

Utero-vaginal packing

Seven years review in the management of post partum hemorrhage due to placenta previa/accreta at a maternity hospital in Central Saudi Arabia

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الأهداف: دراسة لفعالية عملية حشو الرحم والمهبل بالشاش كطريقة للتحكم بالنزيف الأولي بعد الولادة نتيجة للمشيمة المتقدمة والملتصقة.

الطريقة: أجريت دراسة إسترجاعية في مستشفى النساء والولادة بمجمع الرياض الطبي - الرياض - المملكة العربية السعودية، خلال الفترة ما بين يناير 2001م وحتى ديسمبر 2007م. تتم العملية بحشو المنطقة السفلية من الرحم (lower uterine segment) بقطعة من الشاش يبلغ طولها (2m) وعرضها (10cm) مبللة بمحلول الماء والملح. يتم إدخال الشاش إلى الرحم عن طريق جرح العملية القيصرية، أما طرفه السفلي فيتم سحبه عن طريق عنق الرحم إلى المهبل ثم يتم إكمال العملية القيصرية بالطريقة المعتادة، مع أخذ الحذر على عدم إدخال الغرز الجراحية في الشاش، في نهاية العملية يتم إدخال شاش مائل في المهبل حتى يضاد ضغط الشاش الرحمي وذلك للضغط على الأوعية الدموية في الحوض. يتم إزالة الشاش في اليوم التالي عن طريق المهبل.

النتائج: بمراجعة 83 حالة، والتي تعرضت نزيف أولي بعد الولادة نتيجة للمشيمة المتقدمة والملتصقة، تبين أنه يمكن علاجها بعدة طرق جراحية إلا أن 48 حالة منها تم إيقاف النزيف بطريقة حشو الرحم والمهبل بالشاش فقط بنجاح، ثلاث حالات منها استدعت تدخل جراحي مرة أخرى لاستئصال الرحم. لم يكن هناك أية حالة وفاة للأمهات.

خاتمة: إن عملية حشو الرحم والمهبل بشاش ذات فعالية وكفاءة عالية في التحكم بالنزيف الأولي بعد الولادة والذي يحدث نتيجة للمشيمة المتقدمة والملتصقة، كما تعتبر عملية سهلة، سريعة، آمنة، غير مكلفة مادياً، ولا تحتاج إلى إمكانيات خاصة أو خبرة كبيرة، لذا من الأجدر القيام بها كمرحلة أولى لمحاولة وقف النزيف قبل اللجوء إلى عمليات كبيرة مثل استئصال الرحم. وهي بذلك تعتبر طريقة مثلى للمحافظة على الرحم خاصة لدى الأمهات الصغيرات في السن والآتي لديهن عدد قليل من الأطفال. وبهذه العملية قد يتم التحكم بالنزيف تماماً، أو أنها قد تمنح المزيد من الوقت للتنسيق لإجراءات جراحية أكبر، وهذا يمكن تحديده حسب حالة المريضة.

Objectives: To study the effectiveness of utero-vaginal packing in the management of primary postpartum hemorrhage due to placenta previa/accreta.

Methods: We conducted this study in the Maternity Hospital, Riyadh Medical Complex, Riyadh, Saudi Arabia. This is a retrospective study covering 7 years from January 2001 to December 2007. Utero-vaginal packing was carried out by placing gauze soaked in normal saline solution approximately 2 meters long and 10 cm in width into the lower uterine segment through the cesarean incision, with its end passed through the cervix into the vagina. Routine closure of the cesarean incision was performed, and then another similar pack was inserted into the vaginal fornices to counteract the pressure effect of the uterine pack and compress the pelvic vessels.

Results: In 83 patients with post partum hemorrhage caused by placenta previa/accreta, 48 of them underwent utero-vaginal packing alone as a conservative measure in the management of bleeding. Three of them needed second surgical intervention, however, there was no maternal death among the series.

Conclusion: Utero-vaginal packing is of benefit in achieving hemostasis in cases of post partum hemorrhage due to low lying placenta previa/accreta and conserving the uterus particularly in women with low parity.

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Obstetric hemorrhage remains a leading cause of maternal mortality. In the most recent triennial report into why mother's die 2000-2002 in United Kingdom, catastrophic obstetric hemorrhage was the second most common cause of direct mortality.¹ It is estimated that worldwide 140,000 die of post partum hemorrhage each year, one every 4 minutes. In addition to death, serious morbidity may follow post partum hemorrhage. Sequelae include shock, coagulopathy, and pituitary necrosis (Sheehan syndrome).² In Saudi Arabia, obstetric hemorrhage remains the leading cause of maternal death.³ In a recent survey of maternal mortality in the state of New York, the leading cause for maternal mortality was post partum hemorrhage.⁴ The incidence of placenta previa at the time of birth varies widely in published series, but on average, it occurs once every 150-250 live births.⁵ Two thirds of placental accretism occurs in patients who have placenta previa.³ When faced with placenta previa and accreta, brisk bleeding from placental implantation sites in the lower uterine segment sometimes may cause difficulty in achieving hemostasis. First, all different traditional methods should be used to attempt to stop the hemorrhage, including oversewing the placenta bed, uterine packing, uterine arteries or internal iliac arteries ligation, or embolization. When all the less radical surgical interventions have failed to stop hemorrhage, emergency hysterectomy is the last resort.¹ The present study aimed at analyzing the management and outcome of patients who had post partum hemorrhage due to placenta previa/accreta and were successfully treated with multiple methods particularly, the beneficial effect of utero-vaginal packing in controlling the bleeding and preserving the uterus.

