



COMOC-MG Stitch: Modification of B-Lynch Suturing Technique to Control Atonic Post-partum Haemorrhage

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Received: 12 March 2020 / Accepted: 24 June 2020
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Abstract

The COMOC-MG (Compression Of Myometrium and OCclusion of uterine artery by Dr. Mahesh Gupta), a modified B-Lynch stitch technique, utilized polyglycolic acid double strand suture with 80 mm long straight taper point and 50 mm half circle round bodied needle. Its dual action of causing hemostatic compression as well as reduced uterine blood flow, in managing PPH is exemplified using 3 cases. The COMOC-MG stitch technique was found to be effective, with fewer complications, in controlling post-partum haemorrhage (PPH). One subsequent full-term pregnancy occurred after 6 years of this surgery. The COMOC-MG stitch technique is a valuable and safe alternative to B-Lynch or other modified B-Lynch suturing techniques for successful management of atonic PPH, while preserving fertility.

Keywords COMOC-MG stitch technique · Modified B-Lynch technique · Post-partum haemorrhage · Uterine atony · Polyglycolic acid suture

Introduction

Post-partum haemorrhage (PPH) is defined as bleeding of 500 ml or more within 24 h of delivery. PPH can be considered even if women become haemodynamically unstable due to the minor blood loss [1]. In India, PPH has been reported as a major cause of maternal mortality, accounting for approximately 38% of maternal deaths [2].

In 1997, Christopher B-Lynch devised an innovative technique to manage uncontrolled PPH [3]. Since then, several modifications in this technique have been published; however, none of them have a successful outcome in all patients [4]. B-Lynch remains the standard suturing technique for the management of uncontrolled PPH. However, several concerns have been raised regarding the B-Lynch technique. Firstly, the uterine wall is punctured with a needle six times which may further provoke bleeding. Secondly, potential

risks of blood entrapment, cavity occlusion, and infections cannot be overlooked as B-Lynch suture technique involves transfixation of the uterus from front to back in order to place the suture.

Due to inadequate medical facilities in developing countries like India, suturing technique complications might lead to emergency hysterectomy or maternal mortality. Herein, a simple and effective COMOC-MG (Compression Of Myometrium and OCclusion of uterine artery by Dr. Mahesh Gupta) stitch that combines uterine artery ligation with the concept of B-Lynch technique is described, for the control of life-threatening PPH using three cases. Polyglycolic acid double strand suture with 80 mm long straight taper point needle and 50-mm half circle round bodied needle (Fig. 1) was used in this technique. The name COMOC-MG is a registered trademark (ID: 3,175,301) of Mahesh Gopichand Gupta and is valid till 02 February 2026.

Surgical Technique

The following steps are involved in the competent application of the COMOC-MG stitch (Fig. 2):

1. Informed consent was obtained before the surgical procedure.

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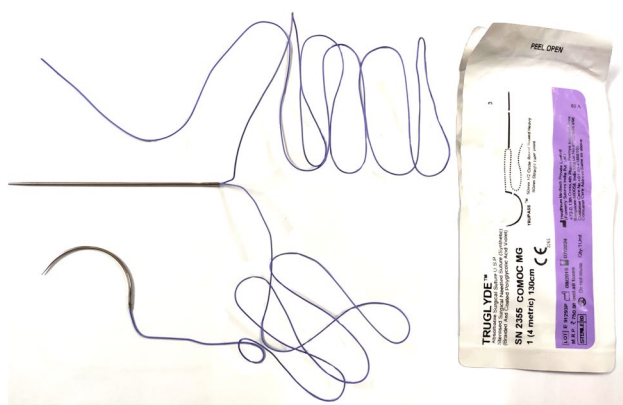


Fig. 1 The needle and thread used in this COMOC-MG stitch

2. The patients were placed in the Lloyd Davies position for the procedure with legs apart and no head-down tilt, so that vaginal bleeding could be assessed.
3. Appropriately sized Pfannenstiel incision was used to open the abdomen.
4. After delivery, the uterus was exteriorized and inspected for bleeding sites directly while the caesarean wound was still open.
5. The procedure used for COMOC-MG stitch technique was as follows: (A) a 80 mm long straight taper point needle with polyglycolic acid double strand suture (Truglyde®, Healthium Medtech Pvt. Ltd.) was used to puncture the uterus 3 cm below and 3 cm medial from the lower cut edge of the uterus in the case of caesarean section or 3 cm medial from lateral edge of uterus at the isthmus, in the case of normal delivery. (B) The needle was taken out from the posterior wall after inserting it into the anterior wall at the same level. (C) The loop around the eye of the needle was cut to obtain two free limbs posteriorly and two free limbs anteriorly. Out of anterior two limbs, one has the curved needle attached to it. (D) Then, both free limbs of one strand (from double strand) were tied by a knot at the top of uterus as Heyman's suture. In Heyman's technique, two vertical sutures are placed and tied on each side of the fundus of the uterus to prevent slippage of the knot [5]. (E) The second strand of suture material with the round body needle was now passed to the avascular area of broad ligament just below the cut edge of uterus at the same level on the posterior aspect. (F) Both the limbs of the second suture strand were also tied firmly to occlude the uterine artery. (G) The similar procedure was then repeated on the left (Fig. 3).

