



## Surgical Management of Postpartum Haemorrhage- Evaluation of A Novel Uterine Compression Suture

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### ABSTRACT

*Post-partum haemorrhage is a leading cause of maternal mortality worldwide. Although it can be effectively managed by non-operative methods in a majority of cases, surgical management becomes necessary in a few cases. Uterine compression suture is a standard procedure in the surgical management of cases of PPH refractory to medical therapy before resorting to more radical procedures like arterial ligation and hysterectomy. B-lynch suture technique, which has been in practice for the last couple of decades is difficult to master and reproduce in inexperienced hands. Here we report a novel uterine compression suture technique developed by the authors called the Kagwad Stitch which is equally effective and easy to master and practice.*

**KEYWORDS :** Post-partum haemorrhage, surgical management, uterine compression suture, Kagwad Stitch.

### Introduction:

Post-partum haemorrhage (PPH) defined as more than 500 ml blood loss from the genital tract within 24 hours of delivery<sup>1</sup> is the most common preventable cause of maternal mortality worldwide with cause specific mortality rate of 27 percent<sup>2</sup> with the maximum incidence reported from Asia and Africa<sup>2,3</sup>. In India it accounts for 26-32 percent of all maternal deaths<sup>4,5</sup>. The most common cause for PPH is uterine atony<sup>2,5</sup>. The incidence of PPH is almost 150 times the number of deaths it causes<sup>1,2</sup>. Although medical management constitutes the main line of management and does suffice in the majority of cases which are mild, it is the surgical treatment that becomes necessary in severe PPH which has the greatest impact in reducing the maternal mortality secondary to PPH. Traditionally B Lynch and Hayman stitch have been used to surgically control PPH before resorting to more radical procedures such as hysterectomy. Each method has its own advantages and disadvantages compared to the other. Here we describe our surgical technique for the control of PPH which is technically simpler with comparative efficacy to B lynch called "Kagwad stitch".

### Materials and methods:

#### Study design:

It was a prospective study conducted in Vani vilas and Bowring hospital over a period of 10 years. A total of 109 patients underwent the procedure for the management of PPH. Informed and written consent was taken from all the patients who underwent the procedure.

#### Inclusion criteria:

- Patients who delivered by normal vaginal delivery or by caesarean section in our centre.
- Patients with uncontrolled PPH following adequate medical management.

#### Exclusion criteria:

- Patients who delivered outside and were referred to our centre.
- Patients who refused to give consent.

#### Methodology:

The patients were shifted to operating room and were operated under general anaesthesia. Patient was placed in the Lloyd Davis position so that there is access to the vagina to objectively look for bleeding. A Pfannenstiel incision is placed in PPH following normal delivery 2-3 cms above the pubic symphysis. The incision is deepened through the subcutaneous tissue and the rectus muscles are separated along the midline and the peritoneal cavity

is entered. Bladder is dissected separate of the lower uterine segment. A transverse incision was taken on the uterus. Uterine cavity was entered. Examined and evacuated if any contents were present. In cases following caesarean section the previous incision was opened.

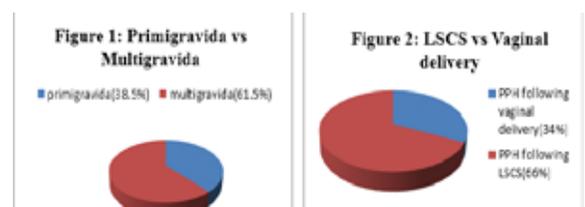
#### The Kagwad stitch is now taken as follows:

- The needle of chromic catgut No.2 was straightened out or a straight needled chromic catgut No.2 was used.
- The needle is passed antero-posteriorly 2-3 cm above the LSCS wound or above the lower uterine segment. The same suture is passed postero-anteriorly through the fundus 2-3 cm below the fundal margin and the suture is tied anteriorly. The uterus is compressed from above downwards while tying the knot.
- The same is repeated on the other side.
- Vagina is assessed to see if the bleeding is controlled.
- Uterus is then closed in two layers.

