

Surgical Techniques used in the Emergency Treatment of the Obstetric Hemorrhages

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Abstract

Introduction: Hemorrhages are one of the main causes of maternal mortality, as much in developing countries as in developed countries.

Objective: To expose our experiences with the techniques of surgical interventions applied in the emergency treatment of the obstetric hemorrhages.

Materials and Methods: The study applied is descriptive, retrospective, from transversal court in 51 patients. Those whom it was necessary to apply surgical emergency interventions to control the obstetric hemorrhages; from January 1988 to February 2017 at the General hospital "Ciro Redondo Garcia", in Artemisa, Cuba.

Results: The average ages of operated patients are 27 years (95% CI for the 25.0000 to mediates 28.8057) years. The childbirth type that preceded with the most frequent event of hemorrhage is the Caesarean operation (27/49=55.1%). The main causes of hemorrhages are the uterine atony (22/51=43.1%), vaginal and cervix lacerations (10/51=19.6%). The most used surgical intervention is the total hysterectomy associated with the ligature of the hypogastric arteries (25/51=49.0%). Surgical conservative techniques were applied to patients with uterine atony, achieving in all of them total control of the hemorrhage (6/51=11.7%). There was one maternal death (1/51=2.0%).

Conclusions: The surgical technique used for the treatment of the obstetric hemorrhages was the total hysterectomy associated to the ligature of the hypogastric arteries, in young patients, with uterine atony, vaginal and cervical lacerations. There was one maternal death. It was possible to conserve the uterus in patients with uterine atony, applying surgical conservative techniques that's why we consider, that these techniques should be applied with more frequency, whenever the patient's clinical circumstances allow it.

Introduction

Hemorrhages are one of the main causes of maternal death, so much in the developing countries as in developed countries. The early stage treatment options include drugs to increase uterine contractions, surgical techniques, radiological interventions and hemostatic drugs. It is a serious problem that requires effective treatment to avoid a surgical intervention (hysterectomy) that often is the last treatment option [1].

Before an obstetric hemorrhage, the opportune recognition of the cause and intervention is fundamental. The combinations of medical conservative therapies are the most adequate options for treatment and are successful in most of the cases. However, when the process continues and abnormalities of clotting or hemodynamic instability are presented, the next step should be an invasive intervention

The interventions that are mostly used are the curettage packing, reparation of vaginal lacerations, compressive sutures and pelvic devascularization mostly after the caesarean operation. The uterine compressive sutures are very effective and an easy emergency procedure that conserves the fertility. The last option in all the cases of persistent hemorrhage is the emergent hysterectomy [2].

The uterine atony is responsible for the 50% of the hemorrhages in childbirth and 4% of the maternal deaths. It is recommended to use the 4 "T"s: Tone, Trauma, Tissue and Thrombin to evaluate the cause of the hemorrhage [3,4].

When the medical measures or mechanics are not enough to control the hemorrhage for uterine atony or the hemorrhage is due to another cause, we will think about an intervention treatment [5,6].

The techniques of surgical interventions are applied depending on the delivery type and the causes of the hemorrhage [7,8]:

- Uterine hemostatic sutures (compressive sutures).
- Ligature of uterine and uterus-ovarian arteries.
- Ligature of the hypogastric arteries.
- Obstetric hysterectomy (total or subtotal).
- Ligature of hypogastric arteries (not carried out).
- Pelvic tamponade.

One of the challenges is to reduce the maternal mortality that is the Objective of Development of the Millennium (ODM) they outline to the states. Cuba, as a state member of the United and signatory Organization of Nations of the ODM has worked to improve the health of women and with it to diminish the morbidity and the maternal mortality.

The objective of the present investigation is to share our experiences with the techniques of surgical interventions applied in the treatment of obstetric emergency hemorrhages.

Material and Methods

The study applied is descriptive, retrospective, from a transversal court in 51 patients to those whom it was necessary to apply surgical emergency interventions to control the Obstetric Hemorrhages (OH), from January 1988 to February 2017 at the general hospital “Ciro Redondo Garcia”, in Artemisa, Cuba.

Criterion of main results: The operated patients’ age, childbirth type that preceded to a hemorrhage event, main causes of hemorrhages, surgical interventions used and maternal mortality.

