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Research Article

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# Advanced Techniques in Obstetrics: Experience and three-year sequence in Naval Medical Center of Mexico City and General Hospital of Temixco Morelos

## Abstract

Obstetric hemorrhage is considered a public health problem, with an impact on morbidity and mortality, uterine atony is considered the main cause, there are treatment protocols that must include general measures of life support and other more specific ones such as: uterine massage, prophylactic use of uterotonic agents, active management of labor and volumetric replacement; There are patients who, even with uterotonic management, do not reverse uterine atony, who are candidates for the application of intrauterine compression techniques, if remission is not achieved, it is started with uterine compression sutures and arterial ligations, highlighting in the latter group the GALA hypogastric artery ligation technique, these surgical techniques become one of the most used maneuvers since it is easy and fast to perform and of course it is accessible whatever the center where it is practiced, constituting one of the pillars in the management intensive obstetric hemorrhage.

**Keywords:** Hayman, Posadas, Obstetric Hemorrhage, cesarean section, advanced techniques in obstetrics

Volume 12 Issue 3 - 2021

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**Received:** April 28, 2021 | **Published:** May 13, 2021

## Background

Obstetric hemorrhage was previously defined as blood loss greater than or equal to 500ml in transparation, in turn, this was divided into moderate when the blood loss is between 1000 and 2000ml and severe when it is more than 2000ml. 2 also concepts as 500ml for delivery, 100 ml for cesarean and 1500ml for porro surgery. They have remained in the past, currently obstetric hemorrhage is defined as loss maternal death and perinatal complications are considered a health problem in mexico, as well as in the world, even though covid-19 is currently considered the first cause of maternal death in mexico, the calculated maternal mortality ratio is 52.8 deaths per 100,000 estimated births, where obstetric hemorrhage is the 3rd leading cause of maternal death.[1]

Obstetric hemorrhage was previously defined as blood loss greater than or equal to 500ml in transparation, in turn, this was divided into moderate when the blood loss is between 1000 and 2000ml and severe when it is more than 2000ml.[2] Also concepts as 500ml for delivery, 100 ml for cesarean and 1500ml for porro surgery. They have remained in the past, currently obstetric hemorrhage is defined as blood loss after any obstetric event, which produces hemodynamic instavility, it is defined in a cuali way, blood losses of other recoletic and biological caungeous ocilete recolective ctexumeso de cauntitativa or venous, taking into account the ph, excess base, lactate, and hb with hto. Such modifications have been of vital importance in the diagnostic and treatment management as according to the physiology of pregnancy, imc and previous anticipated pregnancy modify the permissible bleeding.[2]

Complications associated with postpartum obstetric hemorrhage do not occur due to blood loss, but rather to ineffective maneuvers to stop bleeding, which could be avoided if they were carried out properly, its prevention and timely treatment. These, despite being carried out by competent professionals, with demonstrated skills and adhering to the best clinical practices, on many occasions fail to stop the bleeding, making surgical intervention necessary.[1,2] In this study, we will only report the advanced surgical techniques, defined as compressive sutures, double and triple desarterialization of uterine arteries and hypogastric ligation. The techniques of minimum invention such as urterine clamping with zea technique, compressive balloons, uterine massage and uterine bimanual compression, are not reported in the series of cases, as it is part of the unique and prophylactic maneuver in the attention. Raising the suspect index of obstetric hemorrhage, as well as timely and rapid intervention by trained hands, is without doubt the basis of the cornerstone as described in this drafting. As in emergency medical courses, trauma, sepsis etc. before the catostrophe improve the forecast, surgical time. And postoperative state, as well as quality of life in our patients. Reducing morbidity not only maternal mortality is a current priority, healthy moms, healthy families, it is equivalent to a better society.[2,3]

The most common cause of pph remains uterine atony, first-line treatment for obstetric bleeding consists of conservative management with the use of uterotonic agents in doses and cascades described in multiple algorithms of obstetric care, as well as availability of personal medicines and instrumental according to each hospital unit, bimanual uterine massage and early replacement of blood components (depending on the clinic and gasometric levels). If conservative treatment fails, second-line therapy is available that includes intrauterine balloon tamponades, uterine compression sutures, and ligation of the uterine artery and / or internal iliac artery.[3]

