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RESEARCH ARTICLE

POSTPARTUM HAEMORRHAGE EMERGENCY CARE USING THE BUNDLE APPROACH AT ACHARYA VINOBA BHAVE RURAL HOSPITAL OF JNMC SAWANGI, WARDHA

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ABSTRACT

Postpartum haemorrhage is characterized within 24 hours of birth as a blood loss of 500 ml or greater. Post partum haemorrhage is the leading cause of maternal mortality in India and approximately one-quarter , worldwide. Most Post partum haemorrhage-related deaths occur during the first 24 hours of birth, most of which could be prevented by the use of prophylactic uterotonics during the third stage of childbirth and timely and effective management. The "bundles" strategy was designed to improve adoption and compliance with prescribed treatments.(5) Care bundles differ from other care packages in that compliance is only accomplished when all the packaged measures are completed and registered. Compliance with the package as a whole therefore implies higher compliance rates for its individual elements. Coordination, collaboration and cooperation are stressed because the mechanisms of these health systems are necessary for quality and sustainability. (1)In 2012, the World health organization released its "Recommendations for Postpartum Hemorrhage Prevention and Treatment" to provide evidence-informed clinical care.

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INTRODUCTION

Postpartum haemorrhage is characterized within 24 hours of birth as a blood loss of 500 ml or greater. Post partum haemorrhage is the leading cause of maternal mortality in Indiaand approximately one-quarter, worldwide. Most Post partum haemorrhage-related deaths occur during the first 24 hours of birth, most of which could be prevented by the use of prophylactic uterotonics during the third stage of childbirth and timely and effective management (1) Postpartum hemorrhage is the world's number one cause of maternal death in both developing and developed countries, according to the World Health Organization (WHO, 2013). If unattended, POST PARTUM HAEMORRHAGE can be fatal within 2 hours even to a safe low risk woman. It is the fastest amongst maternal killers (WHO, 2013) (1). The American College of Obstetricians and Gynecologists (2006) reports 140,000 people worldwide die of POST PARTUM HAEMORRHAGE every year — one every four minutes.

About half of all maternal deaths happen within 24 hours of birth (2) All women bearing a pregnancy after 20 weeks of gestation are at risk of POST PARTUM HAEMORRHAGE and its sequelae. Hemorrhage postpartum is a cause of maternal mortality and has significant prevention opportunities. Cross-functional multidisciplinary teams, along with facilities and support systems in place to handle this growing patient group, are therefore essential (2) Although frontline clinicians will be the first to respond to a post partum haemorrhage, help from administrators and the healthcare management system is necessary to effectively standardize processes and ensure effective outcomes for patients. Cross-functional care teams continue to search for different and innovative ways to work together to bring about meaningful change. While there are several risk factors known and associated with post partum haemorrhage, this often happens without warning. In contrast, there is a substantial difference in postnatal (3).

Observations and management in various hospital In 2001, the Institute for Healthcare Improvement developed a systematic approach to bundling care to enhance the quality and efficiency of care delivery. The Institute for Healthcare Improvement described bundles as 'small sets of evidence-based treatments for a given patient population and care environment, resulting in significantly better outcomes when implemented together than when implemented individually.'(4) The "bundles" strategy was designed to improve adoption and compliance with prescribed treatments.(5) Care bundles differ from other care packages in that compliance is only accomplished when all the packaged measures are completed and registered. Compliance with the package as a whole therefore implies higher compliance rates for its individual elements. Coordination, collaboration and cooperation are stressed because the mechanisms of these health systems are necessary for quality and sustainability.(1)In 2012, the World health organization released its "Recommendations for Postpartum Hemorrhage Prevention and Treatment" to provide evidence-informed clinical care.