The study was conducted at the Maternity Hospital (MCH) at Riyadh Medical Complex which serves Riyadh and adjoining areas of Saudi Arabia, also those with complicated cases from outside the immediate catchments area are admitted to MHC. The average delivery rate at MCH is 8,000 each year. This study was approved by the Maternity Hospital Director. The study is a retrospective cohort review, which covers a period of 7 years from January 2001 to December 2007. Medical records of the patients who were admitted into the Intensive Care Unit (ICU) due to post partum hemorrhage (PPH) as a result of placenta previa/accreta were reviewed. The patients in the ICU were monitored and observed for any further bleeding. Blood and blood products were transfused for correction of hypovolemia and coagulopathy. Exclusion criteria included cases of post partum hemorrhage due to uterine atony, ruptured uterus, cervical, vaginal, or perineal trauma. Utero-vaginal packing was carried out

by introducing gauze of 2 meters long and 10 cm in width, which was soaked with normal saline into the lower uterine segment through the caesarean section incision and its lower end was pulled down through the cervix into the vagina. The cesarean section incision was closed in 2 layers with interrupted stitches with careful attention in order not to involve the gauze in the stitches. At the end of operation, another same vaginal pack was inserted into the vaginal fornices to counteract the pressure effect of the uterine pack and compressed the pelvic vessels. Twenty-four hours postoperatively, the packs were removed vaginally. Antibiotics coverage was given for 5 days.

Data were collected using a special data collection form then coded, entered, and analyzed using SPSS® version 9. The *p*-value was calculated using chi-square test and fisher's exact test. Analysis was made with regards to gestational age, parity, history of previous caesarean section, degree of placenta previa amount of blood loss, amount of blood, and blood products transfusion required. The modality of intra-operative management particularly utero-vaginal packing with or without internal iliac artery ligation and the outcome of such management.

During the study period, 83 patients needed ICU management postoperatively due to post partum hemorrhage (PPH) as a result of placenta previa/accreta. The minimum gestational age was 28 weeks and the maximum was 41 weeks. The maximum parity was para 16. The maximum amount of blood loss was 7 liters and the minimum was one liter. All patients received blood transfusion with a maximum of 26 units of packed red blood cells and 26 units of fresh frozen plasma. Major placenta previa was associated with a history of 2 cesarean sections. Placenta accreta was associated with more than 2 cesarean sections. Elective cesarean section were carried out for 38 patients and emergency cesarean sections were carried out for 45 patients, most of them were unbooked ($p=0.4394$, *t*-test). Forty-five (94%) patients were managed successfully with uterovaginal packing alone, however, 3 (6%) patients needed re-opening and hysterectomy (Table 1). There were no maternal deaths recorded. Thirty-five patients with placenta previa major were managed successfully with utero-vaginal packing with or without internal iliac arteries ligation. Hemostasis was achieved in 13 patients with placenta accreta with the same procedure, while 9 patients needed hysterectomy (Table 2). Utero-vaginal packing with or without internal iliac arteries ligation conserved the uterus of 32 patients of low parity and 21 patients of high party ($p=0.032$) (Table 3).

There are different modalities of intraoperative management of postpartum hemorrhage

due to placenta previa/accreta including tamponade techniques (Foley catheter, Sengstaken-Blakemore tube and SOS Bakri tamponade balloon), uterine artery ligation, and embolization, hypogastric artery ligation are used to decrease the degree of post partum hemorrhage, however, hysterectomy is used when conservative measures have failed.⁶ The technique of packing of the lower uterine segment is described for local control of bleeding points. Preservation of reproductive potential may be accomplished with this technique with minimal morbidity.⁷ Historically, packing of the uterine cavity for post partum hemorrhage was endorsed by many standard textbooks of the 1930's and 1940's. Williams Obstetrics supported the practice until the tenth edition.⁸ Fear of infection and concealed hemorrhage were offered without specific examples or occurrence rates. The practice fell out of widespread use from the 1960's to the 1980's, although sporadic reports of its successful use have been published. Druzin⁷ described a technique of packing the lower uterine segments at

cesarean section for hemorrhage associated with placenta praevia and focal accreta. He used this technique only after attempting suture ligation of the bleeding sites and after bilateral uterine artery ligation failed to control the bleeding in the lower uterine segment. In our study, none of the patients had developed infection and this may be due to use of broad spectrum antibiotics and removal of the pack within 24 hours as confirmed by Maier's investigation.⁸ There was no maternal death from post partum hemorrhage due to placenta previa/accreta during the study period. Placenta previa/accreta not only increases maternal mortality and morbidity, but also it increases the perinatal mortality and morbidity as a result of increase iatrogenic preterm delivery because of its association with antepartum hemorrhage. Gordodeski⁹ reported mean gestational age of 36 weeks,⁹ and in this study the mean gestational age at delivery was 35 weeks with minimum of 28 weeks. In this series, dexamethasone was given to the patients who were before 34 weeks gestation and were admitted

□□□□□□□□ Relationship between type of intra-operative management and need for second surgical intervention.