If all the aforementioned uterine preservation treatments fail, then an obstetric hysterectomy should be performed, considered that a peripartum hysterectomy is a life-saving procedure in some conditions, however it involves loss of fertility, psychological trauma and complications of the urogenital tract. The emotional impact on

post-hysterectomized patients has been such that institutional hospitals have created psychotherapy groups for these patients. In senecta life, there are no studies involving urinary or fecal incontinences, as well as gemnotal prolapses in patients with obstetric hysterectomia, from the physiological point of view, it is expected to have impact on these patient longing and collosure modes urgency of obstetric bleeding.[4]

In the last two decades several uterine compression sutures of various different techniques have been introduced, the b-lynch suture was the prim, for the first time in 19974 in 2002, Hayman et al. reported a simplified uterine compression suture with slight modifications of a b-lynch technique. the application of a hayman suture is quick and easy.[4,5] Also, when performed after closing the close-up, the bleeding from the edges of the hysterorraphy is considerable, it is necessary to mention that the original technique takes segment 2-3cm below the raffia. thus avoiding tears at this level and reducing the risk of dehiscence of histerorraphy.[4,5]

In 1966, james l. o'leary published the detailed description of the technique, in which he established that it was necessary to access the lateral aspect of the uterus and to dissect the vesicouterine peritoneum and the anterior lamina of the broad ligament, to visualize and ligate the uterine vessels. this description became popular and eventually became known as the o'leary technique. 6 in mexico, in 2007, posadas-nava and his group made a modification to this technique, which consists of the selective ligation of the uterine arteries, through access through the posterior aspect of the uterus to the height of the uterine segment both techniques, which simplifies the procedure, reduces execution time because it avoids any dissection, increases safety (reduces the possibility of injuring neighboring structures) and is easily reproducible.[6]

## Materials and methods

Retrospective, descriptive study carried out at the Naval Medical Center and General Hospital of Temixco, Morelos during the period from June 2017 to June 2020. Patients with postpartum and trans-cesarean obstetric hemorrhage were included, in all patients the uniform protocol of medical management for postpartum obstetric haemorrhage and transcesarean section consisting of: uterine massage, uterotonic drug treatment, all those patients without remission of uterine atony, received dearterialization of posed uterine arteries and double O'leary, as well as Hayman compression sutures (Figure 1).

Predisposing risk factors were considered (Table 1), such as multiparity, varicose or thickened uterine segment, twin pregnancy, endometriotic foci, or contraction distortions in labor.