6. The uterus was kept in an anteflexed position by an assistant, and the suture was pulled using a moderate tension to hold the uterus in the flexion position. The suture was then tied securely. During this compression, the vagina was checked for bleeding.
7. The uterus was placed back into the abdominal cavity, and sutured, and then, the abdominal wall was closed layer by layer.
8. Care was taken not to damage the bowel and the bladder.

Experience from Three Cases

COMOC-MG stitch was adopted since medical treatment such as uterine massage, bimanual compression, infusion of oxytocin (20 IU in 500 mL saline at a rate of 125 mL/hr), injection of prostaglandin F_{2α} (250 µg intramuscularly), and misoprostol (800 mg) had proved ineffective in the three cases. After suturing, there was the obvious improvement of bleeding. The duration of the procedure ranged between 4 and 5 min (Table 1).

No post-operative anatomical or physiological abnormalities were seen in any of the three women. The post-partum menstrual flow and breastfeeding were normal. Ultrasound confirmed that the endometrium and ureter were normal and hysteroscopy showed a normal uterine cavity in all three women. One subsequent full-term pregnancy occurred after 6 years of this surgery in a 27-year-old woman, who delivered with repeat caesarean section.

Discussion

The modified B-Lynch approach (COMOC-MG stitch described here not only successfully managed PPH during caesarean section, but also preserved fertility. This technique was used secondary to medical treatment for PPH and was successful in all the three cases. The technique is based on dual mechanism that reduced or ceased bleeding by surgical compression and ascending uterine artery branch occlusion. Adding uterine artery ligation to concept of B-Lynch technique, in COMOC-MG stitch, may help to control PPH more thoroughly during caesarean section.

COMOC-MG stitch uses a single-puncture on either side of the uterus, leaves space in the uterine cavity to allow free drainage of blood, debris, and inflammatory material, and