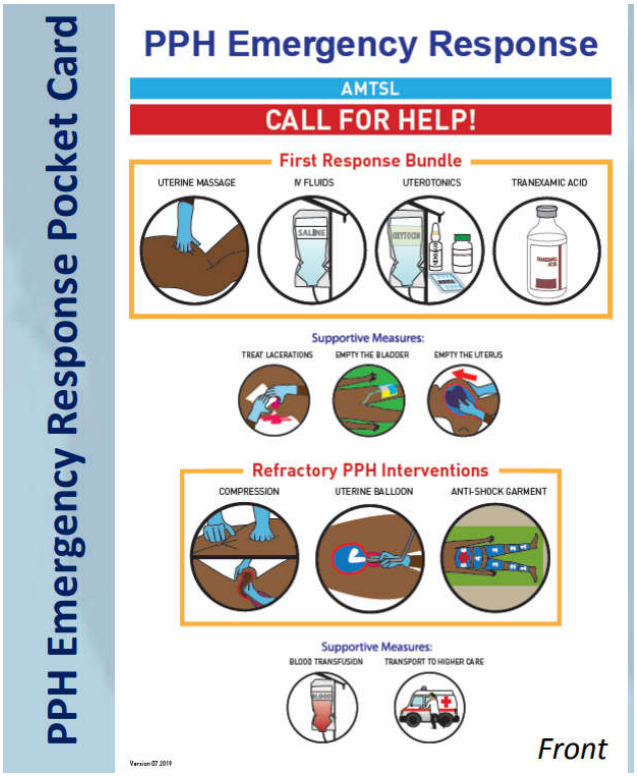
Dr Thomas Burke (Chief, Division of Global Health and Human Rights, Emergency Department, Massachusetts General Hospital Harvard University) and his team introduced a comprehensive management of post partum haemorrhage using bundle approach. This technique looks into the technical and non-technical components and it was utilized by 55 facilities in Maharashtra. He is known for his low cost innovations for developing world. With his patent uterine ballon tamponade device (comprising of a special catheter and condom), he is currently running a pilot study with 11 medical colleges in India to cater to tackle the complications of Post partum haemorrhage using uterine ballon tamponade and other bundle care approach.

Aims and objectives: This study aims at comparing the outcome in terms of maternal mortality and morbidity after the introduction of post partum haemorrhage bundle care programme as a routine practice in management of post partum haemorrhage, comparing the data from before 2017 prior to introduction of the programme and post 2017 after introduction.

MATERIALS AND METHODS

This research is a retrospective, observational study with systematic assessment of the efficacy and protection of uterine ballon tamponade 's incorporation into post partum haemorrhage treatment along with other components, making a bundle care approach. Study period from march 2016 to march 2020 was considered. During the study period all the patients who underwent mild to moderate post partum haemorrhage were assessed consecutively before and after incorporation of bundle care approach. For our study we considered hospital settings at Acharya Vinoba Bhave hospital of Jawaharlal Nehru medical colleges awangi. Between 2 october 2017 and 8 december 2017, the consultation for the creation of post partum haemorrhage care packages was conducted among international maternal health experts. Completion of the online surveys and attendance at the in-person meeting indicated approval of the participants (7) an institutional review board had requested a review of the consultation. Postpartum hemorrhage has been defined as bleeding that a professional birth attendant feels severe and alarming for this exercise furthermore, in the absence of an agreed concept of refractory post partum haemorrhage, bleeding has been described as non-responsive to initial care and requiring an additional colletion of procedures. This way treatment was established. All World health organisation recommendations were assessed for appropriateness within given setting, resulting in 14 interventions eligible for inclusion the 14 interventions were then classified according to purpose (prevention, first response, and response to refractory post partum haemorrhage); application to vaginal delivery, cesarean delivery, or any type of delivery; and application during the third stage of labor or the first 24 hours postpartum (3).

Fig1,2-showing post partum haemorrhage emergency response card devised by bundle care approach, practiced in present study.



- **Early identification of atonic post partum haemorrhageor excessive bleeding P/v.**
- During Full term normal vaginal delivery
- Active management of third stage of labor
- Evacution of urinary bladder ,Bimanual massage
- Hemostatics
- Inj Oxytocin
- Tab misoprost-Subcutaneous,per rectal
- InjCarboprost
- Tamponade/Uterine ballon tamponade
- Exploration after Full term normal vaginal delivery

- **during lower segment caeserean section**
- Inj oxytocin
- Injcarboprost
- UBT
- B-lynch sutures
- Stepwise uterine artery,ovarianartery,internal iliac artery ligation

- Continous training of Post-graduate/Nursing staff and utilization of Uterine ballon tamponade and practice of placing Uterine ballon tamponade in indicated cases
- Vertical integration program to Primary health care level.
- pocket card (fig1,2)was designed and distributed to all the post graduate students,and nursing staff for prompt care and a similar chart depicting the steps of bundle approach was displayed in labour room as well.