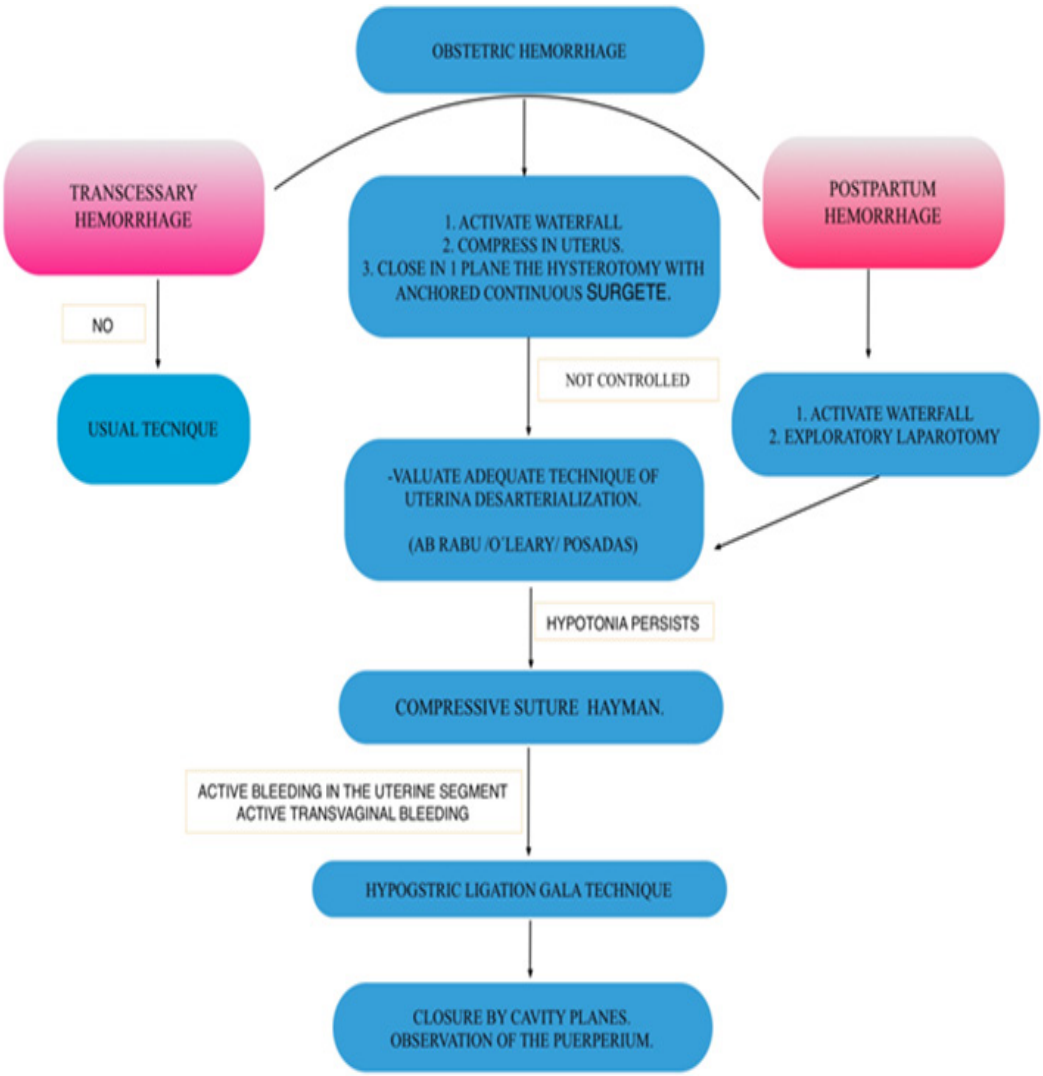


**Figure 1** Algorithm for bleeding control proposed by the authors.

**Citation:** Rodriguez-Villan C, Fermin-Aldama Y, Vilchis AB. Advanced Techniques in Obstetrics: Experience and three-year sequence in Naval Medical Center of Mexico City and General Hospital of Temixco Morelos. *Obstet Gynecol Int J.* 2021;12(3):139–143. DOI: 10.15406/ogij.2021.12.00567

**Table 1** Indications for surgery in patients with bleeding

| Diagnostics | Total | % |
|---|---|---|
| Low fetal reserve | 10 | 12.20% |
| Iterative caesarean section | 9 | 10% |
| Previous cesarean section | 5 | 5.50% |
| Chorioamnionitis | 3 | 3.30% |
| Soft tissue dystocia | 13 | 14.30% |
| Fetal dystocia | 6 | 6.60% |
| DPPNI | 2 | 2.20% |
| Twin pregnancy | 6 | 6.60% |
| Oligohydramnios | 5 | 5.50% |
| Dystocic delivery | 23 | 25.70% |
| Preeclampsia | 9 | 10% |

In this study, the dearterialization of the uterine artery was performed in the first intention, decreasing the flow to 80% of the uterine irrigation, sometimes the posterior access is not viable due to Mullerian malformations, myomas, endometrial foci, in the second instance In this series of cases, compression suture, improving uterine tone, in a few cases it had to be complemented with hypogastric artery ligation, lowering blood pressure, since it has been shown in multiple studies that this technique is not first-line for events obstetrics, due to the need for multiple forms, due to the need for retroperitoneal access in an obstetric patient, considering that it is vascularized, thus increasing the risk of vascular injury and ureters due to physiological stasis of the urinary tract in pregnancy.

