



Research Article

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Morbidity in Patients Undergoing Hypogastric Artery Ligation at Risk of Obstetric Bleeding



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Summary

Background: Obstetric bleeding is the leading cause of maternal mortality underdeveloped countries, account for one-third of deaths. Alternative surgical techniques are available to stop bleeding such as ligation of hypogastric arteries.

Objective: To determine maternal morbidity in patients undergoing hypogastric artery ligation at risk of obstetric bleeding from June to December 2012 in H.G.R. 36 I.M.S.S Puebla.

Material and Methods: Descriptive, observational, transversal, ambilective, homodemetic study. Patients at risk of obstetric bleeding under "hypogastric artery ligation" were included from June to December 2012 at H.G.R. 36 I.M.S.S. Puebla, of any maternal and gestational age. The Tipo and sample size was finite, not probabilistic. Statistical method: descriptive and Odds.

Results: 38 patients underwent hypogastric artery ligation. Average age: 26.9 years. Placentalacretism (44.74%) was the most common indication Odds 0.78, followed by uterine hypotonia (7.89%) Odds - 0.07 and placenta previa (7.89%) Odds x 0.07. There were 22 (57.8%) patients with obstetric bleeding, 15 (68.18%) had previous C-section background Odds Odds 2.12. The probability of culminating in Odds obstetric hemorrhage hysterectomy is 4.2. Se documented 1 (2.63%) patient with post-ligature ureteral complication Odds 0.027. Maternal and perinatal mortality of 0%.

Conclusion: Complication after ligation of hypogastric arteries was presented in 1 patient with ureteral ligation. There were no vascular complications. Maternal mortality was 0%. Perinatal mortality was 0%.

Keywords: Hypogastric artery ligation; Obstetric bleeding; Maternal morbidity; Maternal mortality; Vascular complications; Perinatal mortality

Background

Postpartum bleeding remains the leading cause of death in under developed countries, which account for about one-third of maternal deaths in Latin America, Asia and Africa [1-3]. An estimated blood loss of more than 500ml after vaginal delivery or a loss of more than 1,000ml cesarean birth has often been used for the diagnosis of obstetric bleeding [4,5]. In Mexico, it is estimated that 86% of deaths occur in hospital units. Patients who

had vaginal births had a slightly higher prevalence of postpartum bleeding than those who had cesarean deliveries [2,6-24]. In 2010, only 115 women died in the State of Mexico per 100,000 inhabitants, while in 2009 that figure was 166 cases [17,20,22].

Bleeding is the leading cause of death secondary to hypovolemic shock, before this occurs, early onset of coagulopathy has been shown. Hypothermia, acidosis, and dilution resulting

from common resuscitation actions can worsen coagulopathy [13,19,22]. The latter can be complicated by hypothermia and acidosis, both leading to defective clotting [7,12,14].

Callagan (2010 AJOG) concluded that cesarean delivery without induction of labor has higher rates of postpartum bleeding [5,8,10]. The American College of Gynecology and Obstetrics reports that the risk factors for postpartum hemorrhage are: Prolonged Labor, Precipitated Labor, Postpartum Hemorrhage History, Medium Lateral Episiotomy, Preeclampsia, Uterine Overdistension (macromic products, multiple pregnancy, polyhydramnios), Ethnic Asian and Hispanic, Corioamnionitis, Cesarean delivery [6, 9,11,16,18, 19]. In cases of postpartum hemorrhage, first-line treatment includes uterotonic agents with or without procedures intended for uterine capping. If the latter fails, the following treatment focuses on surgical procedures such as ligation of uterine/hypogastric arteries or hysterectomy, rescue surgeries associated with saving the patient's life [22].

Hypogastric artery ligation (H LAH) is a surgical technique by which internal (hypogastric) iliac arteries are ligate to its anterior branch [21,23]. The indications are classified into 2 types:

Profilactica and Therapeutic: Prophylactic is when performed prior to a non-obstetric pelvic surgical procedure, for the sole purpose of preventing intense bleeding during surgery [21].

Terapeutica: This is when the ligature is performed after a non-obstetric pelvic surgical procedure, in order to inhibit bleeding secondary to the same surgery [21].

Prophylactic indications of uterine artery ligation in obstetrics are: uterine atonia, placenta accreta, Couvalaire uterus. Complications of hypogastric artery ligation are classified into vascular lesions and ureteral lesions.

