



EVALUATION OF STEPWISE UTERINE SPARING METHOD IN MANAGING PLACENTA ACCRETA SURGICALLY

*Dr. Arabiya Abdulghafoor Ahmed

M. B. Ch. B, D. G.O, AL Mustansiriya University Baghdad, College of Medicine Anbar Department of Gynecology - Haditha General Hospital for Gynecology Haditha -Anbar /Iraq.

*Corresponding Author: Dr. Arabiya Abdulghafoor Ahmed

M. B. Ch. B, D. G.O, AL Mustansiriya University Baghdad, College of Medicine Anbar Department of Gynecology -Haditha General Hospital for Gynecology Haditha -Anbar /Iraq.

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ABSTRACT

This prospective and observational study was carried out in the Department of Obstetrics & Gynecology of Al-Falluja Teaching Hospital in Iraq. The study included (100) primigravida female patients in the third trimester (after 32 weeks gestation) with pregnancy induced hypertension. Serum uric acid assay was done then the patients were classified into three groups according to uric acid level; Group I (low hyperuricemia) uric acid below 25th percentile (5.8 mg/dl). Follow up of maternal outcome as (eclampsia, HELLP, acute renal failure and accidental hemorrhage) and fetal outcomes (stillbirth, prematurity, IUGR and IUFD). Other obstetric complications that can affect pregnancy. Other medical diseases and severe pre-eclampsia that need urgent termination were excluded. This study aimed to determine the relationship between hyperuricemia and perinatal results in pregnancy induced hypertension. Results showed a significant increase in serum uric acid, urea and creatinine in the high group compared to the middle and low ones. Bad fetal outcome and pregnancy complications were directly proportionate to the serum uric acid levels. It can be concluded from the current study that these data reinforce the general agreement about the utility of hyperuricemia in the prognosis of adverse perinatal outcomes in pregnancy induced hypertension. Serum uric acid level measurements are a useful and inexpensive marker for predicting adverse perinatal outcomes.

KEYWORDS: Serum uric acid; Hyperuricemia; Pre-eclampsia; Pregnancy induced hypertension.

INTRODUCTION

Placenta accrete is a life-threatening obstetric condition which requires multidisciplinary team for management. It is an abnormal firm attachment of placenta into the uterine wall. It is a high risk pregnancy condition, in which blood vessels and other parts of the placenta grow too deep into the uterine wall. It occurs when a defect in the decidua basalis allows chorionic villi to invade the myometrium and the normal decidua fails to develop. It is associated with the highly invasive and penetrating power of the developing trophoblast.^[1]

Placenta accreta may lead to massive obstetric hemorrhage with attempt to remove the placenta leading to several complications such as disseminated intravascular coagulopathy, cesarean hysterectomy, multiple surgical injuries to the ureters, bladder, and other viscera, adult respiratory distress syndrome, renal failure, hypovolemic shock, circulatory collapse and need for post-operative intensive care unit (ICU) or death. The average amount of blood loss at delivery in a case of placenta accreta is 3,000-5,000 ml.^[2]

Diagnosis of placenta accreta can be done by different modalities such as Ultrasound Grey scale, color Doppler (CD) and Magnetic Resonance Imaging (MRI). Ultrasonography is usually employed as the primary modality for antenatal diagnosis of invasive placentation. MRI is reported to be complementary to the ultrasound, as it may help in diagnosing of invasive placentation, especially in those cases in which ultrasound (US) is not conclusive as posterior placenta previa.^[3] Prenatal diagnosis of invasive placentation is associated with a reduced risk of maternal complications by enabling the surgeon to plan for the type of resources needed at the time of delivery as management is a team work. These resources include two senior obstetrician staff, anesthesia team, neonatologists, available blood products, possible intervention radiology for uterine artery embolization or internal iliac artery occlusion, urologists if surgery is associated with bladder or ureteric injury, vascular surgery for internal iliac artery ligation and need for maternal post-operative ICU admission.^[4]

Till now, it has been found that there is no definite planned management of placenta accreta as it depends

upon personal expertise and hemodynamics of patient. In the past, it was generally accepted that placenta accreta was well and ideally treated by total abdominal hysterectomy. Hysterectomy is a lifesaving measure to manage uncontrolled uterine hemorrhage.^[5]

Recently, obstetricians searched for new different modalities for removal of the placenta with less blood loss and fewer complications with repair of the uterus at the time of the delivery to preserve the female fertility. This study was conducted to evaluate the stepwise uterine sparing technique as a conservative management of placenta accrete for preserving the uterus and fertility of the female with minimizing surgical complications.

