Journal of Clinical Case Reports
ISSN: 2165-7920

Matsubara et al., J Clin Case Rep 2014, S1
DOI: 10.4172/2165-7920.S1-002

Case Report Open Access

Uterine Compression Suture for Cesarean Hysterectomy: Possible Applications to Conditions other than Atonic Bleeding

Shigeki Matsubara*, Tomoyuki Kuwata, Takahiro Yoshiba, Rie Usui and Akihide Ohkuchi

Department of Obstetrics and Gynecology, Jichi Medical University, Tochigi, Japan

Abstract

Uterine compression suture (UCS) has become widely acknowledged as an effective measure to achieve hemostasis mainly for atonic bleeding. We described a case in whom UCS was effective in performing cesarean hysterectomy. A 28-year-old woman after term planned CS due to placenta previa had severe postpartum hemorrhage. Unresponsive to uterotonics, UCS was performed, which did not achieve hemostasis, with bleeding amount of 7000 mL. Peripartum (cesarean) hysterectomy was performed without any difficulty. UCS compressed the uterus or at least prevented the uterine cavity from filling with a large amount of blood. This reduced the amount of bleeding during the surgery. UCS may also be useful for other conditions such as prophylaxis of uterine re-inversion or prophylaxis of bleeding after perimortem cesarean section. Thus, UCS may be more widely applicable than previously considered.

Keywords: Cesarean hysterectomy; Postpartum hemorrhage; Perimortem cesarean section; Peripartum hysterectomy; Uterine compression suture

Abbreviations: UCS: Uterine Compression Suture; MY suture: Matsubara-Yano Suture

Introduction

Postpartum hemorrhage is still a life-threatening condition in both developed and developing countries and many treatment protocols have been proposed. The final treatment is still hysterectomy.

Since the introduction of B-lynch [1], various Uterine Compression Sutures (UCS) have been reported [2]. We also described a novel UCS, Matsubara-Yano (MY) suture [2,3]. Thus, UCS have been widely acknowledged as a possible "second-line treatment of postpartum hemorrhage" [4]. UCS compresses the uterus, and thus UCS have been considered an effective measure to achieve hemostasis in postpartum hemorrhage mainly due to atonic bleeding.

UCS applied to the lower uterine segment can also be useful for achieving hemostasis at cesarean section for placenta previa: in this condition, the placenta attaches to the lower uterine segment and thus placenta-separation-site bleeding occurs from this site [5]. Can UCSs be applicable other conditions than these two, atonic bleeding and bleeding at cesarean section for placenta previa? We here described a patient who underwent cesarean hysterectomy, and introduce a new application of UCS.

Case Presentation

A 28-year-old primiparous woman had total placenta previa without placenta accreta, and gave birth to a healthy infant on term planned cesarean section. After closing the abdomen, she had severe postpartum hemorrhage. We considered that both atonic bleeding and previa-separation-site-bleeding (the lower uterine segment) were the culprits. Bi-manual compression, uterine massage, and administration of uterotonics did not achieve hemostasis. We performed re-laparotomy and first performed MY uterine compression suture, in which two longitudinal and two transverse transfixing sutures were placed as previously described [2,3]. MY suture ameliorated uterine atony but severe bleeding from the lower uterine segment continued. Since the bleeding from this site was severe and acute, we considered that uterine sandwich (UCS+intrauterine balloon) [6] would not achieve hemostasis. Total bleeding amount was 7000 mL.

Although we transfused fresh frozen plasma, the massive bleeding resulted in consumption coagulopathy: platelet count 25,000/microliter, fibrinogen 50 mg/dL, and activated partial thromboplastin time 54.8 seconds (range <29.9). Uterine artery or internal iliac artery ligation was not considered.