The statistic procedure was carried out through the revision of the clinical histories and the making of a formula for the process of the datas and prosecution in the system MedCalc 2007, expressing the results in charts and graphics.

Analysis and Discussion of the Results

The present investigation shows our experiences in surgical confrontations of the Obstetric Hemorrhages (OH) in 51 patients in which not possible the control of the hemorrhage using other methods in the obstetric department of the general hospital “Ciro Redondo Garcia” of Artemisa, Cuba in the period understood between January 1988 to February 2017.

Those that are fully devoted to obstetric emergencies know that, without mistake maternal hemorrhages has killed more women than any other pregnancy complication in the humanity’s history [9].

The average age of operated patients is 27 years (95% CI for the 25.0000 to mediates 28.8057) due to emergency surgical procedures for obstetric hemorrhage control (Figure 1).

This doesn’t correspond with other authors [10]; it behaves this way in our series because at this age’s range is that most women give birth in our country.

Considering that independently that the process of delivery takes place in good ages, have or not risks factors, all women arrive to childbirth with risk of bleeding fundamentally in the peripartum.

The childbirth type that preceded to an hemorrhage event with more frequency was the caesarean (Figure 2). Two cases are not informed in the total of childbirths, because the hemorrhage was because of an early pregnancy failure of the second trimester with coagulopathy and the other case an uterine rupture with fetus in abdominal cavity in the moment of the laparotomy that it doesn’t count as a childbirth.

The literature concludes that the emergency hysterectomies because of obstetric hemorrhages, the biggest percent, are carried out after a caesarean operation [11].

It is shown in the chart 1 that the uterine atony was presented as the main cause of an hemorrhage complication, similar to that informed by the revised literature [12]. The neck and vagina lacerations constitute the second cause of postpartum hemorrhage in our series. The damage of the genital tract as a cause of post partum hemorrhage can happen spontaneously or because manipulation used for the extraction of the fetus.

The traumatism can happen after lingering childbirth, especially in patients with relative or absolute cephalic -pelvic disproportion and in uterus that have been stimulated with oxytocin or prostaglandins [13-15]. The cervical lacerations are more commonly associated with the use of the forceps; for it is that the neck should be inspected after these procedures [16-18] (Table 1).

Several surgical techniques were used such as invasive or conservative treatment to control hemorrhages according to each patient’s clinical characteristics (Table 2).

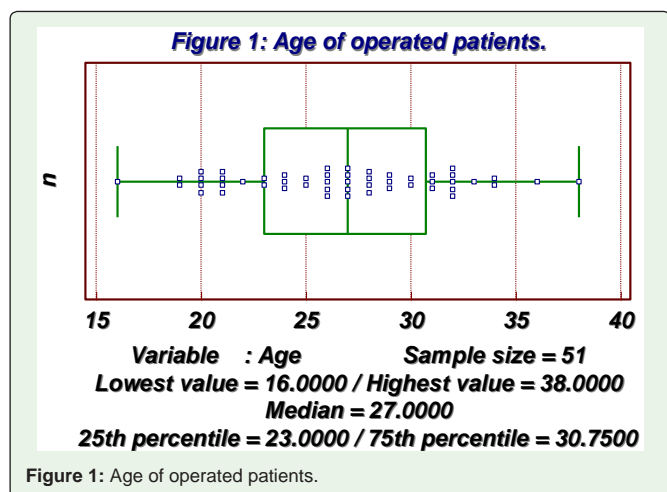


Figure 1: Age of operated patients.

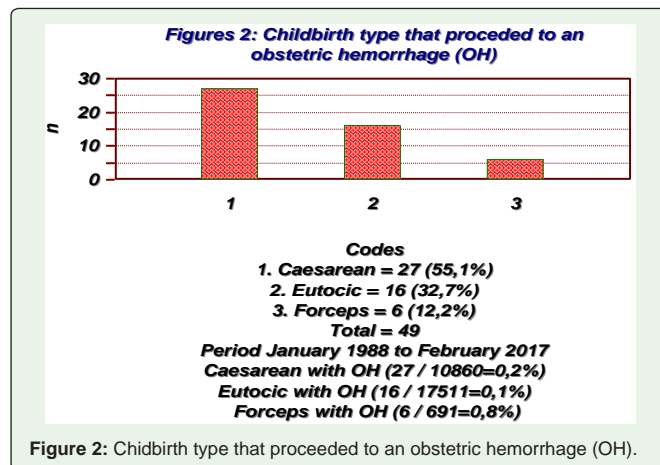


Figure 2: Childbirth type that preceded to an obstetric hemorrhage (OH).

