# Management of Refractory Atonic Post Partum Hemorrhage by Upper Segment Compression Suture

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**Aims:** The study was undertaken to test the efficacy of Upper Segment Compression Suture(USC Suture) for the control of atonic post partum hemorrhage unresponsive to medical treatment. **Study Design:** Observational study. **Duration:**: From March 1998 to March 2003. **Setting:**: Department of Obstetrics & Gynaecology, Lahore General Hospital , Post Graduate Medical Institute , Lahore, Pakistan. **Subjects:** Fourteen women with atonic PPH refractory to medical treatment. **Results:**: Fourteen women with severe atonic PPH were managed using uterine massage and utero tonic drugs. Failing these measures, Upper Segment compression suture was used as first line conservative surgical technique. There was no re-laparotomy for recurrent PPH. All cases were managed successfully avoiding hysterectomy or other complex surgical procedures. Recovery in all cases was uneventful.Long term follow up was available in four cases. All were having normal menstruation. Two of them achieved spontaneous pregnancies. **Conclusion:**: Upper Segment Compression Suture is an effective technique for managing refractory PPH caused by uterine atony.
**Key words:** Post partum hemorrhage, USC suture, Caesarean hysterectomy, Uterine atony, conservation of uterus..

An estimated 30,000 maternal deaths occur in Pakistan annually i.e. one woman dies every 20 minutes. Life time risk of maternal death in Pakistan is 1 in 38 as compared to 1 in 230 in Sri Lanka , 1 in 5100 in United Kingdom and 1 in 6000 in Sweden[1]. Hemorrhage is the leading cause of direct maternal death in Pakistan, twenty five percent of all direct maternal deaths

More than 50% in Indonesia and Egypt and over 30% of maternal deaths in India are due to post partum hemorrhage[2]. Out of 125,000-140,000 PPH related deaths per year world wide , more than 90% occur in third world countries[3]. In 90% cases uterine atony is the cause of PPH. Myometrial exhaustion as in cases of prolonged and obstructed labors, overdistension of the uterus due to multiple pregnancy,polyhydramnios and halothane[4] may cause uterine atony. Other causes of PPH like retained placental or membrane pieces, tears ,inversion of uterus and co-agulopathy may be associated with uterine atony and must be looked for and dealt accordingly[5].

Stimulation of myometrial contraction manually (massaging fundus uteri per abdomen) and medicinally (oxytocin) is effective except in some cases when obstetric hysterectomy is usually performed to control PPH and save patient's life. Obstetric hysterectomy is associated with high morbidity and mortality[5,6,7]. It results in serious psychological and social problems like sterility.

Conservative surgical methods like bilateral internal iliac artery ligation (49% effective)[6,8]; bilateral uterine artery ligation (80% effective)[5] and bilateral uterine and ovarian artery ligation have been more complicated and less effective and a duty doctor may not be familiar with them.

Uterine artery embolization has been used to arrest PPH. The level of arterial occlusion is independent of the size of the particle because of irregularity in the shape of the particle and its tendency to clump. Ischaemia resulting from embolization may lead to serious complications like vesical vault necrosis[9].The technique is available in few specialized centres and very few doctors are trained for this purpose[10].

Recently various compression sutures have been introduced for conservative management of atonic PPH like rectangular, circular and brace compression sutures[11]. Underlying mechanism is direct compression of the bleeding site. Braces of B-Lynch suture reduce the uterine blood flow bilaterally towards the placental site hence it seems more logical keeping in view the peculiar arrangement of uterine blood supply[12] (Fig.1)BLB suture effectively controls PPH[13,14].

Upper segment compression suture (USC-suture) is based on the same principals however it is simpler and applicable in our circumstances.

**Materials & methods:**

Since there is no method to quantify post partum blood loss ,therefore ,the development of shock and the need for blood transfusion were used to define severe PPH (American College of Obstetricians & Gynecologists Recommendations) 6 .Emergency resuscitation was done in all cases (two I.V lines ,plasma expander solution, blood transfusion).Diagnosis of uterine atony was reached by finding a relaxed uterus on abdominal examination and excluding other causes of PPH like vulval, vaginal, cervical tears ,retained membranous and placental pieces .For this purpose patients who developed PPH after vaginal delivery and after conclusion of caesarean section ,were examined in operation theatre in lithotomy position under good light and uterus explored .For uterine atony measures were taken to stimulate uterine contraction i.e. uterine massage ,bimanual compression of the uterus, oxytocin injection 10 units I.V stat, injection methergin 0.5mg. I.V stat (only in normotensive women) oxytocin

infusion,direct intrmyometrial injection of methergin and per rectal prostaglandins (Pg-E2). In case of failure of the above measures , Upper segment compression suture was opted as first line conservative surgical technique as an alternative to obstetric hysterectomy. Cosent for laparotomy and hysterectomy was taken.Six units of blood and were arranged.

