No Yes	1316 4887	21.2 78.8

Outcomes Associated with Active Management of the Third Stage of Labor in the Community Setting

Variable	Variable categories	No Active Management n (%)	Active Management n (%)	Statistics
Length of 3rd stage of labor (n=17768)	<15 min 15-30 min 31-60 min >60 min	7851 (62.1) 3242 (76.0) 503 (71.4) 72 (45.9)	4791 (37.9) 1023 (24.0) 201 (28.6) 85 (54.1)	X^2 = 311.543 p< .001
Length of 3rd stage 2 groups (n=17768)	<= 30 minutes > 30 minutes	11093 (65.6) 575 (66.8)	5814 (34.4) 286 (33.2)	X^2 =.498 p= .480
Postpartum Hemorrhage (n=18167)	No Yes	11207 (66.9) 757 (53.2)	5536 (33.1) 667 (46.8)	X^2 = 110.752 p<.001
Postpartum Maternal Fever (n=18167)	No Yes	11927 (65.8) 37 (68.5)	6186 (34.2) 17 (31.5)	X^2 = 0.171 p= .679
Postpartum Retained Placenta (n=18167)	No Yes	11882 (66.2) 82 (38.1)	6070 (33.8) 133 (61.9)	X^2 = 74.330 p< .001
Postpartum Manual Removal of the Placenta (n=18167)	No Yes	11873 (66.3) 91 (36.8)	6047 (33.7) 156 (63.2)	X^2 = 93.742 p<.001
Postpartum maternal transport (n=18148)	No Non-emergent Emergent	11705 (66.3) 158 (51.1) 90 (51.1)	5958 (33.7) 151 (48.9) 86 (48.9)	X^2 = 48.089 p<.001

Conclusions

- **Preliminary Findings**
- Women who experienced a third stage of labor greater than 30 minutes were most often:
  - Over 30 years of age
  - Having their first baby
  - If they had a previous delivery, more likely to have experienced a previous postpartum hemorrhage
  - Not associated with prolonged third stage of labor include: a previous retained placenta, race, ethnicity, previous cesarean section, and BMI
- Among women with documented duration of the third stage in community births, 4.8% experienced a third stage greater than 30 minutes
- Prolonged third stage of labor was associated with prolonged first and second stages of labor, PPH, retained placenta, manual removal of the placenta, and emergent hospital transport
- Over 6200 providers documented using some type of active management of the third stage (elective field). Most often used: Pitocin after the anterior shoulder or after the birth of the baby
- Women having active management were more likely to experience a PPH, retained placenta, manual removal of the placenta and hospital transport.
- Women experiencing experiencing active management of the third stage were more likely to have a third stage greater than 60 minutes, but when the categories were compressed, the difference was no longer significant
- Women experiencing a prolonged third stage of labor were not significantly more likely to experience a maternal fever
- Some variables are limited by missing data (including duration of the third stage of labor)
- Further analysis will be needed
- Questions:
  - Was active management used after delayed placental separation?
  - What impact does shared decision making and informed consent have on the use of active management of the third stage in community birt

Selected References

Begley CM, Gyte GM, Devane D, McGuire W, Weeks A, Biesty LM. Active versus expectant management for women in the third stage of labour. *Cochrane Database Syst Rev.* 2019;2(2):Cd007412.

Erickson EN, Bovbjerg ML, Cheyney MJ. Factors affecting third-stage management and postpartum hemorrhage in planned midwife-led home and birth center births in the United States. *Birth.* 2020.

Erickson EN, Lee CS, Grose E, Emeis C. Physiologic childbirth and active management of the third stage of labor: A latent class model of risk for postpartum hemorrhage. *Birth.* 2019;46(1):69-79.

Knight M, Callaghan WM, Berg C, et al. Trends in postpartum hemorrhage in high resource countries: a review and recommendations from the International Postpartum Hemorrhage Collaborative Group. *BMC Pregnancy Childbirth.* 2009;9:55.

Magann EF, Lutgendorf MA, Keiser SD, et al. Risk factors for a prolonged third stage of labor and postpartum hemorrhage. *South Med J.* 2013;106(2):131-135.

Safari K, Saeed AA, Hasan SS, Moghaddam-Banaem L. The effect of mother and newborn early skin-to-skin contact on initiation of breastfeeding, newborn temperature and duration of third stage of labor. *Int Breastfeed J.* 2018;13:32.

Schorn MN, Minnick A, Donaghey B. An exploration of how midwives and physicians manage the third stage of labor in the United States. *J Midwifery Womens Health.* 2015;60(2):187-198.

Tan WM, Klein MC, Saxell L, Shirkoohy SE, Asrat G. How do physicians and midwives manage the third stage of labor? *Birth.* 2008;35(3):220-229.

van Ast M, Goedhart MM, Luttmer R, Orelio C, Deurloo KL, Veerbeek J. The duration of the third stage in relation to postpartum hemorrhage. *Birth.* 2019;46(4):602-607.

Acknowledgement

Special thanks to the AABC Foundation for a Research Grant.

Thanks to members of the AABC Research Committee for support and guidance