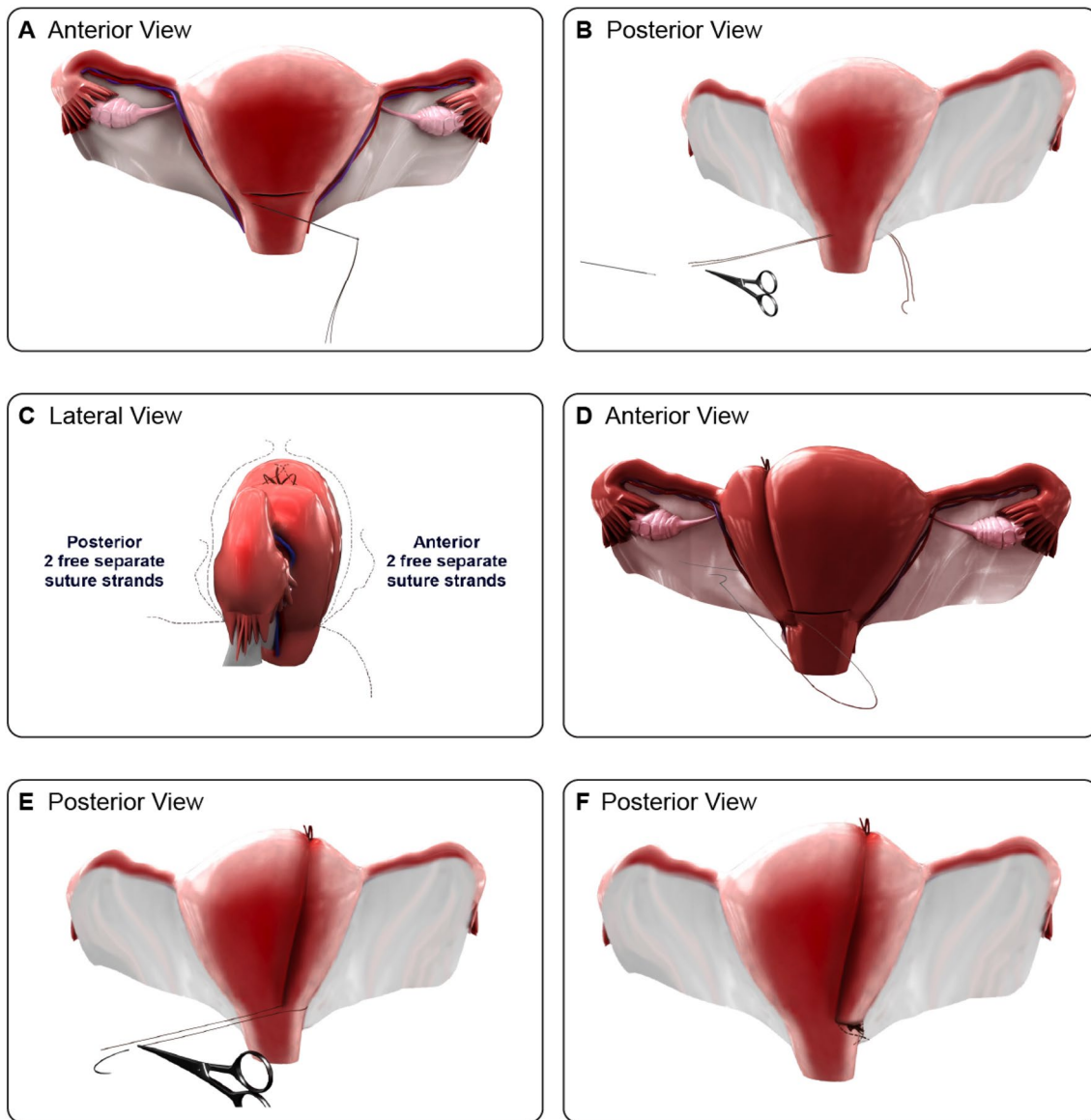


Fig. 2 COMOC-MG stitch. *Notes:* **a** 80mm long straight taper point needle is inserted into the uterus from 3 cm below and 3 cm medial to the lower cut edge of the uterus, **b** The loop around the eye of the needle is cut to obtain two free limbs posteriorly and two free limbs anteriorly, **c** From double strand, one strand will make a loop

on the top of uterus as Heyman's suture, **d** the second strand with round body needle will now pass to the avascular area just below the cut edge of uterus at the same level on the posterior aspect, and **e** and **f** both limbs of the second suture strand tied firmly to occlude the uterine artery.

avoids re-opening of uterine incision. So, this technique allows conservation of the uterus and fertility. The success rate is in line with previous studies reporting successful preservation of the uterus in cases with atonic PPH [4]. If the COMOC-MG technique fails, one can still resort to balloon therapy.

This technique can be applied for therapeutic and prophylactic purposes. It should be attempted as early as possible to maximize its success in women at risk of PPH. The simplicity, practicality, safety, and ease of application render this technique very efficient and reliable. Also, the learning

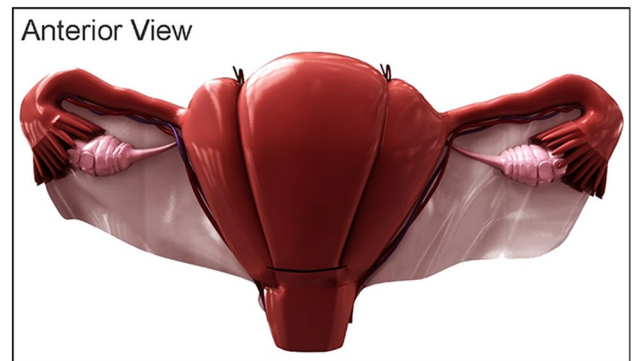


Fig. 3 COMOC-MG stitch placed on either side of the uterus

Table 1 Characters of patients with severe PPH treated by COMOC-MG technique

Case no	Age (year)	Gravidity and parity	Term (weeks of gestation)	Presenting diagnosis	Mode of delivery	Estimated blood loss	Blood transfusion (PRBC)	Operation time (min)
1	36	G1P1	36 weeks	Multiple pregnancy	LSCS	300 mL (Haemodynamically unstable)	–	4
2	40	G2P2	Full term	Placental previa accrete	LSCS	1000 mL	350 mL	4
3	27	G2P2	39 weeks	Obstructed labour	LSCS	1000 mL	700 mL	5

LSCS lower segment caesarian section, PRBC packed red blood cell

of this modified technique requires less time as it involves the use of single puncture on either side of the uterus and can be performed in a short duration of time with limited resources. This modified suturing technique also prevents the development of undue pressure on the suture lines as no intrauterine fluid collection occurred post-operatively with this technique. Therefore, it should be considered a procedure of choice if previous medical treatment does not control atonic PPH and certainly before any radical surgery is considered.

Conclusion

The COMOC-MG stitch is a valuable and safe alternative to B-Lynch or other modified B-Lynch suturing techniques for successful management of atonic PPH, while preserving fertility. However, to draw a firm conclusion concerning the efficacy of this technique compared with other modifications, future studies with optimal number of cases are required.

Acknowledgements Author thanks WorkSure India for medical writing and editing support.

Funding No funding was provided for this study.

Compliance with Ethical Standards

Conflict of interest The author has no conflicts of interest to declare.

Informed Consent Informed consent was obtained from all the three cases before the surgery.

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About the Author



Dr. Mahesh Gupta Dr. Mahesh Gupta is one of the leading gynaecologists of the country who is a recipient of Times of India—Health Icon Ahmedabad city award, 2018. He is a former president of Ahmedabad Obstetrics and Gynaecological Society (AOGS) and convener of Gujarat State Gynaecologist Association, India. Dr. Mahesh Gupta takes care of patients during pregnancy and performs deliveries at his 50-bed multispecialty hospital at Ahmedabad. He also treats patients for menstrual pain, polycystic ovarian syndrome, infertility, vaginal discharge, contraception.

He has presented many papers in international conferences. He has recently developed and patented COMOC-MG stitch technique to control post-partum haemorrhage (PPH) which is found to be a valuable and safe alternative to B-Lynch or modified B-Lynch suturing techniques.