

To cite: Gupta M, Gupta A, Otha DD, Gupta U. Modification of B-Lynch Stitch Technique (COMOC-MG) to Control Postpartum Hemorrhage: Clinical Perspective from 19 Cases. Pan Asian J Obs Gyn 2020;3(2):98-102.

Received on: 15-07-2020

Accepted on: 17-08-2020

Modification of B-Lynch Stitch Technique (COMOC-MG) to Control Postpartum Hemorrhage: Clinical Perspective from 19 Cases

¹Mahesh Gupta, ²Aditya Gupta, ³Dinmohammad Dadanbhai Otha, ⁴Usha Gupta

^{1,2}Chief Consultant, ^{3,4}Consultant

^{1,3,4}Department of Obstetrics and Gynecology, ²Department of Surgery

¹⁻⁴Pushpam Hospital, Sabarmati, Ahmedabad, Gujarat, India

ABSTRACT

Background: B-Lynch stitch technique, a standard approach for the management of postpartum hemorrhage (PPH), is associated with potential risks of blood entrapment, cavity occlusion, and infections that cannot be overlooked.

Objective: To share the clinical perspective of controlling PPH by COMOC-MG, a modified B-Lynch stitch technique

Materials and Methods: Medical records of all women managed by the COMOC-MG stitch technique, in a tertiary care center, from January 2012 to January 2020 for PPH were reviewed.

Results: Nineteen women were managed by COMOC-MG stitch technique. The estimated stitch time was 4–5 minutes. No additional surgery was needed in all of the cases. Seventeen (89%) women did not receive any blood transfusion. Twelve (63%) women reported restoration of their menses. One full-term pregnancy was reported six years after COMOC-MG stitch technique. Postoperative lower abdominal pain was reported in three cases. No cases of uterine infections, other late complications, or death were reported.

Limitations: Retrospective nature and small sample size are important limitations of this article.

Conclusion: The COMOC-MG stitch technique is simple and easy to perform, with a single puncture required on each side of the uterus. It also has the potential to reduce postpartum transfusion requirements and hysterectomy rates in women with PPH. It avoids uterine infection by respecting the uterine cavity and may help maintain fertility.

Keywords: Postpartum hemorrhage, COMOC-MG stitch technique, modified B-Lynch technique, cesarean delivery, uterine atony, polyglycolic acid suture.

INTRODUCTION

Despite recent developments in the field of obstetrics emergency for maternal health support, postpartum hemorrhage (PPH) remains the leading cause of maternal morbidity and mortality in developing country.¹ PPH is responsible for 38% of maternal deaths in India, annually.² Uterine atony, genital tract lacerations, retained placenta, placenta accreta, coagulation disorders and uterine inversion are common indications of PPH.³

B-Lynch technique is the first uterus-preserving stitch technique for controlling PPH, which was further modified by many centers around the world.⁴⁻⁷ The

Address for Correspondence

Mahesh Gupta
Chief Consultant
Department of Obstetrics and Gynecology
Pushpam Hospital, Sabarmati
Ahmedabad, Gujarat, India
gynecmg@gmail.com

concerns of B-Lynch technique include several uterine wall punctures or bites (six in total), bleeding from middle portion of the uterus after suturing, need of a special wide curved needle and difficult to perform on an oversized uterus.⁴ This technique also requires reopening of the uterus to explore the intrauterine cavity, which is highly inconvenient.

COMOC-MG (Compression of Myometrium and Occlusion of uterine artery by Dr. Mahesh Gupta), a modified B-Lynch technique can address these concerns. The technique controls PPH more thoroughly as it adds uterine artery ligation to the concept of the B-Lynch technique. This article describes the clinical perspective of managing PPH with COMOC-MG stitch technique during cesarean delivery. The name COMOC-MG is a registered trademark (ID: 3175301) of Mahesh Gopichand Gupta and is valid till 02 February 2026.