In all cases, selective ligation of the uterine arteries was performed with a posterior approach (Posadas technique), which consists of an exploratory laparotomy and in bloc ligation of the uterine vessels (artery and vein) through the posterior aspect of the uterus. For its execution, the uterus must be exteriorized and flexed towards the pubis, the vascular bundles on the posterior aspect of the uterus must be identified and palpated, the anatomical site of the sutures must be visualized (2 cm below the uterine segment) and a transfictive point must be made entering and leaving the avascular areas of the myometrium, in the region of each uterine artery with polyglycolic acid 1 (Figure 2).

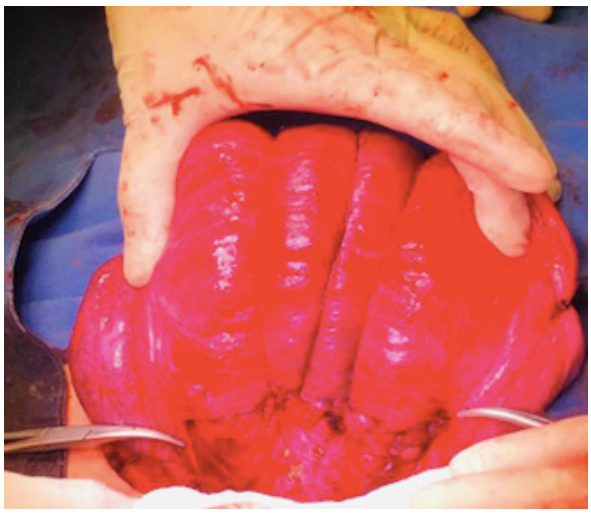

**Figure 2** The Hayman suture.

Subsequently, the tubal arteries were ligation with polyglycolic acid, as it was not considered successful, the Hayman compression suture was performed. The uterus is exteriorized and rectified, before executing the compression suture, the uterus is manually compressed and it is verified that this maneuver reduces bleeding. Next, the compression suture is performed. A transfictive point is made, with a straight needle, directly anterior to posterior to the uterus, at the level of the uterine segment and 3-4 cm medial to the lateral border of the uterus. The suture is then directed to the fundus and tied there, while the assistant makes forceful uterine compression (Figure 3).

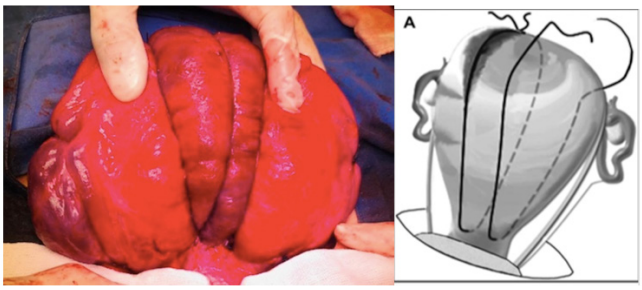


**Figure 3** Complete Hayman compression suture.

The suture must be performed on each side of the uterus (parallel reins) and, finally, the absence of vaginal bleeding must be verified. In case of persistent bleeding, the uterine arteries were ligation (Posadas technique) or hypogastric artery ligation. The absence of bleeding at the stitches was verified and the success of the procedure was confirmed by vaginal inspection.

Information regarding general obstetric variables (age of the mother, obstetric history, perinatal history), route of termination of pregnancy, cause of obstetric bleeding, time of execution of the technique, operative findings, total estimate of bleeding, complications was recorded. Trans and postoperative, and evolution of the patients, stay in intensive care unit, length of stay in the ICU.

## Results

Between June 2017 and June 2020, a total of 90 patients with a diagnosis of uterine atonia resistant to treatment with uterotonics were studied, the mean age was 25 years +/- 5years, the cause of obstetric hemorrhage in 86%. It was non-reversible uterine atony, to a lesser extent partial accreta in 4.4%, endometrial foci in 4.4%, uterine artery tear in 2%, myomatosis in the uterine segment, and hysterorrhaphy dehiscence in 1.1%.