#### Results:

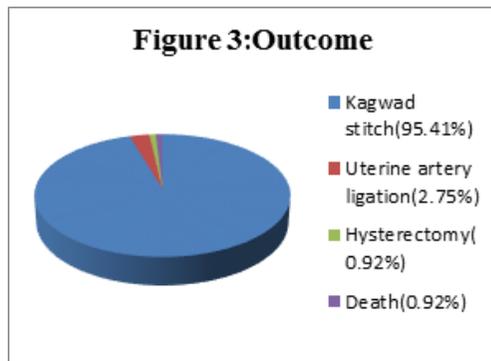
A total of 109 patients underwent the procedure for the control of PPH after medical treatment with uterotonics failed and the following observations were made in our patients.

The age of the patients who underwent the surgery ranged from 19 to 36 years. Of the 109 patients 42 were primigravida (38.5 percent) while 67 were multigravida (61.5 percent). PPH was seen following normal vaginal delivery in 37 patients and after LSCS in 72 patients. Early PPH (<24 hours) was seen in 106 patients. Late PPH was seen in 3 patients. All three patients presented within a week of delivery with 2 cases on day 2 and one on day 4 after postpartum. Figure 1 shows the incidence in primigravida vs multigravida. Figure 2 shows the incidence after LSCS and after normal vaginal delivery.



All the patients were shifted to emergency operating theatre and operated wounds are taken from all patients. Of the 109 patients who

were operated with Kagwad stitch was successful in 104 patients.3 patients underwent uterine artery ligation and one underwent hysterectomy 1 succumbed due to uncontrolled coagulopathy resulting in a success rate of 95.41%. Figure 3 shows the outcome of the various interventional methods.



All patients were closely monitored for continued PPH in the immediate post operative period and followed up for a period of 6 months.

### Discussion:

PPH is a leading contributor to maternal mortality rate worldwide and more so in developing countries like India. Although PPH is life threatening, early detection and prompt treatment can help reduce the mortality to a large extent

Most common cause of PPH is uterine atony which accounts for about 50 to 80 percent of cases<sup>5,6,7</sup>. Other causes being retained placental tissue, bleeding due to traumatic causes like perineal, vaginal, cervical, uterine lacerations or from episiotomy incisions, uncontrolled coagulopathy due to HELLP syndrome, ITP, abruptio placentae, DIC or sepsis.

Medical therapy with oxytocin infusion, methyl ergonovine and carboprost along with bimanual uterine compression will control the bleeding in the majority of cases with surgical treatment needed in only 1 percent of patients<sup>8</sup>.

Surgical treatment usually consists of uterine compression sutures mainly as described by Christopher B-lync. We report a novel suture technique which is effective and easy to practice and master.

B-lync in 1997, reported the use of his compression sutures on a series of 5 patients with success in all patients<sup>9</sup>.

Hayman et al reported their practice of placing 2-4 vertical sutures involving the anterior and posterior uterine walls without hysterotomy<sup>10</sup>.

Pareira et so reported their technique of compressing the uterus with both longitudinal and horizontal sutures without entering the uterine cavity with bites involving the subserosal myometrium<sup>11</sup>.

The success rate in various large series ranged from 77 to 82 percent<sup>12</sup>.

Baskett in a study of 28 patients reported an avoidance of hysterectomy in 23 patients with compression sutures with a success rate of 82 percent<sup>13</sup>.

Wohlmouth et al in their study of 22 cases described success in 11 cases with B-lync sutures and in 6 cases with B-lync sutures and uterine and/or ovarian artery ligation with a hysterectomy avoidance rate of 77.3 percent<sup>14</sup>.

In our series the success rate was 95.41 percent which is comparable to other case series.

The cases in which compression sutures failed were managed by uterine or ovarian artery ligation which is a part of a standard sequence of surgical management and this was successful in 2.75 percent.

One patient had to undergo hysterectomy as a life saving procedure

as all the other surgical modalities of treatment failed.

One patient succumbed due to uncontrolled coagulopathy secondary to sepsis and DIC.

On long term follow up(atleast 6 months) recurrent PPH was not seen in any of the successfully treated patients. Pyometra was seen in one patient which was effectively controlled using intravenous antibiotics.

No cases of uterine necrosis was seen in our series although a few cases have been reported in other series<sup>12</sup>.

No significant adverse effects on the future pregnancies seemed to be present as 13 of our patients conceived after the placement of these sutures. The rest either underwent tubectomy or were lost to follow up. So pregnancy outcomes could not be objectively assessed.

In conclusion, our method of compression sutures is an effective way of controlling PPH refractory to medical therapy and as effective as B-lync sutures or other uterine compression sutures and is easier to practice and reproduce with no significant adverse effects following the procedure.

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