

Suction and Evacuation for Management of Postpartum Hemorrhage

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Abstract

Objectives: To report the authors' experience in suction and evacuation with cannula followed by maintenance of negative pressure in the uterine cavity by keeping the cannula inside for 20-30 minutes, which was performed for controlling intractable postpartum hemorrhage (PPH) in a tertiary care hospital.

Materials and Methods: This is a retrospective observational study carried out from July 2011 to December 2012 at Batra Hospital and Medical Research Centre, New Delhi, India. Nine patients who delivered either vaginally or via caesarian section and developed primary PPH refractory to conventional medical treatment, were included in the study. Suction and evacuation of the uterine cavity was done and then the cannula was kept inside the uterine cavity for 20-30 minutes thereby maintaining negative pressure (400-600 mmHg) in the cavity. Data were retrieved from patients' hospital records.

Results: Intractable primary hemorrhage was encountered in 9 patients of whom 6 had bleeding after caesarian section and 3 after vaginal deliveries. Uterine atony due to prolonged labour was the commonest cause. Hemorrhage was effectively controlled in 8 out of 9 cases (88.9%) and hysterectomy was avoided. In one patient (11.1%) the procedure failed and life saving hysterectomy was done to control the bleeding. This approach not only controls PPH but also preserves the woman's reproductive functions and avoids hysterectomy and its related complications and consequences.

Conclusion: This is a simple conservative surgical method to treat PPH in low resource settings. It requires minimal training, conserves the uterus, and is technically less challenging and associated with less blood loss than hysterectomy.

Keywords: Suction Evacuation, Postpartum Hemorrhage, Cannula, Atonic Uterus

Introduction

Postpartum hemorrhage (PPH) is one of the major causes of maternal mortality and a redoubtable contributor to puerperal death from other causes. World Health Organization (WHO) has traditionally defined primary PPH as postpartum blood loss of 500 ml or more from the genital tract within 24 hours of the birth of a baby (1). Ratnam and Rouff (2) state that most Asian women have smaller built, lesser blood volume, lower hemoglobin and poor nutrition. Due to these facts even a lesser blood loss has a more sinister effect. Hence they advocate 300 ml blood loss as a definition of PPH. In developing countries like India where women have no access to trained birth attendant the incidence of PPH is bound to be high. Efforts to prevent PPH in developing countries are therefore of paramount importance to the global effort to achieve the Millennium Development Goal of reducing maternal mortality ratio by three quarters (from 1990 levels) by 2015 (3).

We saved laparotomy and further surgical intervention for atonic PPH by just suction and evacuation, a simple conservative surgical technique.

Material and Methods

This is a retrospective observational study carried out

from July 2011 to December 2012 in Department of obstetrics and gynecology at Batra Hospital and Medical Research Centre, New Delhi, India, a tertiary care hospital. This study included nine women who delivered either vaginally or via caesarian section (CS) who developed severe primary PPH refractory to conventional medical treatment. When medical management failed, suction and evacuation of the uterine cavity was done and then the cannula was kept in the uterine cavity maintaining negative pressure of 400-600 mmHg for 20-30 minutes. Steps of the technique are; 1) the patient is shifted to operation theatre. Procedure is performed under general anesthesia, 2) the patient is catheterized and placed in the lithotomy position, 3) full surgical asepsis is to be taken, 4) the appropriate suction cannula is fitted to the suction apparatus, 5) the cannula is then introduced into the uterus; the tip is to be placed in the middle of the uterine cavity, 6) the negative pressure of suction is raised to 400-600 mmHg, 7) evacuation of all clots, if present, 8) the suction cannula is retained there for 20 to 30 minutes, thereby maintaining negative pressure of 400-600 mmHg in the uterine cavity, 9) the suction is broken before withdrawing the cannula down through the cervical canal to prevent injury to the internal os, 10) simultaneously uterotonics are also given, 11) After being satisfied that

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the uterus is remaining firm and there is no bleeding, procedure is withheld and a sterile vulval pad placed. Maintenance of negative pressure in the uterine cavity with suction cannula keeps the uterine cavity collapsed and does not let it distend thereby complimenting contraction of the uterus and retraction of the vessels. This technique was performed on all nine patients. The patient's age, parity, gestational age, mode of delivery and outcome of procedure were recorded (Table 1).

Results

The age of patients was between 22 and 36 years (means 31 years). The majority of patients (66.7%) were multipara. The gestational age at which procedure was performed ranged from 37 to 41 weeks. Cesarean section (CS) was performed in six cases (66.7%) and three cases (33.3%) delivered vaginally. Eight cases (88.9%) were delivered at our institute, while a case was delivered at another hospital and referred to our institute for further management of severe PPH with shock. On examination, general condition was fair and vitals were stable in all patients except one who was admitted in condition of shock and PPH after CS. Majority of cases of PPH in our study group were due to prolonged labour or non-progress of labour. Suction and evacuation technique with maintenance of negative suction pressure successfully stopped bleeding in eight (88.9%) of the nine patients. In one patient (11.1%) the procedure failed and life saving hysterectomy was done to control the bleeding (Table 1). The total volume replacement ranged from 1,000 to 4,000 ml. All the patients made a good recovery after procedure. None of the patients developed complication related to procedure. There was no maternal death.