Intra-operative management	Re-open + hysterectomy	Re-open + pack + iliac ligation	No need for 2 nd surgical intervention n (%)	Total (n=83)
Utero-vaginal packing	3 (6)	0	45 (94)	48
Utero-vaginal pack + internal iliac arteries ligation	0	0	5 (100)	5
Hysterectomy as first surgical intervention	0	0	12 (100)	12
Suturing of placental bed	1 (5)	1 (5)	16 (38)	18

□□□□□□□□ Relationship between type of placenta previa and intraoperative management.

Type of placenta	Hysterectomy	Utero-vaginal packing & internal iliac ligation	Utero-vaginal packing (UV)	Suturing of placental bed
Minor placenta	0	0	5	1
Major placenta	3	3	32	15
Accreta	9	2	11	2
Total	12	5	48	18

□□□□□□□□ Relationship between parity and intraoperative management.

Intraoperative management	Para 4 and less	More than para 4	P-value
Utero-vaginal packing	29	19	0.203283*
UV pack + internal iliac ligation	3	2	0.532337†
Hysterectomy	4	8	0.0040413†
Suturing of placental bed	11	7	0.881432*
Total	47	36	

*chi-square test, †fisher's exact test

with antepartum hemorrhage, after which the bleeding subsided and they were delivered by elective C-section at 37 gestation. The risk of placenta previa/accreta was noted to be increasing with high parity. In this study, the mean parity was 5 with maximum of para 16. Most studies reported that the incidence of placenta praevia increased proportionally with the number of prior cesarean deliveries. In this study, major placenta previa was associated with a history of more than 2 prior cesarean sections, placenta accreta was associated with more than 2 previous cesarean sections, and the maximum number of prior cesarean sections was 6. Placenta previa is usually associated with massive bleeding. Robe¹⁰ reported blood loss of 11.5 liters, however in the present study the mean blood loss varies among the 83 patients with minimum loss of one liter and maximum of 7 liters, but the mean blood loss of all 83 patients was 2,305 liters. The preparation for elective cesarean section for placenta previa must be meticulous. At least 4 units of blood must be cross-matched and the facilities for more should be at hand. A senior obstetrician and anesthetist should be involved.¹⁰ In our series, 45 cases (54%) were delivered by emergency cesarean section. Nine of them ended by hysterectomy as a result of poor preparation due to unbooked cases, however, 3 patients had hysterectomy as an elective procedure for placenta accreta and high parity. Uterine packing to control post partum hemorrhage for placenta previa/accreta is not a widely used technique. Maier⁸ reported 4 cases of post partum hemorrhage due to placenta previa managed by uterine packing. In our study, utero-vaginal packing with or without internal iliac artery ligation was successfully used in 53 patients, only 3 patients were re-opened and underwent hysterectomy because of uncontrolled bleeding despite good packing (Table 1). Bilateral internal iliac artery ligation is successful in avoiding hysterectomy in approximately half of the cases associated with uterine atony and placenta accreta.¹¹ In this series, it was carried out for only 5 patients, this may be because practitioners are less familiar with this technique. Emergency cesarean hysterectomy is a rare event in Western countries, though often necessary in the third world.¹² In the present study, hysterectomy was performed for 12 patients and most of them were of high parity. Cesarean hysterectomy is associated with increased maternal morbidity from the need for blood transfusion and the need for postoperative ventilatory support. In this series, 50% of patients were managed with hysterectomy and had a blood loss of more than 2 liters and reached up to 7 liters. Follow up of each patient was difficult, because most of our patients were referred cases from peripheral areas and communication with most of them was impossible. Communication was possible with 12 patients who delivered in the last year of the study, 4 patients had no menstrual period secondary to hysterectomy, 3 patients had lactational amenorrhea

(who delivered in the last 3 months) and the remaining had regular period and using contraception. Fertility was difficult to be assess due to short duration of follow up and the patients using contraception.

In conclusion, when confronted with a patient experiencing placenta praevia/accreta with massive bleeding, preserving child bearing function and minimizing bleeding should be carefully considered. Utero-vaginal packing was successful in controlling hemorrhage in approximately 94% of the patients when it was used and most of them with low parity. There was no maternal death among this series. This technique is simple, safe, quick, cheap, requires no special equipment, and effective in controlling bleeding and conserving fertility. So, it is worthwhile to be considered as a first line of management in controlling bleeding from placenta previa/accreta, particularly in patients with low parity. It may control hemorrhage completely or provide time to organize a definitive procedure and if the need for another procedure has to be re-evaluated and then decided upon on the basis of the patient's condition.

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