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A STUDY OF ASHOK ANAND SUTURE IN REDUCING LOWER SEGMENT BLOOD LOSS AND PREVENTING OBSTETRIC HYSTERECTOMY IN MAJOR PLACENTA PRAEVIA CASES

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ABSTRACT

Introduction: To avoid the need for blood transfusions and hysterectomy in cases of placenta praevia during caesarean section delivery by a simple innovative technique developed by Dr ASHOK ANAND called Ashok Anand's stitch.

Methods: This stitch is based on the reasoning that taking the stitch bilaterally occludes the collaterals and secures hemostasis as they are the end arteries supplying lower segment .Sample size: 22 cases in each study group. Blood loss was estimated by standardized visual method (fixed container and mop).

Results: By applying this technique in 22 cases, there was significant reduction in the blood loss and caeserian hysterectomy compared to control group.

Conclusions: Ashok Anand's stitch is a simple and effective technique in controlling lower segment bleeding in cases of placenta praevia during caesarean section thus avoiding the need for blood transfusions and obstetric hysterectomy. The technique is easy to apply, less invasive and simple.

KEYWORDS : Ashok Anand stitch, Placenta previa, Lower segment bleeding

INTRODUCTION

Post partum haemorrhage (PPH) is commonly defined as a blood loss of 500 ml or more within 24 hours after birth, while severe PPH is defined as a blood loss of 1000 ml or more within the same timeframe according to World Health Organisation (WHO). A small blood loss that makes the woman haemodynamically unstable is also termed as PPH. It is a complication of delivery and the most common cause of maternal death, accounting for about 35% of all maternal deaths worldwide. These deaths have a major impact on the lives and health of the families affected resulting from failure of the uterus to contract adequately (atony),placenta praevia, genital tract trauma (vaginal or cervical lacerations), uterine rupture, retained placental tissue, or maternal bleeding disorders. Any excessive bleeding from the birth canal occurring within 24 hours is called primary PPH and between 24 hours and 12 weeks postnatally is termed as secondary PPH.

About 830 women die from pregnancy or childbirth-related complications around the world every day. Among the maternal deaths more than 52% are attributable to three leading preventable causes- Haemorrhage, Sepsis, and Hypertensive disorders. WHO statistics suggest that 35% of maternal deaths are due to PPH. Postpartum bleeding is the quickest of maternal killers and can kill even a healthy woman within minutes to hours, if not treated. A combination of quality antenatal care, skilled care at birth by active management of third stage of labour, the availability of high quality emergency obstetric care (with trained medical personnel and adequate infrastructure) and improved access to these services are essential to save many maternal lives

In placenta praevia, the highly vascular and friable lower segment which forms the placental bed is slow to retract and the greater the time it takes, more severe is the blood loss. To add to it, taking haemostatic sutures in the placental bed is difficult and the chances of placental bed tissue cut through by sutures are high, leading to further blood loss. Devascularisation of lower segment by bilateral uterine artery ligation is helpful, but only to some extent. In developed countries and at well-equipped centres where facilities of blood and blood products, intensive care and skilled surgeons are available, such complications can be managed with help of uterine artery catheterization, ballooning and embolization. This also requires specialized, expensive equipmens and technical expertise. In underdeveloped and developing countries with scanty resources and sometimes even in developed countries with resources, it can be a nightmare to anyone.

Ashok Anand's stitch is a simple, less invasive, cost effective, time saving and rapidly effective method to control lower uterine segment blood loss in such cases. It was discovered on the operating table on 19 Nov, 2007 by Dr. Ashok Anand, Professor in Obstetrics and Gynaecology, Grant Medical College and Sir JJ Group of Hospitals, Mumbai, in an attempt to control postpartum haemorrhage in a case of previous caesarean delivery with central morbidly adherent placenta previa. This technique has been successfully applied to several cases of placenta previa operated in the last 3 years at JJ Hospital with no apparent complications till date, no requirement of blood transfusion for operative blood loss and no obstetric hysterectomies.

METHODS

Study Design: six months hospital based case control clinical study.

Place of study: Government Vellore Medical College and Hospital , Adukamparai , Vellore -11

Sample size: 22 cases were taken in which Ashok Anand's stitch was applied and these were compared with 22 other randomly selected cases of major placenta previa delivered during the period of six months (Jan 2020 to June 2020) at Government Vellore Medical College and Hospital. Two groups were compared on the basis of blood loss, need for blood transfusion , and obstetric hysterectomy. Estimation of blood loss was done by standardized visual method.

Eligibility Criteria:

Inclusion

- Placenta previa was defined as a placenta that by ultrasound was partially or completely covering the internal os of the cervix;
- PPH diagnosis according to blood loss of more than 500 ml for vaginal deliveries and more than 1000 ml for caesarean delivery by the American College of Obstetricians and Gynaecologists (ACOG);

Exclusion

- Non-standardized diagnoses
- Non-standardized definitions of PPH

The technique can be described as follows:

1. The patient is kept in a supine position under spinal/general anaesthesia.
2. After delivery of the baby by lower segment caesarean section, umbilical cord is clamped and cut and uterus is exteriorized with placenta in situ.
3. Both uterine angles are secured with braided coated Polyglactin 910 number1 on round body needle (40mm ½ circle).
4. Bilateral uterine arteries (descending cervical branch) are ligated with the same suture. Bladder is pushed down further.
5. The assistant holds the uterus in central upright position. A spade or any other retractor can be used to retract the intestines behind

the uterus to avoid injury.