Table 1: Causes of hemorrhages.

Causes of hemorrhages	No	%
Uterine atony	22	43.1
Uterine rupture	2	3.9
Placenta previa and accretism	8	15.7
Coagulopathy	1	2.0
Uterine inversion	1	2.0
Vagina and neck lacerations	10	19.6
Postoperative hemorrhage	3	5.9
Late postpartum hemorrhage	4	7.8
Chi-square	55.510	
DF	7	
Significance level	P < 0.0001	

As can be seen in Table 2 that in 25 patients (49.0%) a total hysterectomy plus the ligation of the internal or hypogastric iliac arteries were performed (HTA + LA-II) , 2 for uterine rupture, one of them related with the induction of labor of a dead fetus in pelvic presentation that was found in abdominal cavity at the moment of the laparotomy.

The other case was a patient with 35 weeks of gestation in spontaneous labor with microcaesarean antecedents where a break out of the uterine bottom took place. It was also used in the cases with vagina and neck lacerations related with eutocic and instrumented childbirths, and in post caesareans uterine atonies that had been manipulated through vaginal way and a total hysterectomy were preferred.

In 17 cases (33.3%), a subtotal hysterectomy and ligation of the hypogastric arteries were performed (HSA + L A-II) because of post caesareans uterine atonies, 12 because of inability of uterine contractions, 3 for uterine miomatosis and 2 after placenta previa with bleeding in the place of the placenta insertion.

The ligation of the hypogastric arteries was used as a unique resource, for the control of the post surgical hemorrhage after a caesarean operation, hysterectomy in 3 cases.

The hysterectomy plus ligation of the internal hypogastric iliac arteries was the resource most used depending on the peculiarities of each case and because it is shown in the protocol to continue in our obstetric consensus, later to the published in the year 2012, it was incorporated in the conservative techniques in the treatment of the obstetric hemorrhages [8,19].

The ligation of the hypogastric arteries is a technique that saves lives in the obstetric hemorrhages and especially recommended in cases of severe hemorrhages, in events when embolization of uterine artery cannot be performed [20]. The mortality and maternal morbidity for obstetric hemorrhages are potentially avoidable, due to this procedure should be practiced by those who face the handling of these obstetric emergencies day by day and this way to avoid more maternal deaths for hemorrhages [21,22].

If the alternative surgical methods are insufficient to control the hemorrhage, the hysterectomy is inevitable in order to avoid the biggest loss of blood and coagulopathy risk; without being a difficult

decision, not only for the secondary morbidity that accompanies it, but also for the psychological trauma that means the sterility, amenorrhea, among others [23]. Aguilar Ponce and others authors studied the obstetric hysterectomies where the postpartum hemorrhage occupied an outstanding prevalence [24-26].

In a pregnant patient with gestational time of 35 weeks, severe preeclampsia with fetal dead, re-evaluation for the hemodynamic instability is required, also urgent laparotomy is required, meeting a great retro placental hematoma and Couvelaire uterus with severe hemorrhage for a nulliparous patient, ligation of the upper branches of the uterine arteries and of the ovarian anastomosis uterus was realized; with the hemorrhage still taking place and clotting alterations the decision was made to carry out the ligation of the hypogastric arteries as third step (LA-U + LA-II) achieving the control of the hemorrhage (Table 2).

Four years later this patient was pregnant of a second child in which a Caesarean operation was performed to give birth on term, a newly born with good weight without complications.

Although it is possible to carry out an obstetric hysterectomy and to solve the maternal hemorrhage problem, it is a dilemma that the woman finishes her fertility with that surgical act, especially when that complication happens in the first childbirth [27].

The ligation of the afferent vascular pedicles to the uterus, branches of the uterine arteries and the ovarian anastomosis uterus (LA-U + LA-II) are simple and quicker techniques that don't require a better surgical skill and have a high percent of effectiveness [28].

These procedures are considered to be accepted for the initial surgical handling of the uterine atony, as an alternative to the hysterectomy that has a higher morbidity and in which the uterus is not preserved, while the team of help arrives and to reserve the bond of the hypogastric arteries as third step to continue, previous to the hysterectomy or complementary if it doesn't carry out before.