Vascular Injury: This group is the outer iliac artery ligation, hypogastric artery tear, hypogastric vein tear and sacral venous plexus injury [21].

Ureteral Injuries: Conditioning, wall injury, ligature, total section. Late complications are those that occur after the first 10 days of postoperative: we have buttock atrophy and bladder necrosis. Because there are no studies reporting maternal morbidity in patients undergoing hypogastric artery ligation at risk of obstetric bleeding, so interest arises to conduct this research.

Material and Methods

Descriptive, observational, transversal, ambilective, homodemic study. Patients at risk of obstetric bleeding under "hypogastric artery ligation" were included from June to December 2012 at H.G.R. 36 I.M.S.S. Puebla, of any maternal and gestational age. The Tipo and sample size was finite, not probabilistic. Statistical method: descriptive and Odds.

Results

A total of 38 postoperative women of hypogastric artery ligatures at risk of obstetric bleeding were included from June to December 2012 at the Regional General Hospital number 36 of the Mexican Institute of Social Security Puebla. The results found were analyzed below.

The average age was 26.9, minimum of 16 years and maximum of 37 years, 5.38 years. The details are shown in Table I. The average body mass index was 28.61, minimum 21.6, maximum 35.5 and 3.47. Details are presented in Table 2. One (2.63%) patient was found to carry uterine myomatosis and 37 (97.36%) patients is not presented in Table 3. Reported to 23 (60.5%) patients with prior C-section and 1 (2.63%) patient with myomectomy history as seen in Table 4.

Table 1: It shows the age of the patients studied (source: clinical record).

Age			
No. 38	Average 26.9	*OF 5.38	
Age	Frequency	Percentage	ODDS
16-20a	4	10.53	0.12
21-25a	12	31.58	0.46
26-30a	10	26.32	0.36
31-35a	9	23.68	0.31
36-40a	3	7.89	0.09
TOTAL	38	100	

*DE - standard deviation.

Table 2: Displays the body mass index of the patients studied (source: clinical record). *DE - standard deviation.

IMC				
No. 38		Average: 28.6 years	*OUT OF 3.47	
Parameter	Ranges	Frequency	Percentage	ODDS
Normal	18 - 24.99	4	10.53	0.12
Overweight	25 - 29.9	20	52.63	1.11
Obesity I	30 - 34.9	12	31.58	0.46
Obesity Ii	35 - 39.9	2	5.26	0.06
Total		38	100	

Table 3: It shows the antecedent of uterine myomatosis in the patients studied (source: clinical record). *DE - standard deviation.

Myomatosis Uterine			
No. 38	Average 0.19	*OF 0.16	
Miomatosis	Frequency	%	ODDS
This	1	2.63	0.02
Absent	37	97.36	-
TOTAL	38	100	

Table 4: Displays the antecedent of previous surgery in the patients studied (source: clinical record). *DE - standard deviation.

Previous Surgery			
No.	38 DE 0.48		
Previous Surgery	Frequency	%	ODDS
No	14	36.84	0.56
Cesarea	23	60.53	1.5
Myomectomy	1	2.63	0.02
TOTAL	38	100	

Table 5: Shows patients with uterine overdistension in the study (source: clinical record). *DE - standard deviation.

Sobredistensión Uterina			
No. 38	DE 0.34		
Uterine Sobredistension	Frequency	%	ODDS
None	33	86.84	-
Multiple Pregnancy	3	7.89	0.08
Macrosomia	2	5.26	0.05
TOTAL	38	100	