The termination of the pregnancy was documented by: cesarean section in 96.7% and delivery in 3.3%. The estimated time of resolution of the obstetric hemorrhage was 15.37 minutes, the bleeding after the application of suture techniques was 571cc.

Regarding the suturing techniques, selective dearterialization of the Posadas uterine arteries was performed in 4.4%, in 95.5%. Hayman compression suture was performed plus selective dearterialization of Posadas uterine arteries, the procedure was successful in 95% of the cases. In only 1 case, the GALA technique hypogastric ligation was added to achieve hemostasis Figure 4.

The postoperative period was simple in all cases and these women were discharged from the hospital in good condition; in no case was a complication due to compression suture technique documented, without reoperation, no patient, no obstetric hysterectomy merit, and only 3 patients merited stay in the Intensive Care Unit, with an average stay of two days.

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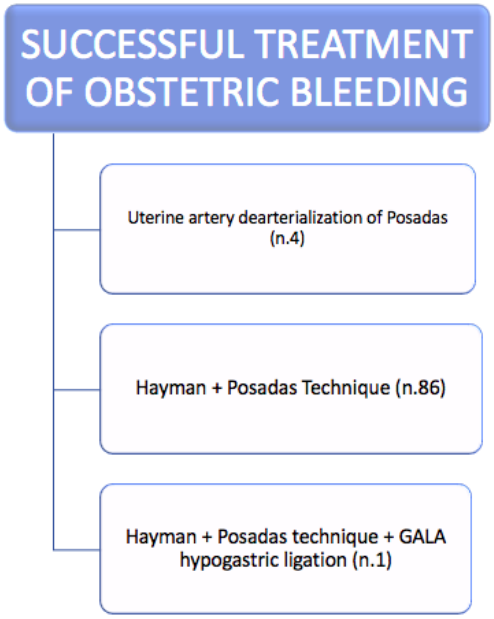


**Figure 4** Suture techniques performed.

## Discussion

Our study represents a considerable cause, reported in mexico, by a single operator, the results in this study suggest that this sequence of surgical events offers the advantages of being easier, it can be applied more quickly, the learning curve is of 8 patients, a key point in an emergency situation, and avoids the need to perform an obstetric hysterotomy, the reported success in controlling bleeding is 95.5%, which agrees with Moreno-Santillán et al.[7] in 2018 (reference), where only hayman compression suture was applied.

To date, there are no studies that analyze the estimated time of each of the advanced surgical techniques in obstetrics, in this study the average time was 15 minutes, with 2 techniques, and total resolution of uterine atony, although they cannot be make comparisons with other studies, where only a single technique was evaluated with an average time of 19.5 minutes, in eduardo de la luna and collaborators in 2019.

Another benefit provided by advanced surgical techniques is the reduction of blood loss, in this study the blood loss was 571cc, compared to that reported in eduardo de la luna et al. in 2019, with an average blood loss of 1485+/- 393ml. the key to this is the elevation of the suspect index by risk factors, owned by the patients, gestation or labor.[8–11]

## Conclusion

Compression sutures use the reduction of arterial flow (uterine dearterialization), venous flow (compression suture) and blood pressure in the pelvic hollow (hypogastric ligation). In the context of obstetric hemorrhage and control of bleeding, we consider that the combination of the techniques described is effective. The sequence mentioned in our casuistry can be applied quickly, easily and with a short learning curve, as well as with the minimum risk of vascular lesions.

The Hayman compression suture avoids the need to perform a lower segment hysterotomy when atony follows delivery, or the transcesarean area reduces uterine bleeding from atony and at the edges of the hysterotomy.

Likewise, the modification of the posadas technique for the dearterialization of uterine arteries, through access through the posterior face, simplifies the procedure in most cases, reduces the execution time because it avoids any dissection, increases safety and reduces the learning curve.