Peripartum (cesarean) hysterectomy was performed, which is technically difficult [7]. However, this time, this was performed without any difficulty. UCS (MY suture) compressed the uterine body or at least prevented the uterine cavity from filling with a large amount of blood: 1) uterine cavity was compressed, preventing blood accumulation within the uterine cavity, and thus the uterine size became smaller, 2) thus the uterus became easy to exteriorize, and 3) bleeding amount from the uterine side (accumulated blood within the uterus) became smaller when incising the parametrium (Figures 1a and b). These factors reduced bleeding amount during the surgery, contributing to an "easy" procedure of the surgery. Total bleeding amount during hysterectomy was 2000 mL. Considering the presence of consumption coagulopathy, this amount of bleeding was small. Her postoperative course was uneventful and she was healthy at 6 months after the surgery.

Discussion

A review of peripartum or cesarean hysterectomy reported an average mortality rate of 4.8% [7]. This does not mean that hysterectomy per se caused this high maternal mortality but situations requiring this surgery may eventually cause it. Indeed, cesarean hysterectomy is one of the most difficult obstetric surgeries and is always challenging [8]. Every effort should be made to make this surgery easier and safer. Although we here describe only a single case, it was the consensus of

***Corresponding author:** Shigeki Matsubara, Department of Obstetrics and Gynecology, Jichi Medical University, 3311-1 Yakushiji, Shimotsuke, Tochigi 329-0498, Japan, Tel: +81-285-58-7376; Fax: +81-285-44-8505; E-mail: matsushi@jichi.ac.jp

Received February 25, 2014; **Accepted** March 25, 2014; **Published** March 27, 2014

Citation: Matsubara S, Kuwata T, Yoshiba T, Usui R, Ohkuchi A (2014) Uterine Compression Suture for Cesarean Hysterectomy: Possible Applications to Conditions other than Atonic Bleeding. J Clin Case Rep S1: 002. doi:10.4172/2165-7920.S1-002

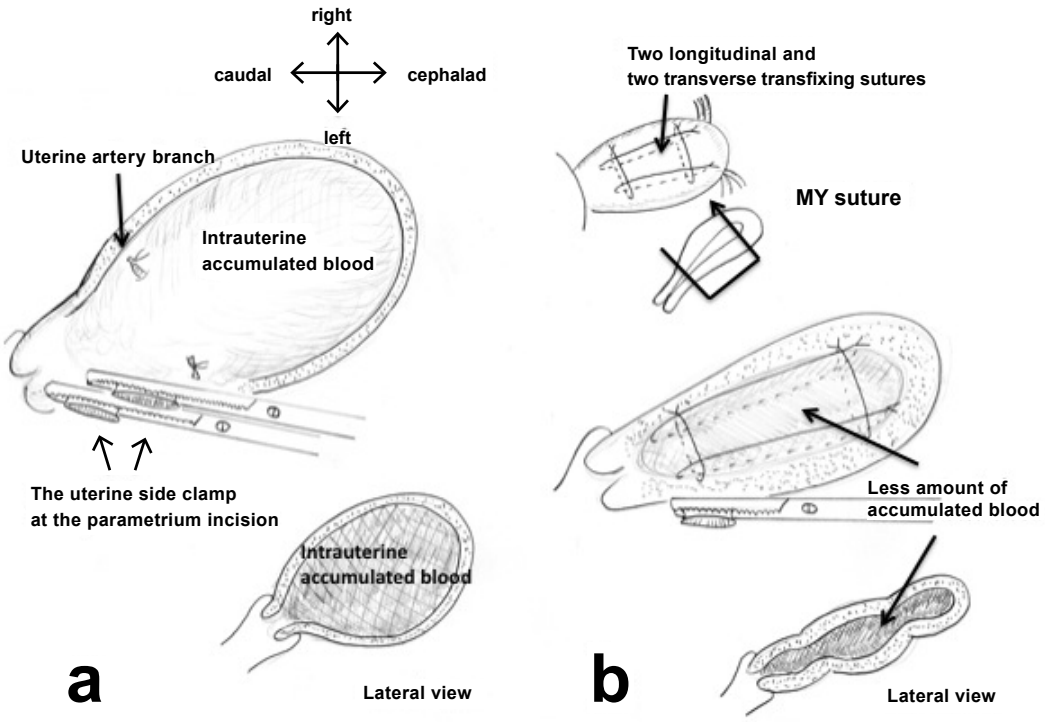

Figure 1: Schematic presentation of cesarean hysterectomy without (a) and with (b) Matsubara-Yano (MY) uterine compression suture