PATIENTS AND METHODS

This prospective single armed clinical trial study was conducted at Obstetrics and Gynecology Department of Gynecology -Haditha General Hospital/ Iraq during the period from April to September 2016.

A total of (30) pregnant women with placenta accreta after 32 weeks of gestation diagnosed by Doppler Ultrasonography and MRI or discovered intra-operatively on surgical table in emergency cases were included. False diagnosed placenta accreta or managed cases with severe destruction of lower uterine segment and non-separable placenta which needed hysterectomy were excluded from the study.

Elective termination of pregnancy was conducted on completed 36 weeks of gestation. While in emergent cases, termination was mediated regardless of the gestational age. Preparation of cross matched packed red blood cells (RBCs) and four units of fresh frozen plasma was a routine practice before the beginning of surgery.

Surgical Technique

- Under general anesthesia all patients were operated. The following steps were done in all cases by the same surgeon:
- Dissection of the urinary bladder from anterior wall of lower uterine segment as much as possible for good exposure, with cauterization or ligation of the newly formed uterovesical anastomotic branches.
- High transverse incision of the uterus at upper border of placenta to avoid trans-placental incision which provoked severe bleeding then extraction of the baby with ecbolics administration.

- Double uterine artery ligation on both sides (DUAL). First ligature was done before separation of the placenta lower at the level of the uterine isthmus. Second ligature was done after separation of the placenta higher at the level of utero-ovarian anastomosis.
- Removal of placenta. Either the total placenta or piece meal was removed according to the degree of placental invasion.
- Hemostatic “square” quadruple sutures at lower uterine segment at the bleeding points or even sewing the placental bed. If there were destructive edges of lower uterine segment, local resection of the invaded part of the uterus with the placenta and trimming the edges was done to provide healthy edges for sutures and repair.
- Insertion of triple way Foley catheter size 24 F inflated by 50 cc saline to compress the bleeding points on the lower uterine segment. It was inserted by assistant or straight artery forceps from the uterine cavity descending to the cervix and caught by another assistant from the vagina. It was preferred to be done from above to avoid upward ascending vaginal infection and keep the intra cervical portion aseptic. This triple way catheter aided additional benefits in irrigation and drainage the uterine cavity from any retained blood.
- Closure of uterine incision wall in continuous double layers, the first layer was associated with significant reductions of blood loss, second layer for tightness of the sutures.

All demographic data, pre-operative findings, operative data, complications, and post-operative recording of vital signs, drains, urinary output, bleeding, fever and number of transfused blood units if needed were recorded. Also, hemoglobin level was checked 6 hours post-operatively.

Statistical analysis

The results were analyzed by SPSS 20 program. The tests used were mean, standard deviation and percentage.

RESULTS

In this study, the enrolled patients (n=30) with placenta accrete were diagnosed prenatally with Ultrasound and MRI. The demographic data of the patients were presented in tables (1) and (2).

Table (1): Demographic data of the patients.

		Range	Mean ±SD
Age		23-40	30.50±4.45
Number of previous CS		0-4	3.30±2.50
Parity		0-5	3.50±2.50
Gestational age at delivery (weeks)	Preterm	34.0-35.9	35.0±1.1
	Full-term	36.0-39.0	37.59±2.35
Duration since last CS		1-6 years	3.45±2.15

Table (2): Operative findings of this study.