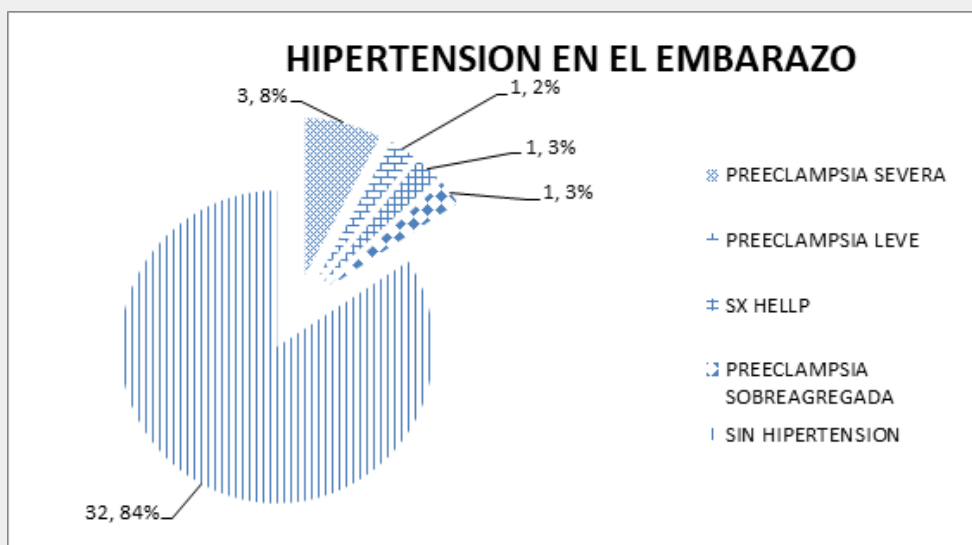


Figure 1: Shows the percentage of patients in the study who had hypertension during pregnancy.

“Hypertensive disease in pregnancy” (Figures 1 & 2) was present in 1 (2.63%) patient with mild preeclampsia; severe preeclampsia at 3 (7.8%) patients; HELLP syndrome in 1 (2.63%) patient and over-added preeclampsia by 1 (2.63%) Patient. Found

5 (13.15%) patients with uterine overdistension, 3 (7.89%) patients with multiple pregnancy and 2 (5.2%) patients with Macrosomic products (Table 5).

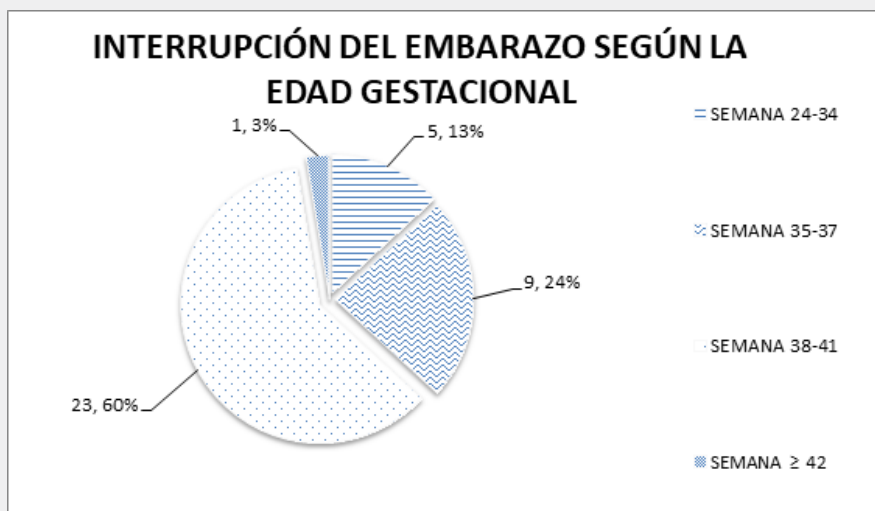


Figure 2: Shows the gestational age (percentage) of patients in the study at which they completed their gestation.

Registered at 2 (5.2%) patients with long-term labor history and 36 (94.8%) patients who didn't present it. 1 (2.63%) was identified patient with precipitous labor history dystocia (TDPP) and 2 (5.2%) patients with long-term expelative distocia (P.E.P.). The risk factor "use of uteroinhibitors" was presented 2 (5.2%) patients with prior treatment based on magnesium sulfate and 3 (7.8%) patients with nifedipine. 14 (36.85%) were documented patients using "oxytocin" and 24 (63.15%) patients without this (Tables 6-10). 3 (7.8%) were found patients with induction of labor with Dinoprostone ® (PGE2) and 35 (92.1%) patients without this. "Disruption of pregnancy according to gestational age" was presented under the following conditions: 5 (13.15%) patients between week 24 - 34; 9 (23.68%) patients at week 35-37; 23 (60.5%) patients at week 38 - 41; 1 (2.63%) 42nd week of gestation (Tables 11 & 12). In terms of the route of termination of pregnancy, 29 (76.31%) were recorded patients who completed cesarean delivery and 9 (23.68%) patients by vaginal delivery, of which they can be broken down as follows:

Table 6: Shows patients with long-term labor history in the study (source: clinical record). *TDP - Labor **DE - standard deviation.