METHOD

Review of Medical Records and Data Collection

The medical records of all women who had been managed by COMOC-MG stitch technique⁸ for PPH in a tertiary care hospital, Gujarat, India from January 2012 to January 2020 were reviewed. The institutional ethics committee approval was not required as this modified B-Lynch technique was carried out in emergency settings. Also, the article only provides clinical perspectives from 19 de-identified individuals managed by COMOC-MG stitch technique.

The medical records were reviewed for age, gravida, parity, gestational age, pre-surgery weight, preoperative hemoglobin level, causes of primary PPH, duration of surgery, amount of blood loss and transfusion, need for additional surgery (e.g. balloon therapy & hysterectomy), length of hospital stay, postoperative complications, restoration of menses and subsequent pregnancy. Intraoperative blood loss was measured by weighing swabs, sponges, operative drapes and calculating the amount of blood in the suction bottles.

After delivery, 5–10 U of oxytocin was injected intramuscularly as routine procedures. The uterine massage, bimanual compression and uterotonics were used step by step for poor uterine contraction. In case of failure to respond to these conservative measures, the decision to perform COMOC-MG stitch technique was

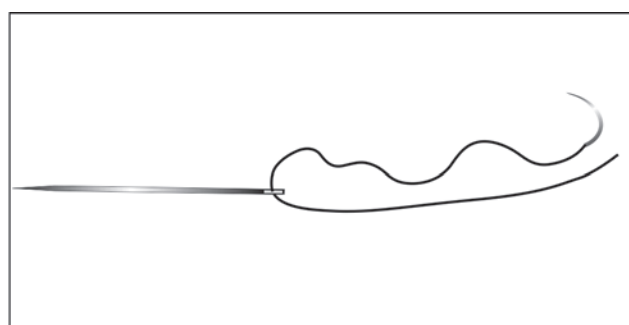


Fig. 1: A polyglycolic acid suture used in the COMOC-MG stitch technique with 40 mm round needle on one end and a 3.5 inch long straight needle

taken on the basis of degree of uterine contractility and the amount of bleeding within 4 to 5 min after delivery of placenta.

Stitch Technique Description

- All women received the low transverse cesarean section.
- Suture material used was chromic catgut or polyglycolic acid with 40 mm round needle on one end and a 3.5 inch long straight needle (Trugut[®]/Truglyde[®], Healthium Medtech Pvt. Ltd.) (Fig. 1)
- The suture technique was as follows:
 - Exteriorization of the uterus was performed.
 - The above mentioned straight needle made the puncture in the uterus about 3 cm below and 3 cm medial to uterine incision.
 - The suture was then taken out posteriorly from the uterine wall at the same level.
 - The loop of the straight needle was cut to obtain two free limbs posteriorly.
 - Anterior side of the uterus wall also has two limbs of the suture; one was free and the other one with a round body needle.
 - Then one limb from anterior and another limb from the posterior wall of the uterus from the same suture strand were tied by a knot at the top of the uterus.
 - The round body needle using the second strand of suture was then passed through the avascular portion of the broad ligament and tied firmly with another limb of the same suture to occlude the uterine artery.
 - A similar procedure was repeated for the other side of the uterus. The uterus was compressed

bimanually by an assistant, and the surgeon used a moderate tension, with suture, to hold the uterus in flexion position. Another assistant was asked to look for any vaginal bleeding.

- The abdominal wall was then closed, layer by layer.

Statistical Analysis

Data were statistically described in terms of median with minimum and maximum range, mean with standard deviation and numbers when appropriate.

RESULTS

COMOC-MG stitch technique was attempted in 19 women because their uterus did not respond to other conservative measures. There were twin pregnancies in seven cases. Demographic parameters including women age, gravida, parity, gestational age at delivery, preoperative weight, hemoglobin values, risk factors for PPH and estimated blood loss are shown in Table 1. Average blood loss was 337 mL (range 200–1000 mL).