		Range	Mean \pm SD
Type of morbidly adherent placenta (n, %)			
Placenta accreta		19 (63.3%)	
Placenta increta		8 (26.7%)	
Placenta percreta		3 (10.0%)	
Operative time (minutes)		70-145	112.45 \pm 25.91
Intraoperative blood transfusion units)		1-5	3.50 \pm 2.45
Hospital stay (days)	Non complicated	2-3	2.45 \pm 0.65
	Complicated cases	7-12	9.65 \pm 3.15
Intraoperative blood loss (mL)		1000-2500	1750 \pm 1150.5
Postoperative blood transfusion (units)		2-5	3.50 \pm 2.10
Postoperative blood loss (mL)		500-1000	795.50 \pm 250.15
Hemoglobin level (gm/dl)	Pre-operative	8-11.5	9.15 \pm 2.01
	Post-operative	6.5-11.1	8.98 \pm 1.45

The surprising finding in this study was that patients were so younger due to increasing rate of cesarean sections and encouraging preservation of uterus.

Hemoglobin level was significantly dropped after the procedure which was corrected later by cross-matched blood transfusion.

This study showed a high success rate of the stepwise uterine sparing technique in preserving the uterus.

The success rate was 90%, included 27 cases from total 30 ones successfully preserved the uterus and only 3

cases who required hysterectomy representing 10%. But there were some related complications in the form of 4 (13.3%) cases complicated with bladder injury, 3 (10%) cases with post-operative fever, also 3 (10%) cases with urinary tract infection (UTI), 4 (13.3%) cases wound infection and 3 (10%) cases needed post-operative maternal ICU admission. Postpartum hemorrhage was detected in 2 (6.7%) cases which was controlled by uterine massage and strong ecbolic. There was no need for vascular surgery during operation, also no need for reoperation or readmission for any case. No visceral or ureteric injuries were reported. Complications are illustrated in figure (1).

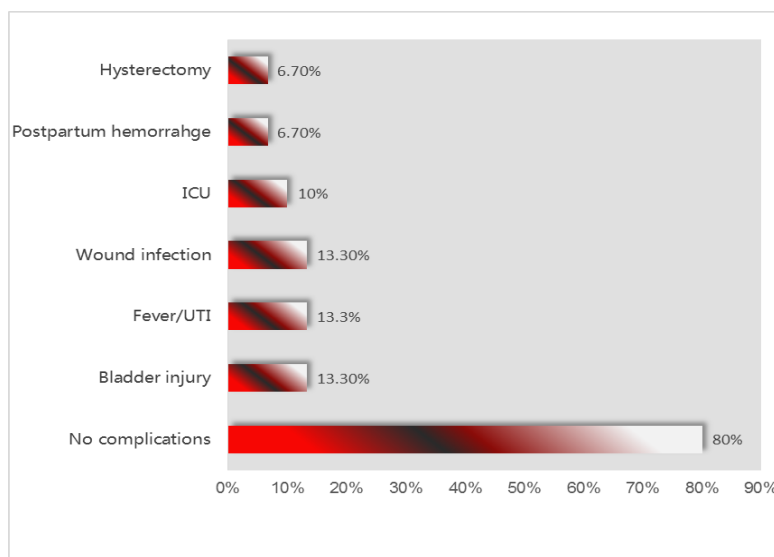


Figure (1): Procedure related complications

DISCUSSION

The results of this study were encouraging to use the stepwise uterine sparing technique in preservation of uterus in morbidly adherent placenta cases. Previous studies conducted to assess the outcome of uterine sparing techniques were found to be different in the methods used and results obtained. The results of this study are in agreement with Walker et al in the pre-operative preparations for management of cases with

placenta accreta. The main difference was that Walker et al used prophylactic occlusion of the anterior division of the internal iliac artery which is an invasive procedure. Our study achieved a high success rate with uterine artery ligation alone. Comparing the results of both studies, operative time (107 minutes) similar to our study (112.45 minutes), also the hospital stay was (5 days), our study lasted only (2-10 days) but it had more bladder injury (30%) than our study (13.3%).^[6]

Shahin et al conducted a similar study depending on bilateral uterine artery ligation to control bleeding. In addition, the idea of using B-Lynch suturing as compression sutures is similar to the quadruple local hemostatic ones used to control bleeding. The differences were that in the study of Shahin et al, two cases needed internal iliac artery ligation, needed post-operative ICU admission and complicated with disseminated intravascular coagulation (DIC) and maternal death. Shahin et al was associated with the need for (2-5 units) units of fresh blood transfused intra-operatively which were less than our study where only (1-5) units of blood transfusion were needed. The total hospital stay in Shahin et al was (17 days) which was longer than hospital stay in our study (12 days).^[7]