Prolonged Labor			
No. 38	DE 0.34		
*Prolonged TDP	Frequency	%	ODDS
Absent	37	97.3	-
This	1	2.63	0.02
TOTAL	38	100	

Table 7: It shows patients with a history of dystocia in the study (source: clinical record). *DE - standard deviation.

Distocia			
No. 38	Average 0.07	*OF 0.27	
DISTOCIA	Frequency	%	ODDS
TDPP	1	2.63%	0.02
P.E.P.	2	5.20%	0.05
SIN DISTOCIA	35	92.10%	-
TOTAL	38	100%	

Table 8: It shows patients with a history of using uteroinhibitors in the study (source: clinical record). *DE - standard deviation.

Use of Uteroinhibitors			
No. 38 - DE 0.34			
Uteroinhibidor	Frequency	%	ODDS
Mg sULfate	2	5.20%	0.05
Nifedipino	3	7.89%	0.07
None	33	86.84%	-
TOTAL	38	100%	

Table 9: Shows patients with an oxytocin employment history in the study (source: clinical record). *DE - standard deviation.

Use of Oxytocin			
No. 38	-DE 0.48		
Treatment	Frequency	%	ODDS
With Oxytocin	14	36.85%	0.56
No Oxytocin	24	63.15%	-
TOTAL	38	100.00%	

Table 10: Shows patients with an employment history of Dinoprostone ®(PGE2) in the study (source: clinical record). *DE - standard deviation.

Labor Induction			
No. 38	-DE 0.27		
Treatment	Frequency	%	ODDS
With Dinoprostone	3	7.89%	0.08
No Dinoprostone	35	92.11%	-
TOTAL	38	100.00%	

Table 11: It shows the path of resolution of pregnancy of the patients studied (source: clinical record).

Pregnancy Resolution Way			
No. 38			
Birth	Frequency	%	ODDS
Vaginal	9	7.89%	0.07
Cesarea	29	92.11%	11.5
TOTAL	38	100.00%	

Table 12: Displays the indication (absolute or relative) of the C-section of the patients studied (source: clinical record).

C-Section Indication		
Absolute Indication	Frequency	%
Iterative C-section	6	15.79%
Placental acretism	5	13.16%
Placenta previa	3	7.89%
Placenta low insertion	1	2.63%
Otras (P. PELVICO, SFA, RCIU, DPPNI, etc)	0	0.00%
RELATIVE INDICATIONS		
EHIE	4	10.53%
multiple pregnancy	3	7.89%
dynamic dystocia	3	7.89%
DCP	2	5.26%
commitment of hysterorffia	1	2.63%
Elective C-section.	1	2.63%
Other (Postterm, Isomunicado, DM, etc.)	0	0

In question to cesarean delivery, they were classified according to the type of indication according to the clinical practice guide of the I.M.S.S. "for the realization of C-section operation. July 2009": Absolute to 15 (39.47%) patients; 14 (36.84%) patients, as shown in the following table. The presence of transoperative bleeding in postoperative patients with hypogastric artery ligation was variable, with at least 550cc bleeding and maximum trans surgical bleeding of 4500cc. The details are shown in the following table (Tables 13 &14).

Table 13: Displays the volume of transoperative bleeding of the patients studied (source: clinical record).

Transoperative Bleeding		
No. 38	Average: 1485cc	1027cc
Volume	Frequency	%
500 a 1000cc	20	52.63
1001 a 1500	4	10.53
1501 a 2000	6	15.79
2001 a 2500	3	7.89
2501 the but	5	13.16
TOTAL	38	100

Table 14: It shows the number of patients with obstetric hysterectomy + ligation of hypogastric arteries and patients who only had hypogastric artery ligation in the study (source: clinical record).

Quirurgical Procedure		
No. 38	Frequency	Percentage
HTA OBSTETRICA + LAH	24	63.15%
LAH	14	36.84%
TOTAL	38	100%

Reported to 24 (63.15%) patients who had obstetric hysterectomy + hypogastric artery ligation and 14 (36.84%) patients who were only given the ligation. A total of 41 live birth products were recorded (there were 3 multiple "gemelar" pregnancies), there was no perinatal death, the details are shown in Table 15 14 patients were documented (36.85%) who did not warrant hemotransfusion and 24 patients (63.15%) than if he used blood products Table 16.