The estimated time required for performing COMOC-MG stitch technique was 4–5 minutes. After the surgery, six women showed mild vaginal bleeding but with stable vital signs. One woman received a single unit of packed red blood cell (PRBC) while other

one received two PRBCs. Re-puncturing, re-suturing or additional surgery was not required in any of the women. Lower abdominal pain was reported in three cases, which improved spontaneously after few days. All women were discharged from the hospital in 2–3 days with prescription of oral iron. Twelve women reported restoration of their menses. One full term normal pregnancy was also reported after six years of COMOC-MG stitch technique.

DISCUSSION

Postpartum hemorrhage, one of the leading causes of maternal morbidity and mortality, remains a challenge for developing countries like India due to high prevalence of anemia, uncontrolled hypertension, multiple pregnancies, non-availability of blood products, operation theaters and intensive care units back-up.⁹ So, the early intervention to minimize the blood loss is the key to avoid a tragic outcome in women at high risk of PPH. This review showed that the COMOC-MG stitch, a modified B-Lynch technique not only managed PPH during cesarean delivery, but also preserved the uterus with mild and reversible postoperative complications. The technique utilizes potential benefit of adding uterine artery ligation to the concept of the B-Lynch compression suture. This brings in some inherent advantages over B-Lynch technique such as it avoids the re-opening of cesarean scar, uses single needle puncture on either side of the uterus, and allows free drainage of blood, debris, and inflammatory material.

In 2011, Kayem et al. reported that use of compression suture within 1 h after delivery reduced the blood loss with a success rate of 84%, while a delay of 2-6 hours increase the risk of blood loss and consequently hysterectomy (success rate 58%).¹⁰ Further, a recent retrospective review found a success rate close to 100% due to use of compression suture within 4-5 minutes after delivery.¹¹ The findings of our review using the COMOC-MG stitch technique is also in agreement with previous study, but with the added benefits of the single puncture on either side and the dual mechanism involving compression of uterus and occlusion of the uterine artery. The low blood loss and high success rate in our review may be attributed to surgeons' fast diagnosis and immediate application of the COMOC-MG stitch technique.

Table 1

Clinical Characteristics of women

| Characteristics | Values (n = 19) |
|--|---|
| Age (Years); Median (Min.-Max.) | 31 (23 – 40) |
| Gravida; Median (Min.-Max.) | 1.4 (1 – 3) |
| Parity; Median (Min.-Max.) | 1 (0 – 3) |
| Gestational age (Week); Median (Min.-Max.) | 36.4 (30 – 39) |
| Pre-surgery Weight (Kg); Median (Min.-Max.) | 64.8 (48 – 86) |
| Preoperative hemoglobin level (g/dl); Median (Min.-Max.) | 11.1 (8.0 – 13.7) |
| Blood loss, (mL), Mean ± SD | 336.8 ± 250.0 |
| Risk factor for PPH (n) | Large for Gestational Age (2), Twin Pregnancies (7), Prolonged Labor (5), Placental Disorders (3), and None (2) |

Time is critical; delay of 2–6 hours in the implementation of compression sutures leads to fourfold increase in the risk of hysterectomy.¹⁰ B-Lynch and its modified suturing technique have also found to be associated with a higher risk of uterine necrosis or pyometra which eventually lead to hysterectomy.^{4,12} Immediate use of COMOC-MG stitch technique successfully prevented hysterectomy and delay-related other complications. Only mild pain in the lower abdomen was reported by three women. Given the safety and simplicity of this technique, it can be performed by less experienced obstetricians in 4 to 5 minutes without any specific instrument or training requirement.

Reopening the incision on cesarean scar may confirm the conditions within the uterine cavity, but this procedure increases the risk of endometritis, sepsis or infection. In contrary to B-Lynch or other modified techniques, the COMOC-MG stitch technique is not associated with passage of the suture through the full thickness of both anterior and posterior uterine body wall, requiring re-opening of the uterine cavity.^{13,14}

Uterine compression suture for PPH does not appear to compromise the women menstrual resumption and subsequent fertility; though impact on fertility rate is not very conclusive.^{15,16} In this review, most of the women resumed their normal menstrual patterns. A full-term pregnancy was also found in a woman after six years of stitch technique.