The success rates are high, the procedure time is short, and they significantly reduce bleeding. They constitute the conservative and definitive first-line surgical treatment in the control of postpartum and transcaesarean hemorrhage. It is worth mentioning that the Hyman suture was the one performed in postpartum and transcendental patients due to its ease. Undoubtedly, the reduction in surgical time not only reduces intraoperative bleeding, if not, it also reduces the anesthetic risk, risk of uterine infection, risk of discarding different tissues, supplies and associated costs in the hospital stay, without a doubt the application of these techniques, should be considered by obstetric schools in the training of the specialty of Gynecology and Obstetrics, since each time we will find ourselves more frequently faced with the challenge of controlling an obstetric hemorrhage, in less time, with insufficient personnel, supplies and comorbidities.

The sequence described in the algorithm is the one carried out by the author of this case study, without being committed to a single surgical technique, it is important to understand that each patient must be individualized with the type of approach, the sutures to be used, the amount of risk involved. The suture as well as the support of the salpinge together with the uterine plexus, that is, there is no universal technique for all patients, which must be considered in each case. Finally, we understand that up to 80% of obstetric hemorrhage can be prevented, if we face it, the use of absorbable sutures, synthetic monofilament in patients with diagnosis or risk of chorioamnioitis, in this way we will reduce the risk of complications, is necessary, to show more patients within this casuistry, in order to expand the universe of study, and carry it out in a comparative way, therefore, a second part of this article will be presented, taking into account variables such as post-tequiav fertility.

## Acknowledgments

None.

## Funding

None.

## Conflicts of interest

The authors declare that they have no conflict of interest.

## References

1. Cabrera YH, Eagle LC, Hernández MR. Application of Hayman compression sutures in postpartum obstetric hemorrhage. presentation of a case. *Medisur*. 2017;15(2):261–265.
2. Diagnosis and treatment of hemorrhagic shock in obstetrics, clinical practice guide, evidence and recommendations. 2017.
3. Cetin BA, Begum AM, Alev AA, et al. comparing success rates of the hayman compression suture and the bakri balloon tamponade. *J Matern Fetal Neonatal Med*. 2019;32(18):3034–3038.
4. Nanda S, Singhal SR. Hayman uterine compression stitch for arresting atonic postpartum hemorrhage: 5 years experience. *Taiwan J Obstet Gynecol*. 2011;50(2):179–181.
5. Posadas-Nava Alejandro. Control of obstetric hemorrhage by selective ligation of the uterine arteries: seven years experience. *Ginecol Obstet Mex*. 2019;87(9):576–582.

6. Ghezzi F, Cromi A, Uccella S, et al. The hayman technique: a simple method to treat postpartum haemorrhage. *BJOG*. 2007;114(3):362–365.

7. Moreno-Santillán AA, Posadas-Nava A, Martínez-Adame LM, et al. Hayman's compression suture: four years' experience. *Ginecol Obstet Mex*. 2018;86(9):590–596.

8. Diagnosis and Treatment of hemorrhagic shock in obstetrics. Evidence and Recommendations Guide. Clinical Practice Guide. Mexico. CENETEC; 2017.

9. Sebastián CL, Liliana Janet CP, Sergio RO. Effects of uterine dearterialization on uterine and ovarian blood flow. *Rev Med Inst Mex Seguro Soc*. 2018;56(2):143–147.

10. De La Hoz, Franklin J Espitia, Oscar EC Zuluaga, et al. Hypogastric artery ligation in severe postpartum hemorrhage. *Ces Medicine*. 2016;30(1):26–34.

11. José PR. From the editor on the Consensus on Obstetric Hemorrhage published by ACOO. *Peruvian Journal of Gynecology and Obstetrics,* 2015;61(3):215–217.

**Citation:** Rodriguez-Villan C, Fermin-Aldama Y, Vilchis AB. Advanced Techniques in Obstetrics: Experience and three-year sequence in Naval Medical Center of Mexico City and General Hospital of Temixco Morelos. *Obstet Gynecol Int J.* 2021;12(3):139–143. DOI: 10.15406/ogij.2021.12.00567