a. Without uterine compression suture. The uterine cavity fills with blood. The uterine wall usually becomes thin. Cutting the parametrium and clamping the uterine (medial) side is required (upper figure of a), which is one of the difficult procedures of this surgery, especially in placenta previa. A large amount of intrauterine blood accumulates just beneath this clamped site and usually pushes the uterine wall outward. Thus, the clamp tends to slip off. When it does, massive bleeding occurs from the uterine side, making the surgery difficult. In addition, in all steps of the surgery, injuring the uterus causes massive bleeding due to the intrauterine blood. Thus, the large amount of accumulated blood is an "ever-present danger" within the uterine cavity. In short, an enlarged uterus filled with blood (Figure 1a, lower) makes all the surgical procedures difficult even if the clamp does not slip off in this figure.

b. With Matsubara-Yano (MY) uterine compression suture. Upper two insets show MY suture: two longitudinal and two transverse transfixing sutures were placed, which compresses the uterine cavity and prevents blood for accumulating in the uterine cavity. Less accumulated blood within the uterus makes the uterine-side clamp tight and secure, leading to less chance of clamp slipping. A smaller uterus is easier to handle during all aspects of the surgery. The uterus can be more easily exteriorized from the abdominal cavity (not shown in this figure).

experienced obstetricians that UCS made this surgery much easier.

We believe that UCS may have wider application than previously considered. We wish to describe other two applications; they are prophylaxis for acute re-inversion after repositioning of postpartum uterine inversion [2,3,9-12], and prophylaxis of bleeding after perimortem cesarean section.

Postpartum uterine inversion can recur both acutely in this delivery (acute re-inversion) and at the next delivery [2,3]. We were the first to introduce UCS as a prophylaxis of acute re-inversion [3]. As described previously [2,3,9-11], UCS, compression of the uterine cavity, prevented re-inversion. Theoretically, B-Lynch suture and Hayman suture prevent "complete" re-inversion but they may not prevent "incomplete" re-inversion; within the uterine cavity, there is still "room" for incomplete re-inversion. In contrast, MY suture may prevent the occurrence of both complete and incomplete re-inversion. Thus, it is our department protocol to perform MY suture after abdominally repositioning of the inverted uterus. I previously touched on this concept [9,10].

Another possible application of UCS is for prophylaxis of bleeding after perimortem cesarean section. A pregnant uterus prevents successful cardiopulmonary resuscitation and thus perimortem cesarean section should be performed to save a mother's life irrespective of fetal survival. A 38-week-pregnant woman had cardiopulmonary arrest due to large brain stem infarction [13]. We performed perimortem cesarean section. Although the uterus was atonic during perimortem cesarean section, low blood pressure may have prevented bleeding: the surgical field was dry without genital bleeding. After perimortem cesarean section, maternal blood pressure resumed and then severe postpartum hemorrhage occurred. Uterine atony together with consumption coagulopathy caused bleeding. Due to an unresuscitatable condition, hysterectomy was not performed. Conditions requiring perimortem cesarean section may usually lead to both atonic uterus and consumption coagulopathy, and thus bleeding after perimortem cesarean section may occur. At that time, we regretted that supracervical hysterectomy was not performed to prevent hemorrhage [13]. Here, UCS could have been an alternative approach. Applying UCS after perimortem cesarean section may have prevented, or at least reduced, postpartum hemorrhage. UCS may be easier and less invasive than supracervical hysterectomy.