Preventive administration of uterotonic agents immediately after delivery is effective in reducing the occurrence of post partum haemorrhage and is recommended for its routine usage regardless of delivery path. oxytocin is the first-line prophylactic drug that can be delivered either intravenous or intramuscular steadily, regardless of the delivery path. routine cord drainage, managed cord pressure, uterine massage, and routine bladder emptying are not routinely recommended for prevention of post partum haemorrhage after vaginal delivery. placental delivery is recommended after a caesarean delivery by controlled cord traction. since this technique does not impact the occurrence of extreme post partum haemorrhage, regular use of a collector bag to measure postpartum blood loss at vaginal delivery is not systemically recommended.

In cases of open post partum haemorrhage following vaginal delivery, it is advisable to position a blood collection tube. the initial treatment for post partum haemorrhage consists of a manual uterine inspection, along with antibiotic prophylaxis, careful visual evaluation of the lower genital tract, uterine massage, and administration of 5-10 International Units oxytocin steadily injected intravenous or intramuscular, supplemented by a maintenance infusion not to exceed a cumulative 40International Units dose. if oxytocin does not manage bleeding, it is advised to administer carboprost within 30 minutes of diagnosis of post partum haemorrhage. intrauterine balloon tamponade should be performed when carboprost fails and before resorting to either surgery or radiology intervention (professional consensus). fluid resuscitation after first line uterotonics is indicated for chronic post partum haemorrhage, or if clinical indications of severity if all medical management options of control of post partum haemorrhagefail, but is placed in situ, an intervention consisting of inserting a condom attached to a urinary catheter into the uterus and inflating it with fluid to stop postpartum bleeding. If all else fails,as an option of last resort stepwise devascularisation and ligation /obstetric hysterectomy was considered.

Problem To Solve: reduction of maternal morbidity and mortality due to post partum haemorrhage by controlling the bleeding as soon as possible and minimize blood loss and the need for advanced care parameters to evaluate hypothesis were the efficacy of bundle treatment were women's age, parity,such as ,the degree of hemorrhage occurred fall in hemoglobin level of more than 2 gm% was observed. need for uterotonics to be used more than necessary according to Active management of third stage of labour criteria, prostaglandin usage,need for supportive measures blood transfusion, uterine balloon tamponade usage, surgical intervention such as hemostatic sutures, stepwise devasularization and ligation needed, if any.

RESULTS

Table 1. AGE-wise distribution of Post Partum Haemorrhagecases

	20-25 years	26-30 years	31-35 years	>36 years
2016	4	6	1	2
2017	7	9	3	2
2018	6	7	2	1
2019	5	11	3	0
2020	2	8	5	1

Table 2. Parity wise distribution of Post Partum Haemorrhagecases

	Nulliparous	Multipararous
2016	6	16
2017	4	17
2018	5	16
2019	3	12
2020	1	5

ADDITIONAL ADVANTAGES OF BUNDLE APPROACH: Bundle approach and placement of Uterine balloon tamponadedevice were used in following instances,of unusual causation of post partumhemorrhage

- Bicornuate Uterus With Vaginal Delivery
- Cervical Ectopic pregnancy
- Unicornuate Uterus With Vaginal Breech Delivery
- Placenta Accreta
- After Manual Removal Of Placenta In Twin Pregnancy

DISCUSSION

A systematic approach was used to review the care bundle literature to establish care packages for atonic post partum haemorrhage following vaginal delivery, the elements of which were focused on who-recommended post partum haemorrhage procedures. The definition of a patient care bundle was adapted from the international health institute bundle concept as "a restricted range of evidence-based treatments for a given patient population and environment, procedure, or treatment."(8) through online and face-to - face consultations, a group of post partum haemorrhage experts reached consensus on a first response package of post partum haemorrhage, consisting of uterotonic, isotonic crystalloid intravenous fluids, uterine fluids.