6. Polyglactin 910 number 1 is mounted on a straight needle (18 no triangular straight) or surgeons preference and inserted into the cervix, from anterior to posterior, 1cm above the level of lateral fornix and 0.5cm medially from lateral cervical
7. The same needle and suture is reinserted from posterior to anterior 0.5cm below the lower edge of the uterine incision on the same side.
8. The knot is then tied and secured midway between the two points.
9. Similar steps are repeated on the other side.
10. As soon as the sutures are taken, the lower segment is devascularized and then the placenta can be easily removed even if it is morbidly adherent.
11. The placental bed is found to be dry with no active bleeding.
12. The uterine incision is then closed.

The accompanying figures illustrate this technique

Figure 1: Uterine artery ligation; Bilateral uterine arteries (descending cervical branch) are ligated with braided coated Polyglactin 910 on number 1 round body needle (40mm, ½ circle).

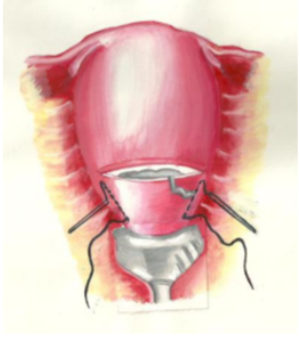

Figure 2: Ashok Anand's stitch- Anterior view; Polyglactin 910 number 1 is mounted on a straight needle (18 no triangular straight). Needle is inserted into the cervix, from anterior to posterior, 1cm above the level of lateral fornix and 0.5cm medially from lateral cervical musculature. The same needle and suture is reinserted from posterior to anterior 0.5cm below the lower edge of the uterine incision on the same side.

Figure 3: Ashok Anand's Stitch- Posterior View; Posterior view of uterus showing the stitch. The needle exits posteriorly, 1cm above the level of lateral fornix on the same side and re-enters the uterus from posterior to anterior 0.5 cm below the level of lower edge of uterine incision.

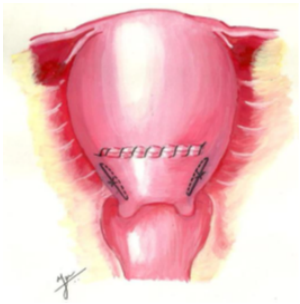

Figure 4: Ashok Anand's stitch- final view; Anterior view of the uterus showing the suture tied midway between the entry and exit points.

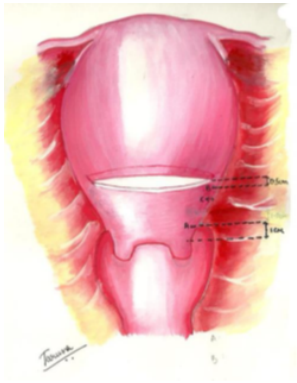

Figure 5: Schematic diagram showing the entry and exit points in Ashok Anand's stitch; A- Point of insertion of needle from anterior to posterior (1cm above the level of lateral fornix, 0.5cm medially to lateral border of cervix), B-Point of reinsertion of needle from posterior to anterior (0.5cm below the lower margin of uterine incision, 2 cm medial to the lateral uterine margin), C-Point midway between A and B anteriorly where the knot is tied.

RESULTS

22 cases in which Ashok Anand stitch was taken were compared with 22 randomly selected placenta previa cases in which stitch was not taken. All cases of placenta previa both control and cases were of Grade 3 or Grade 4. Comparison was done on the basis of blood loss, need for blood transfusion, ICU stay and obstetric hysterectomy.

(1) Analysis of amount of blood loss in two groups(Table 1)

Blood loss	<1000ml	>1000ml
Without stitch	5	17
With stitch	18	4

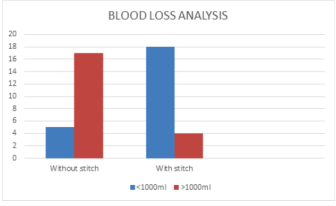

Chart 1: Blood Loss Analysis

On estimation of blood loss using fixed mop and container, it was found that in 18 cases blood loss was less than 1000ml and in 4 cases it was more than 1000ml. While using the same method in the control group in which stitch was not taken, it was found that in only 5 cases blood loss was less than 1000ml and in rest 17 cases blood loss was more than 1000ml.

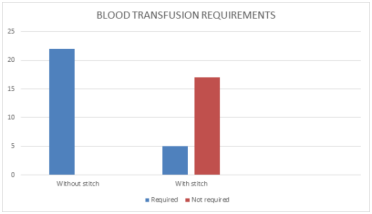

Chart 2 : Blood Transfusion Requirement

(2) Blood Transfusion(table2)

Blood transfusion	Required	Not required
Without stitch	22	0
With stitch	5	17

In 22 cases in which Ashok Anand stitch was taken, the need for blood transfusion was required in 5 cases, while in the control group, blood transfusion was required in all the 22 cases.