Retrospective nature and small sample size are important limitations of this article.

CONCLUSION

The COMOC-MG stitch is a simple, safe and inexpensive technique requiring a single-puncture on either side of the uterus. It has the potential to reduce transfusion requirements and hysterectomy rate in women with PPH. Though looks promising, planned clinical trial is needed to confirm the potential advantages in PPH setting.

ACKNOWLEDGEMENTS

The authors would like to acknowledge WorkSure India for medical writing assistance.

Source of Support

Nil

Conflicts of Interest

There are no conflict of interest.

Financial Disclosure

None

REFERENCES

1. Sebghati M, Chandraharan E. An update on the risk factors for and management of obstetric hemorrhage. *Womens Health (Lond)*. 2017;13(2):34-40.
2. Montgomery AL, Ram U, Kumar R, et al. Maternal mortality in India: causes and healthcare service use based on a nationally representative survey. *PloS one*. 2014;9(1).
3. American College of Obstetricians and Gynecologists. ACOG Practice Bulletin: Clinical Management Guidelines for Obstetrician-Gynecologists Number 76, October 2006: postpartum hemorrhage. *Obstet Gynecol* 2006 Oct;108(4):1039.
4. Blynch C, Coker A, Lawal AH, et al. The Blynch surgical technique for the control of massive postpartum hemorrhage: an alternative to hysterectomy? Five cases reported. *BJOG*. 1997;104(3):372-5.
5. Pereira A, Nunes F, Pedroso S, et al. Compressive uterine sutures to treat postpartum bleeding secondary to uterine atony. *Obstet Gynecol*. 2005;106(3):569-72.
6. El-Sokkary M, Wahba K, El-Shahawy Y. Uterine salvage management for atonic postpartum hemorrhage using “modified Lynch suture”. *BMC pregnancy and childbirth* 2016;16(1):251.
7. Kaya B, Guralp O, Tuten A, et al. Which uterine sparing technique should be used for uterine atony during cesarean section? The Bakri balloon or the B-Lynch suture?. *Arch Gynecol Obstet*. 2016;294(3):511-7.
8. Gupta M. COMOC-MG stitch: Modification of B-lynch surgical technique to control atonic postpartum hemorrhage. *JOGI*. 2020. doi: 10.1007/s13224-020-01345-1 (accepted on 24th June 2020)
9. Ghosh SB, Mala YM. Alternate sequential suture tightening: a novel technique for uncontrolled postpartum hemorrhage. *Obstet Gynecol Int*. 2015;2015:145178.
10. Kayem G, Kurinczuk JJ, Alfirevic Z, et al. Uterine compression sutures for the management of severe postpartum hemorrhage. *Obstetr Gynecol*. 2011;117(1):14-20.
11. Kim ML, Hur YM, Ryu H, et al. Clinical outcomes of prophylactic compression sutures for treatment of uterine atony during the cesarean delivery of twins. *BMC Pregnancy and Childbirth*. 2020;20(1):1-7.
12. Mishra A, Dash S, Rath SK. B-Lynch Resulting in Total Uterine Necrosis Leading to Obstetric Hysterectomy. *JOGI*. 2019;69(1):4-6.
13. Thakur M, Rathore SS, Jindal A, et al. Uterocutaneous fistula following B-Lynch suture for primary postpartum hemorrhage. *Case Rep*. 2018;2018:bcr-2017.

14. Poujade O, Grossetti A, Mougel L, et al. Risk of synechiae following uterine compression sutures in the management of major postpartum hemorrhage. *BJOG*. 2011;118(4):433-9.
15. Doumouchtsis SK, Nikolopoulos K, Talaulikar VS, et al. Menstrual and fertility outcomes following the surgical management of postpartum hemorrhage: a systematic review. *BJOG*. 2014;121(4):382-8.
16. An GH, Ryu HM, Kim MY, et al. Outcomes of subsequent pregnancies after uterine compression sutures for postpartum hemorrhage. *Obstet Gynecol*. 2013;122(3):565-70.