Table 15: Displays the report of newborns in the study secondary to the Hypogastric artery ligation procedure (source: clinical record). *DE - standard deviation.

Births		
Sex	Frequency	%
Male	22	53.65%
Female	19	46.34%
TOTAL	41	100%
Weight		
Weight	AVERAGE 2856GR	*OF 575
Minimum	1500	
Maximum	3820	
Size		

Size	AVERAGE 48.19CM	*OF 3.26
Minimum	40CM	
MAXIMA	55CM	
APGAR		
APGAR	1 MINUTE	5 MINUTES
Minimum	1	6
Maximum	9	9
Capurro		
Weeks	Frequency	*OF 2.72
		AVERAGE 37.34 WEEKS
24 - 34 WEEKS	5	13.16
35 - 37 WEEKS	9	23.68
38 - 41 WEEKS	23	60.53
≥42 WEEKS	1	2.63

Table 16: Displays the report of patients who warranted hemotransfusion during the Hypogastric Artery Ligation procedure (source: clinical record). *DE - standard deviation.

Hemotransfusión		
No.	38 DE 0.48	
Treatment	Frequency	Percentage
No Hemotransfusion	14	36.85%
With Hemotransfusion	24	63.15%
TOTAL	38	100.00%

During the transoperative period there was an average hemotransfusion of 1.12 "globular packages", 0.99 bag of "fresh frozen plasma" and 1.14 bag of "platelet concentrates"; During the postoperative period, an average hemotransfusion of 1.34 "globular packages", 0.81 bags of "fresh frozen plasma" and 0.71 bags of "platelet concentrates" were recorded. The details are shown in Table 17. The average hemoglobin value prior to hypogastric artery ligation is 12.85gr, and the average hemoglobin after the surgical event was 7.89gr as shown in the following table The nosocomial stay was reported in days of the patients studied being "hospitalized in gynecology and obstetrics floor" an average of 3.16 days and in UCIA an average of 1.79 days. The details are shown in Tables 18 & 19.

Table 17: Displays the report of trans and postoperative hemotransfusion in the patients studied. *DE - standard deviation

Hemotransfusión Transoperatoria				
Amount	MIN	Max	Average	*DE
PG	0	7	1.13	1.78
PFC	0	4	0.99	0.91
Conc. PLAQ	0	10	1.14	2.05
Postoperative Hemotransfusion				
PG	0	9	1.34	2.34
PFC	0	8	0.81	1.81
Conc. PLAQ	0	10	0.71	2.23

Table 18: Displays the report of hemoglobin and hematocrit before and after the surgical event. *DE - standard deviation.

Preoperative Hemoglobin				
Amount	MIN	Max	Average	*DE
Hemoglobin	9.0GR	15.5GR	12.85	1.45
Hematocrit	21.6	46	38.5	4.59
Postoperative Hemoglobin				
Hemoglobin	6.22GR	15.5GR	7.89GR	4.47
Hematocrit	18	46	23.63	13.34

Table 19: Displays the UCIA floor and gynecology hospitalization days report in the patients studied. *DE - standard deviation.

Hospitalization				
Núm. Days	MIN	Max	Average	*DE
Floor	1	12	3.16	1.87
UCIA	0	15	1.79	3.05

Of the 38 patients undergoing hypogastric artery ligation, 29 (76.31%) were recorded patients with single indication for LAH, as well as 9 (23.68%) patients had mixed indications, of which they can be broken down as follows. Of the patients who underwent hypogastric artery ligation, the most common single indication was uterine atonia recorded at 17 (44%) patients, in this study, the probability of performing hypogastric artery ligation by uterine atonia is Odds x 0.78. Of the 22 (57.8%) patients who had obstetric bleeding found 15 (68.18%) patients who had prior C-section history, so in this study, the probability of obstetric bleeding with prior C-section antecedent is Odds 2.12 (Tables 20 & 21).

Table 20: Displays unique or mixed indications of patients undergoing LAH in the patients studied (source: clinical record).