Discussion

PPH is one of the leading causes of maternal mortality and an important cause for serious morbidity in the developing and developed world. Morbidity from PPH mainly includes surgical interventions, sepsis and severe anemia. Uterine atony, in which there is failure of the uterine muscle to contract normally following delivery of the baby and placenta, is responsible for up to 70% of all causes of PPH (4). The general management of PPH starts by conservative measures like uterine massage and uterotonic drugs. Severe postpartum blood loss

in hemodynamically unstable patients is more likely to need hysterectomy which can be one of the dangerous procedure and cause permanent loss of fertility. Since last decade, conservative surgical procedures have been successfully used in various circumstances and forms. Conservative surgical approach not only controls PPH but also preserves the woman's reproductive functions and avoids hysterectomy and its related complications and consequences (5). Conservative surgical approach in management of PPH includes: a) Uterine and ovarian arteries ligation; b) Hemostatic brace suturing like B-LYNCH suture; c) Bilateral Internal iliac artery ligation; d) Arterial embolization.

Postpartum hemostasis normally depends on mechanical events which induce strong contractions of the uterine musculature (6). Additional hemostasis may also be related to the opposition of the uterine walls once the myometrium has contracted. Probably our technique of suction of the blood and clots in the uterine cavity and then keeping the cannula inside the uterine cavity for 20-30 minutes keeps the cavity collapsed and does not let it distend. This actually complements the action of uterotonic agents which are also given simultaneously. It does not require great expertise or skill.

The simple mechanical and physiological measures of massaging the fundus, bimanual uterine compression and emptying the bladder to stimulate uterine contraction represent time-honored first-line management of PPH. No published studies were identified to provide an evidence-base for these interventions; nevertheless, professional consensus supports their continued use (7). However techniques of external compression like uterine massage and bimanual uterine compression are not able to maintain constant pressure which is taken care of by the suction pump in this technique.

In recent years, tamponade using various types of hydrostatic balloon catheters like foley catheter, Bakri balloon, Sengstaken-Blakmore esophageal catheter, and condom catheter, has superseded uterine packing for control of atonic PPH. There are no evidence based guidelines on how long the balloon tamponade should be left in place. Usually 4-6 hours of tamponade is adequate to achieve hemostasis. As compared with studies on other conservative surgical interventions for management of PPH, our technique has better success rate (Table 2).

Table 1. Summary of patients with severe PPH treated by the use of Suction Evacuation

Case No.	Age	Parity	Gestational Age	Presentation	Mode of delivery	Outcome
1	22	Primi	40	Prolong labour	CS	Successful
2	34	Multi	37	Accidental Hemorrhage	NVD	Successful
3	32	Primi	38	Prolong labour with PROM with Gestational Diabetes	CS	Successful
4	27	Multi	39	Prolong labour with PROM	NVD	Successful
5	30	Multi	38	Hemorrhagic Shock	CS	Successful
6	25	Primi	40	Obstructed labour	CS	Successful
7	30	Multi	39	Prolong labour	NVD	Successful
8	35	Multi	41	Prolong labour	CS	Successful
9	36	Multi	40	Prolong labour	CS	Failure

Primi= Primigravida, Multi= Multipara, PROM= Premature Rupture of Membrane, CS= Cesarean section, MTP= Medical Termination of pregnancy, NVD= Normal Vaginal Delivery

Table 2. Comparison of suction and evacuation with other techniques of PPH

	Technique	Number of patient	Successful rate
1	Uterine packing (8)	20	85%
2	Ballon Temponade (9)	19	79%
3	Hemostatic brace suturing (10)	52	81%
4	Bilateral hypogastric artery ligation (11)	26	76.9%
5	Arterial embolisation (10)	14	71%
6	Suction and evacuation (Our study)	9	88.9%

Ours is also a technique of internal compression like balloon tamponade. However in this technique the pressure is more as compared to balloon tamponade, which keeps the cavity collapsed. Moreover the duration of the procedure is also much less (30 minutes) which allows us to decide in time whether to proceed for laparotomy or not. It plays an important role in controlling atonic PPH and at times to maintain hemodynamics for bleeding women to reach the referral hospital from the periphery. We have found that suction and evacuation is simple, highly effective, safe, easy to learn and can be easily performed. It seems to be a good option in resource poor settings.

Conclusion

PPH is an obstetric emergency which every obstetrician has to face often unexpectedly. Even after so much of technological advances, very few practical and affordable solutions are available today to decrease PPH related morbidity and mortality. This (Suction with cannula followed by maintenance of negative pressure in the uterine cavity by keeping the cannula inside for 20-30 minutes) is a simple, safe, highly effective and conservative surgical method to control PPH in low resource settings. It requires minimal training, conserves the uterus, and is technically less challenging and associated with less blood loss than hysterectomy.

However we have very few cases to recommend it globally, but it could be possible area of research and larger trials are needed.

Ethical issues

The local ethics committee approved the study.

Conflict of interests

Authors declare that there is no any conflict of interests.

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