The discussion around the response to refractory post partum haemorrhage bundle, which included bimanual uterine compression, aortic compression, uterine balloon tamponade, and non-pneumatic anti shock garment, in addition to continuing with intravenous fluids, uterotonics, and tranaxemic acid raised some controversy, although the majority of the group was in agreement about adopting it as a bundle (9). Developing and implementing the packages does not preclude care professionals from making a comprehensive examination of post partum haemorrhage's etiology until they interfere. (2) while both tranaxemic acid and non-pneumatic anti shock garment may be useful for non-atonic obstetric hemorrhageetiologies, we note that these bundles are recommended for uterine atony.

Table 3. Showing the comparative data of usage of blood and components and blood loss prior to and after implementation of bundle care approach

	Number of blood transfusions required[on an average post partum]	Number of cases showing fall in Hb [>2gm%]after delivery due to post partum haemorrhage
2016	4	13
2017	2	4
2018	2	3
2019	1	1
2020	1	2

Table 4. Showing Number Of Cases Of Post Partum Haemorrhage And Various Interventions Done For The Same

Year	Number Of Deliveries	Usage Of No. Of Uterine Ballon Tamponade Cases	Operations ForPost Partum Haemorrhage. [Devascularisation And Ligation Of Arteries]	No. Of Cases Wherein Emergency Hysterectomy Done	Maternal Mortality Due To Post Partum Haemorrhage
2016	2677	Nil	8	3	2
2017	2891	15	3	1	0
2018	2994	13	2	1	0
2019	2347	18	0	0	1
2020	2874	14	2	0	0

Table 5. Comparison between usage of uterotonics with and without Uterine balloon tamponade resulting on Post Partum Haemorrhage

year	usage of uterotonics only	usage of uterotonics with Uterine balloon tamponade	maternal mortality due to Post Partum Haemorrhage
2016	24	nil	2
2017	28	15	0
2018	16	13	0
2019	17	18	
2020	16	14	0

While the proposed packages of treatment are based on rigorously validated guidelines based on evidence, they have yet to be tested and assessed as a strategy for improving post partum haemorrhage clinical care (10) according to who consultation on post partum haemorrhage care of 2020 the definition of two care bundles for facility implementation. the “first response to post partum haemorrhage bundle” comprises uterotonics, isotonic crystalloids, tranexamic acid, and uterine massage. the “response to refractory post partum haemorrhage bundle” comprises compressive measures (aortic or bimanual uterine compression), the non- pneumatic antishock garment, and intrauterine balloon tamponade advocacy, training, teamwork, communication, and use of best clinical practices were defined as post partum haemorrhage bundle supporting elements.

It was inferred from this study according to bundle approach that, the use intravenous oxytocin is the approved uterotonic medication for the treatment of post partum haemorrhage. if intravenous oxytocin is unavailable, or if the bleeding does not react to oxytocin, it is advised to use intravenous ergometrine, fixed dose oxytocin-ergometrine, or prostaglandin (including sublingual misoprostol, 800 µg).usage of uterine balloon tamponade single handedly has been able to make a drastic change in reduction of incidence of post partum haemorrhage (11) out of 24 cases of post partumhaemorrhage in 2019, ubtplacement was successful in 23 cases as uterine balloon placement was successful and prevented excessive blood loss as procedure to place uterine balloon is very easy and fast, and thus prevented the hypotension and requirement of blood transfusion,in one scenario, uterine balloon placement was a failure as balloon deflated within 5 hours of placement and therefore the infusion of oxytocin tended to sustain the tone of the uterus for the next 24 hours.

Conclusion

The bundle approach is apparently found to be remarkably helpful in prevention of post partum haemorrhage and cutting down the need for surgical intervention although statistical significance could not be established. management of post partum haemorrhage in systemic and structured way as used in the present study was of great help in timely intervention such that judgment on prophylactic steps or decision on hysterectomy can be preserved. if patient is hemodynamically stable then ubt is the first choice after medical management, when the patient starts bleeding, vital assessment of hemodynamic condition needs to be done uterineballon tamponade has no doubt proved to be beneficial in preventing post partumhemorrhage in typical cases as well as non typical cases which could have led to post partum haemorrhage.

Future recommendations

Factors to be assessed include amount of haemorrahage, relative to the individual interventions. It's necessary to recognize the views of health care planners, practitioners and users. Although the trainees were given instruction, they lacked initiative. Emergency helpline received very few calls which were not so important to the project. Given these considerations, there will be a need for implementation research to determine if the bundle approach will ultimately make a difference in saving women's lives from post partum haemorrhage.

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