The multiple square of Ho-Cho was used in 3 patients (Table 2), in a case after an uterine inversion that after its reduction the hemorrhage persisted because of atony. In another case, of post operatory hemorrhage after a Caesarean operation because of

Table 2: Surgical techniques used for the control of hemorrhages.

Surgical techniques	No	%
HTA + L A-II	25	49.0
HSA + L A-II	17	33.3
L A-U + L A-II	1	2.0
L A-II	3	5.9
HO-CHO	3	5.9
B-LYNCH	1	2.0
SUTURES IN "U"	1	2.0
Chi-square	77.333	
DF	6	
Significance level	P < 0.0001	

Abbreviations: HTA: Abdominal Total Hysterectomy; HSA: Abdominal Subtotal Hysterectomy; L A-II: Ligation of Internal Iliac Arteries; LA-U: Ligation of Uterine Arteries; B-LYNCH, HO-CHO and SUTURES "U": Compressive Suture Technique to the Uterus.

placenta previa the same technique was applied. It was also applied a conservative treatment in a case with atony after the vaginal delivery. In a French study, 23 cases were published, where the hemostasis was achieved in 95% in cases of acretism or uterine atony [29].

The B-Lynch technique was described in 1997; it is a continuous suture to apply on the uterus in a simultaneous way to the compression of it. It was used in a case of atony after a Caesarean operation being able to control the hemorrhage and to conserve the uterus (Table 2). The authors report a 91.7% of success with this resource in the control of the hemorrhages for uterine atonies [30,31].

In the Table 2, a case is shown with total occlusive placenta previa acretism where the sutures in “U” were used after the Caesarean operation. This intervention consists on placing in the body uterine transfixants points with suture from the previous face toward later in form of U continuous, on three levels [27]. The ligature in way of a belt near the uterine neck favored the hemostasis at level of the insertion of the placenta.

All these conservative resources mentioned before try to apply a continuous pressure on the bleeding vascular layer. They offer advantages because of their simplicity, their relative security and speed, with the particularity of preserving the uterus to maintain the fertility in a future situation and to avoid the maternal morbimortality that involves the emergency obstetric hysterectomy [32]. It is even discussed to apply these techniques as a prophylaxis purposes in patients with childbirth through Caesarean operations with significant risk of postpartum hemorrhage [30].

In our study there was one patient death (Table 3), because a massive hemorrhage as a complication after neck and vagina lacerations, there was hypovolemic shock in the immediate postpartum with reanimation delay and aggressive medical treatment, surgical intervention was decided where a total hysterectomy with ligature of the hypogastric arteries was applied.

After the control of the arterial hemorrhage and before the clinical conditions manifested by acidosis, hypothermia and coagulopathy, the control of the venous hemorrhage and microvascular by means of the tamponade of the abdominal cavity to correct the metabolic alterations and the hemostasis; at the 72 hours was operated and it was necessary to pack again. In spite of the administration of hemo derivatives and intensive care the patient dies at the sixth day.

In the department of Antioquia (Colombia), 41 women died due to hemorrhages during the years 2004 and 2005, standing out as the first cause of maternal death [33-35].

For some authors the embolization of the uterine arteries is the best technique for the treatment of postpartum hemorrhages that is made with radiologic intervention [36,37]. We don't have this

resource; this technique is useful only in stable women from the hemodynamic point of view.

The massive hemorrhages or exanguinants require in occasions heroic surgical measures that control the bleeding and that save lives, in these cases the decision should be the total hysterectomy or subtotal and also the bond of the hypogastric arteries.

Conclusions

The surgical technique most used for the treatment of the obstetric hemorrhages was the total hysterectomy associated to the ligature of hypogastric arteries, in young patients, with uterine atony and cervicovaginal lacerations. There was one maternal death. It was possible to conserve the uterus in patients with uterine atony in which conservative surgical techniques were applied; we consider that these techniques should be applied with more frequency, whenever the patient's clinical circumstances allow it.

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Table 3: Maternal mortality.

Maternal mortality.	No	%
Deaths	1	2.0
Alive	50	98.0
Chi-square	45.176	
DF	1	
Significance level	P < 0.0001	

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