El Shazly et al used bilateral uterine artery ligation as primary step with 8-suture compression procedure as a second step for controlling bleeding associated with placenta accreta when uterine artery ligation failed to stop bleeding. The difference was that the average time of this procedure which was relatively short (142 seconds). The total intra-operative time of our surgical procedure was (70-145 minutes). The mean estimated amount of intra-operative blood loss was (2830 mL) during this procedure and (2375 mL) in women managed with bilateral uterine artery ligation alone in Elshazly et al study, while in our study, the total amount of intraoperative blood loss was (1750 mL).^[8] Shabana et al reported a modified approach of some surgical steps similar to our study but the only difference was that Shabana et al depended on bilateral ligation of the anterior division of internal iliac artery to control bleeding. The operative time in Shabana et al study was (70-140 minutes), similar to our study (70-145 minutes) and number of blood transfusion units was (2-6 units), similar to our study (1-5 units). The associated complications were (8.5%) rate of cesarean hysterectomy, compared to our study which was (6.7%) only. In regard to complications, 10 (14.1%) patients had urinary tract complications which is nearly similar to our study, 9 (90%) were managed during cesarean section and one case presented later in the form of vesico-uterine fistula. No evidence of later complications as vesico-uterine fistula or later repair was proven in our procedure.^[9]

Kelekci et al achieved a successful technique in management of placenta accrete using our surgical steps including suturing the placental bed with squarely shaped sutures for hemostasis, ligation of utero-ovarian anastomosis branches and finally insertion of a balloon of 3-ways 20 F Foley catheter which was inflated by 80 cc saline and placed into the intrauterine cavity. The study of Kelekci et al differed mainly in internal iliac artery ligation for controlling bleeding and leaving placenta in situ in some cases. Also, there were some different results, such as the units of blood transfusion (2-7) units, while in our study, it was (2-5) units. The operative time was (110±20) minutes, while in our study,

it was (70-145) minutes and the mean hospital stay was (4.2±0.4) days, while in our study was (2-12) days. Comparing rates of associated complications, one patient had post-operative wound infection, while in our study, only 4 (13.3%) cases had wound complications. The post-operative febrile reactions developed in 2 patients in the study of Kelekci et al, while in our study 4 (13.3%) cases developed post-operative febrile reaction.^[10]

Shehata et al reported a study with 100% success rate. It completely agreed with our surgical technique. Both depended on bilateral ligation of uterine artery, higher incision of uterus and insertion of Foley catheter for compressing lower uterine segment. There were some different results. The operative time was (60-100 minutes), while in our study, it was (70-145 minutes) and blood transfusion was (2-4 units) and in our study was (2-5 units). The complications were presented in 6 (40%) cases from the all 15 cases, while (80.0%) of cases in our study passed their surgery without any complications. Bladder injury was found in 2 (13.3%) cases, however, in our study 2 (13.3%) cases had pyrexia. In comparison to our study, 1 case (6.66%) had pyometria and 1 case (6.66%) wound disruption. There was readmission for two cases but no need for ICU admission for any case. While in our study, 3 cases needed post-operative ICU admission representing (10.0%) but there was no need for readmission for any case.^[11]

Palacios-Jaraquemada et al conducted a study with nearly similar surgical procedure which included removal of destructed part of lower uterine segment invaded by the placenta and trimming the uterine edges with repair the defect then insertion of a Foley's balloon catheter, three-way 22 F, in the lower uterine segment as in our study. The differences were that higher success rates were observed without the need for uterine artery ligation rather than in our study which depended mainly on uterine artery ligation. Also repair of the uterine edges in our study was mediated by healthy uterine tissue with usual sutures without need for using any mesh or other foreign bodies. Comparing rate of CS hysterectomy, 18 of total 68 cases needed cesarean hysterectomy while in our study included 2 from total 30 cases. There were some different surgical complications, 1 case had pelvic hemorrhage, 2 cases had coagulopathies, 3 cases with uterine infection, 2 ureteral ligations, 2 iatrogenic foreign bodies reaction, 3 post-operative collections, rupture of an epigastric artery in 1 case and vesical fistula in another case. In our study, these complications had never been reported in any case.^[12]

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