In all the cases of placenta previa in which Ashok Anand stitch was taken and blood transfusion was required, it is mainly because of either anaemia in women or due to departmental protocol of arranging blood prophylactically

(3) Obstetric Hysterectomy (Table3)

Obstetric hysterectomy	Required in	not required in
Without stitch	5cases	17 cases
With stitch	0 cases	22 cases

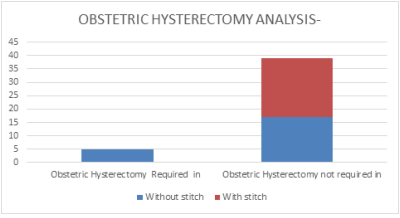

Chart 3- Obstetric Hysterectomy Analysis

Here maternal morbidity was measured in terms of need for obstetric hysterectomies Of the 22 cases in the control group, 5 required obstetric hysterectomy i.e. 22.7%, while none of the cases in which the stitch was taken, required an obstetric hysterectomy.

As we have seen in the analysis above, blood loss in the control group was significantly high as compared to the case group. All the 22 cases in the control group required blood transfusion, while only 5 cases required blood transfusion in the study group. Moreover 7 obstetric hysterectomies were done in the control group as compared to zero in the study group.

Hence, the results clearly suggest that the stitch can be very useful as well as helpful in achieving hemostasis in cases of placenta previa.

DISCUSSION:

The maternal mortality ratio in developing countries in 2018 is 222 per 100 000 live births versus 12 per 100 000 live births in developed countries. Thus 99% of all maternal deaths occur in developing countries with more than half of these deaths occur in sub-Saharan Africa and almost one third occur in South Asia. Very small proportion, 1% of maternal deaths occur in the developed world. There are large disparities between countries, but also within countries; maternal deaths are more in low income group and rural areas as compare to high income group and urban areas. The WHO estimates that postpartum haemorrhage accounts for nearly 30% of maternal deaths worldwide with an estimated 20 million cases annually.

In India, haemorrhage (25.6 percent) ranks first as the cause of maternal death, followed by sepsis (13 percent), toxaemia of pregnancy (11.9 percent), abortions (8 percent) and obstructed labor (6.2 percent) while other causes together total 35.3 percent. Incidence of PPH is reported as 4% after vaginal delivery and 6% after caesarean section; with uterine atony being the cause in about 50% cases. Every year about 14 million women around the world suffer from PPH. In India sample registration scheme (SRS), during survey of causes of death 2006-2007, reported that PPH was a major cause of maternal mortality and responsible for 38 % of maternal deaths .Estimates of maternal mortality ratio in India done by Indian Council of Medical Research (ICMR) in 2019 also showed PPH as a leading cause of maternal mortality in study population.

Morbidly adherent placenta occurs in about 1 in 2500 deliveries. There has been a marked increase in the last 50 years, probably secondary to the increase in Caesarean section delivery rates. Risk factors include implantation in the lower uterine segment over a previous surgical scar or excessive uterine curettage resulting in Ashermann's syndrome. Placenta previa is identified in one-third of cases, and 25% of women have had a previous Caesarean delivery. Nearly one-quarter have previously undergone curettage and another quarter are grand multipara. Although uncommon, they are associated with a significantly high maternal morbidity and sometimes mortality primarily due to haemorrhage, uterine perforation, infection and the associated surgical complications.

In cases of placenta previa, as the lower uterine segment is less muscular, contraction and retraction, which result in the occlusion of the sinuses of the placental bed, are inadequate, and intra-operative haemorrhage is therefore not uncommon. Where haemostasis is difficult to achieve, bleeding sinuses can be over sewn with atraumatic sutures. The intramyometrial injection of use prostagl and in F2α or Balloon tamponing effect on the bleeding placental bed has been shown to be useful in such cases. More recently, where the facilities are available, uterine artery embolization has been used with excellent results. The difficulty with this is the lack of availability of the facilities and the interventional radiologist at the time of delivery. If the bleeding remains uncontrollable, ligation of the internal iliac artery or even hysterectomy may be necessary as the last resort.

Ashok Anand's stitch is a simple and effective new technique to control lower uterine segment blood loss in placenta previa even if it is morbidly adherent especially in cases of placenta praevia with previous Lscs.This stitch is based on the reasoning that taking the stitch bilaterally as mentioned above occludes the collaterals supplying the lower segment. As these are end arteries, their occlusion causes hemostasis in the lower segment.

CONCLUSION

Ashok Anand's stitch can thus be used in cases of placenta previa during cesarean delivery as a simple and effective method for controlling postpartum hemorrhage. The Ashok Anand stich is very effective as it devascularises lower segment even before the placental sinuses are open. It is easy to take & does not require special expertise; it is not time consuming, does not require any special material or instrument & does not affect the fertility. It can be of major help to the surgeons, mainly in developing countries and in the setting of limited resources for avoiding blood transfusions and complications like obstetric hysterectomy and maternal death due to PPH.

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