Indications of Hypogastric Artery Ligation			
No. 38			
Unique Indication of Lah	Frequency	%	ODDS
Placental Acretism	17	44.74	0.78
Placenta Previa	3	7.89	0.07
Atonia Uterine	3	7.89	0.07
Placenta Low Insertion	2	5.26	0.05
Uterine Rupture	2	5.26	0.05
Severe Preeclampsia	1	2.63	0.02
Lah Electiva X C. Itertiva	1	2.63	0.02
Mixed Indication of Lah	Frequency	%	Odds
Placental Acretism + P.Pre	3	7.89	0.07
Placenta Previa Total + Dppni	2	5.26	0.05
C. Iterative + Placenta Pevia + Acretismo	2	5.26	0.05
Atonia Uterine + Acretism	1	2.63	0.02
Atonia Uterine + Ehie	1	2.63	0.02
Total	38	100	

Table 21: It shows the report of patients who underwent hypogastric artery ligation by uterine atonia in the patients studied, the probability rate (oddsodds) is 0.78.

Hypogastric Artery Ligation			
	This	Absent	Total
This	17	0	17
Absent	21	0	21
TOTAL	38	0	38

Of the 38 patients in the study, 22 (57.8%) patients had obstetric bleeding, of these, 18 (47.36%) were recorded patients who culminated in obstetric hysterectomy, so in this study, the probability of culminating in hysterectomy with obstetric hemorrhage is Odds 4.2. Of the 38 patients undergoing hypogastric artery ligation (2 for each patient in our study) 1 (2.68%) patient with post-LAH complication, being in this study, the probability of presenting complications by odds hypogastric artery ligation 0.027 as shown in the following Tables 22-23.

Table 22: It shows the report of patients who had obstetric hemorrhage with prior C-section history, the probability of bleeding probability in this Odds study 2.12.

Patients with Obstetric Hemorrhage				
	This	Absent	Total	
Previous C-section	This	15	0	15
	Absent	3	4	7
	TOTAL	18	4	22

Table 23: Displays the number of patients with complications secondary to the Hypogastric Artery Ligation procedure. In this study, the probability of complications from hypogastric artery ligation is Odds - 0.027 (source: clinical record). *DE - standard deviation.

Complications of Lah		
No. 38		
Lesionvascular	Frequency	Percentage
I Lig Art Iliaca Ext	0	0.00%
Ii Tear of Art Iliaca Int	0	0.00%
Iii Hipog Vein Tear	0	0.00%
Iv Sacro Venous Plexus Lesion	0	0.00%
No Injury	38	100.00%
Total	38	100
COMPLICATIONS OF LAH *DE S 0.017		
Lesion Ureteral	Frequency	Percentage
I Acodamiento	0	0%
Ii Wall Injury	0	0%
Iii Ligature	1	2.63%
Iv Total Section	0	0.00%
No Injury	37	97.37%
Total	38	100

Discussion

Postpartum bleeding remains one of the leading causes of death in underdeveloped countries, even if the resources are available to correct the post-mass blood loss problem. Perhaps one of the main causes of high maternal morbidity is the delay in resorting to surgical techniques, once conservative measures have failed.

Considering that postpartum hemorrhage is the second leading cause of maternal mortality in Mexico reported by SINAIS (National Health Information System), authors such as Reich and Nechtow [25,26]. believe that the hypogastric artery ligation technique is underused in the management of postpartum hemorrhage, probably due to fear of complications that may arise after this procedure. However, the American College of Obstetricians and Gynecologists (ACOG) recommends the ligation of hypogastric arteries as a useful procedure in the treatment of peripartum hemorrhage [27].

This study on hypogastric artery ligation in Obstetrics is not the first to be conducted in Mexico, but it is one of the first to contribute the HGR 36 IMSS San Alejandro Puebla. In our working universe 5562 births were recorded in the HGR 36 IMSS San Alejandro Puebla from June 2012 to December 2012, in which 3032 (54.5%) was reported births by vaginal delivery and 2530 (45.5%) C-section births. It was in the third decade of life, where the most frequent age was found, being the average age of 26.9 years, discordant to Hurtado Estrada's study (2009), which reports its average population of 37 years [28,29]. In our universe there was a frequency of 38 patients at risk of obstetric bleeding, who underwent ligation of hypogastric arteries, of which 9 (7.89%) patients completed their pregnancy by vaginal delivery and 29 (92.11%) C-section in the study period covered.