We cannot reach any conclusion from our experience of this case of cesarean hysterectomy. UCS may prevent re-inversion, but this is

theoretical. We did not perform UCS at perimortem cesarean section. Even if UCS may prove to be a good option for these three conditions, we must consider some possible adverse events accompanying UCS including uterine necrosis, uterine synechiae, or infection. Even though the merits of UCS may outweigh these possible adverse events, we do not claim superiority of MY suture over other UCS. However, since the conditions described here, i.e., peripartum or cesarean hysterectomy, uterine re-inversion, and perimortem cesarean section are life-threatening, every effort should be made to lessen the risks accompanying them. Performing MY suture requires less than 2 minutes and is technically easy and without apparent "adverse effects" when applied to these conditions. To our knowledge, no reports have touched on this possible merit of UCS, especially for cesarean hysterectomy and perimortem cesarean section. This topic should be discussed more widely as cases are reported.

Conclusion

We described a patient with placenta previa in whom UCS was effective in performing cesarean hysterectomy. UCS compressed the uterus and prevented the uterine cavity from filling a large amount of blood, which may have reduced the amount of bleeding during hysterectomy. UCS may be applicable also as prophylaxis of uterine re-inversion and prophylaxis of bleeding after perimortem cesarean section. Although UCS has been considered a treatment of choice for postpartum hemorrhage mainly due to atonic bleeding, UCS may have wider application than previously considered.

References

1. B-Lynch C, Coker A, Lawal AH, Abu J, Cowen MJ (1997) The B-Lynch surgical technique for the control of massive postpartum haemorrhage: an alternative to hysterectomy? Five cases reported. Br J Obstet Gynaecol 104: 372-375.
2. Matsubara S, Yano H, Ohkuchi A, Kuwata T, Usui R, et al. (2013) Uterine compression sutures for postpartum hemorrhage: an overview. Acta Obstet Gynecol Scand 92: 378-385.
3. Matsubara S, Yano H, Taneichi A, Suzuki M (2009) Uterine compression suture against impending recurrence of uterine inversion immediately after laparotomy repositioning. J Obstet Gynaecol Res 35: 819-823.
4. Rath W, Hackethal A, Bohlmann MK (2012) Second-line treatment of postpartum haemorrhage (PPH). Arch Gynecol Obstet 286: 549-561.
5. Mallappa Saroja CS, Nankani A, El-Hamamy E (2010) Uterine compression sutures, an update: review of efficacy, safety and complications of B-Lynch suture and other uterine compression techniques for postpartum haemorrhage. Arch Gynecol Obstet 281: 581-588.
6. Matsubara S (2012) A new compression suture to prevent 'uterine sandwich' from sliding off. Acta Obstet Gynecol Scand 91: 638-639.
7. Machado LS (2011) Emergency peripartum hysterectomy: Incidence, indications, risk factors and outcome. N Am J Med Sci 3: 358-361.
8. Matsubara S, Kuwata T, Usui R, Watanabe T, Izumi A, et al. (2013) Important surgical measures and techniques at cesarean hysterectomy for placenta previa accreta. Acta Obstet Gynecol Scand 92: 372-377.
9. Matsubara S (2010) Uterine compression suture may be useful not only for hemostasis in postpartum hemorrhage but also for prophylaxis of acute recurrence of uterine inversion. Arch Gynecol Obstet 281: 1081-1082.
10. Matsubara S, Baba Y (2013) MY (Matsubara-Yano) uterine compression suture to prevent acute recurrence of uterine inversion. Acta Obstet Gynecol Scand 92: 734-735.
11. Matsubara S, Yano H (2012) Uterine compression suture for acute recurrence of puerperal uterine inversion: Hayman suture? J Obstet Gynaecol Res 38: 1272-1273.
12. Mondal PC, Ghosh D, Santra D, Majhi AK, Mondal A, et al. (2012) Role of Hayman technique and its modification in recurrent puerperal uterine inversion. J Obstet Gynaecol Res 38: 438-441.
13. Matsubara S, Usui R, Watanabe T, Imayoshi M, Ichida M, et al. (2013) Perimortem cesarean section or perimortem cesarean supracervical hysterectomy? Arch Gynecol Obstet 287: 389-390.

This article was originally published in a special issue, **Obstetrics and Gynecology** handled by Editor. Dr. Yigit Cakiroglu, Kocaeli University, Turkey