Details of the procedure are as follows:

- In case of vaginal delivery , abdomen was opened by Pfanenstiel incision , for other cases caesarean wound was opened Uterus was exteriorized .uterus was opened by 4 centimeter incision in those delivered vaginally and in case of caesarean section ,by undoing the sutured uterine incision[15]. Margins of the incision were held by Greenarmytages to control bleeding from incision margins.
- Uterine cavity was swabbed to recheck for adherent pieces.
- Upper uterine segment was compressed bimanually to check for control of bleeding that can be seen through the uterine incision.
- Having done this compression test, two No.2 Chromic catgut sutures (each 36cm. in lengh with curved round body blunt tipped needle 8mm. In diameter) of Ethicon were taken
- The needle of one suture was passed near to the midline about 3 cm. from upper incision margin (Fig. 2) and taken out at a point 4cm. From lateral border of the uterus and 3cm. From upper incision margin. The thread was passed over the anterior surface of the uterus, fundus uteri and posterior surface of the uterus.
- Uterine cavity was re-entered through the posterior wall at the corresponding level. Needle was removed by cutting and thread end held by an artery forceps. Same procedure was repeated on the opposite side with the second thread.
- The inner ends were tied together .An assistant now compressed the uterus; the outer ends of threads are pulled together gently and tied under moderate tension. Reduction in bleeding could be seen abdominally. Figure of eight sutures were used in case of placenta previa. Uterine incision was closed in layers with chromic catgut No.2 after securing the angles of the wound particularly. Drain was inserted in the peritoneal cavity to detect any internal hemorrhage at an early stage .
- At the conclusion of operation, vaginal bleeding was also checked , vital signs, urine output were noted .Patient was shifted to intensive care ward after making sure that there was no bleeding and her condition was improving.

Table 1: Descriptive and outcome data of cases under going USC sutures.

| Age (Years) | Parity | Indications | Mode of delivery | Complications | Blood pressure | Blood transfusion | Hb Pre-OP & Post-OP |
|---|---|---|---|---|---|---|---|
| 40 | G5P3+1 | Obst. Labor | C/S | PPH/DIC | 40/? | 6 u/2FFP | 10.5 / 5.4 |
| 32 | G7P6+O | Prolonged labor | C/S | Postpart.He. | 70/? | 4 units | 9.8 / 6.6 |
| 25 | G4P1+2 (no alive issue) | Fetal distress | C/S | PPH | 70/? | 4 units | 9.8 / 47.5 |
| 25 | PG. | Failed IOL | C/S | PPH | 60/? | 6 units | 10.8 / 6.0 |
| 26 | PG. | Failed IOL (ab.pl. | C/S | PPH | Unrecordable | 8 units | 9.7 / 5.0 |
| 30 | PG. | Fetal distress | C/S | PPH | 50/? | 4" | 12 / 7.0 |
| 23 | PG. | Deep transverse. Arrest | C/S | PPH | Unrecordable | 4" | 11.0 / 6.5 |
| 25 | G2P1+0 previous C/S | Placenta pr. (111) | C/S | PPH | Unrecordable | 6" /2FFP | 9.0 / 7.0 |
| 24 | G2P1+0 | Placenta pr. (IV) | C/S | PPH | 60/? | 4" | 10.8 / 7.2 |
| 25 | PG. | Failed IOL (pre-eclampsia) | C/S | PPH | 70/? | 6"/4FFP | 10.0 / 7.2 |
| 25 | PG. | Obst.labor (IUD) | C/S | PPH | 60/40 | 4" | 7.5 / |
| 26 | G3 P2 (both female) | Obst. Labor | C/S | PPH | Unrecordable | 6" | 7.6 / 6.0 |
| 25 | PG. | NVD at private clinic | NVD | PPH | 50/? | 2"/2FFP | 5.4 / |
| 30 | PG. | NVD t DHQ. | NVD | PPH | Unrecordable | 10"/2FFP | 7.2 gm./dl |

*PG primigravida, G gravida, P para, IOL induction of labour, obst. Obstructed, ab pl. aburptio placentae, deep ts. Arrest deep transverse arrest, placenta pr. Placenta previa, IUD intrauterine death, NVD normal vaginal delivery, DHQ district headquarter hospital, preg. Pregnancy, C/S caesarean section, PPH postpartum hemorrhage. ? = unrecordable.*

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**Note:**

This article has been reproduced because in the last issue No.2, Apr-Jun 2005, pages:94-96; the portion of Results and Discussion was missing.