Patient parity was 2.5 +/- 1.9 (0 to 5), the age of termination of pregnancy was on average 37.3 weeks with DE +/- 2.72 (24-42 weeks). Gestational ages similar to those reported by A.Y. Shahin et al. (2010) [30]. The safety of the surgical technique of hypogastric ligation was checked at only 1 (2.63%) patient with complication after LAH, being in this study, the probability of presenting complications by ligation of hypogastric arteries Odds 0.027, result similar to that presented by Serrano Berrones (2013), who reports 1% complications in his study [28]. Uterine atonia (44.74%) it was the most common indication for the ligation of hypogastric arteries, followed by placental Acretism (7.89%), as in the study of VM Joshi and cols (2007) in which it was recorded as the main cause of uterine atonia with a frequency of 32.7% [25].

Of the 22 (57.8%) patients who had obstetric bleeding, 15 of them (68.18%) they had a previous C-section antecedent, so in this study, the probability of obstetric bleeding with prior C-section antecedent is Odds 2.12. Successful management of hypogastric artery ligation was recorded at 14 (36.84%) patients who were not performed obstetric hysterectomy, a result not far from

that found in the Debasmita Mandal y cols study (2013) where 50% of cases prevented obstetric hysterectomy after ligation of hypogastric arteries [27]. Considering the volume of bleeding, we find in our study, an average bleeding of 1485cc, with DE +/- 1027cc, similar figures can be observed in the study of Serrano Berrones (2013), who reports transoperative bleeding using the technique of ligation of hypogastric arteries from 500 to 2000cc. with an average of 1000cc [28].

Of the patients who required hemotransfusion, 63.15% deserved hemotransfusion, the remaining patients did not. The average transoperative hemotransfusion of globular package was 1.13 unit of globular package, 0.99 unit of fresh frozen plasma and 1.14 unit of platelet concentrates; the average postoperative hemotransfusion of globular package was 1.34; 0.81 unit of fresh frozen plasma and 0.71 unit of platelet concentrates. Compared to other authors such as Hurtado estrada (2009), who records an average of 2 globular packages after ligation of hypogastric arteries in his study [29], higher than in ours.

In relation to the average preoperative haemoglobin was 12.85gr with DE 1.45gr, the average postoperative of 7.89gr with DE 4.47gr, as well as the average preoperative hematocrit of 38.53 and the average postoperative of 23.63. The number of days of hospital stay after the hypogastric artery ligation procedure was recorded in hospital floor of 3.16 days OF +/- 1.87 days, and in UCIA 1.79 days with DE +/- 3.05. Compared to other studies such as Serrano Berrones (2013), which reports the number of days in regional hospital Mr. Adolfo López Mateos a maximum number of 23 days of hospitalization after the surgical procedure of ligation of hypogastric arteries 28, our figures were lower than those already mentioned.

Registered 1 (2.63%) with postoperative complication secondary to ligation of hypogastric arteries, distant result to authors such as Abel M and cols. (2009), who report up to 13.3% complications from post-ligation ureter ligation of hypogastric arteries [31]. Maternal mortality was found absent in our study. However, other authors have recorded mortality rates up to 6.7% after this procedure. In this research, although it is a descriptive study, with a sample of patients limited by time, it yielded important data in relation to patients with obstetric hemorrhage, such as the fact that there are no perinatal deaths, nor maternal deaths in patients undergoing hypogastric artery ligation, finding only one patient complicated from ureteral injury of all studies; this situation probably reflected the previous training of medical personnel in our hospital, implemented in recent times, but above all that the idea that "obstetric hysterectomy" is no longer the first surgical option for handling obstetric bleeding has changed.

With the analysis of the data obtained, an overview of the behavior of obstetric bleeding and its surgical management in this hospital unit was obtained. Future studies, probably comparative and/or experimental, may take into account the hypogastric

artery ligation technique as a useful surgical procedure in the management of obstetric bleeding. Probably in order to check, compare and/or corroborate its usefulness to standardize and give better care to the pregnant patient at risk of obstetric bleeding. This is why the surgical technique of ligation of hypogastric arteries was observed as a safe, first-line procedure for the control of obstetric bleeding, so as more experience is gained and better results are achieved, a progressive increase in its application in women with obstetric bleeding will be seen by reducing morbidity and maternal mortality with optimal survival. Not forgetting that the effectiveness of the procedure will depend on its timely performing, adequate indication and good surgical technique.

Conclusion

Complication after ligation of hypogastric arteries was presented in 1 patient with ureteral ligation. There were no vascular complications. Maternal mortality was 0%. Perinatal mortality was 0%.

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