



MANAGEMENT OF MAJOR DEGREE PLACENTA PREVIA DURING LSCS OPERATION– A NEW SURGICAL TECHNIQUE (DUTTA’S)

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ABSTRACT

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OBJECTIVES

Evaluation of a new surgical technique (Dutta’s) to prevent postpartum hemorrhage due to major degree placenta previa during cesarean section.

METHODS

This study was conducted at tertiary care hospital(JNM,& NSGH) at Kalyani, Nadia, West Bengal, India from the period January 2004 to December 2009. Ninety four (94) cases diagnosed to be having major degree placenta previa, undergoing LSCS operation, were selected for this study. New surgical technique(Dutta’s) was adopted in a stepwise manner = delivery of baby > bilateral uterine artery ligation by chromic catgut no-1 suture > injection tranexamic acid (1000mg) IM > injection oxytocin in intravenous infusion(10 units 30 drop /min in 500 ml of 5% dextrose)>delivery of placenta and membranes> checked properly if any tear or laceration in placental site > closure of uterine wound was done after securing bleeding from placental bed >closure of abdomen in layers by polyglycolic acid no 1 suture.

RESULTS

It was observed from this study that good effectiveness to control bleeding and intra operative blood loss less than 300cc were seen in 89(94.68%) cases respectively. Six (6.3%) cases required underlying interrupted suture for bleeding from placental bed. Subtotal cesarean hysterectomy was advocated in 3(3.28%) cases due to failure to control uterine atony. Immediate post operative bleeding less than 200c.c was found in 81 (86.16%) cases. Maternal mortality was found to be absent. Maternal morbidity was seen in 12(12.76%) cases. Subsequent menstrual cycles were found to be normal in 80(87.91%) cases and repeated pregnancy was observed in 26(28.57%) cases indicating non effect on gonadal function.

CONCLUSION

Dutta’s new surgical technique during LSCS for major degree placenta previa was found to be simple, safe and quick procedure. It reduces perfusion pressure, permits time for further steps, thereby avoiding unnecessary ligation of bilateral internal iliac arteries and cesarean hysterectomy. Maternal mortality and morbidity were also found to be reduced. This technique is suitable for rural based hospital in absence of adequate blood transfusion facility.

“Prior ligation of both uterine arteries (dutta’s new surgical technique) before placental expulsion during caesarian section for major degree placenta previa had showed very promising result not only to reduce intraoperative blood loss but also prevent maternal mortality and morbidity”

Keywords: Major degree placenta previa, new surgical technique (Dutta’s), cesarean section, PPH

INTRODUCTION

Hemorrhage killed more women than any other complications of pregnancy in the history of mankind. Placenta previa, abruption placenta and uterine rupture are three important causes of ante partum hemorrhage seen frequently at tertiary care level hospital claiming high maternal mortality and morbidity¹. Till date present existing different surgical techniques⁶⁻²² adopted during LSCS to deal with excessive bleeding after placental separation site from major degree Placenta Previa have not been found to be effective method to control intra-operative hemorrhage. This has led to high incidence of maternal mortality and morbidity. Hence to prevent intra-operative hemorrhage during LSCS operation due to major degree placenta previa author has advocated new surgical technique (Dutta's) in a stepwise manner to reduce maternal mortality and morbidity.

MATERIALS AND METHODS

This study was conducted at tertiary level hospital (JNM & NSGH), Kalyani, Nadia, West Bengal, India from the period of January 2004 to December 2009. Ninety-four (94) cases who undergone LSCS operation for major degree placenta previa (complete or partial occlusion of cervical os) were selected for the present study.

New technique (Dutta's) were undertaken during LSCS operation in a stepwise Manner >lower segment incision > delivery of baby from uterine cavity>bilateral uterine artery ligation by chromic catgut no -1 suture > inj. tranexamic acid (1000 mg) IM> Inj. oxytocin intravenous infusion (10 units 30 drops/min in 500ml of 5% dextrose)>delivery of placenta and membranes and checked properly > if tear or laceration in placental site interrupted suture by chromic catgut no 1 > uterine wound were closed in two layers by chromic catgut no 1 suture after securing bleeding from placental site or from other site if any> closure of abdominal wall after toileting the abdominal cavity and in presence of good uterine contraction >inj.

tranexamic acid 500 mg IM was given in two doses 6 hourly starting 4 hr. after the operation and inj. oxytocin (10 units 30 drops/min in 500 ml of ringer lactate and 5% dextrose alternatively) for 12 hrs . Care of bladder was taken before the LSCS incision was given and before the closure of Uterine wound and abdominal wall.

Through history taking, clinical assessment, blood profile, USG/MRI was advocated.

Blood loss was estimated from standard mop (50 x 20 inch) weight, blood from suction apparatus and blood clot. (accurate blood loss assessment is difficult to estimate)

All cases were followed up to 7 days to see immediate post operative complications and upto 2 year to see gonadal function.

Statistical analysis was not performed in this study. Informed consent was obtained from all patients.

RESULTS

TABLE I
Antenatal care (n-94)

In table I it was observed that 82 (87.24%) cases were having one or two antenatal check up at primary health centre or rural hospital, were referred as emergency cases . Only12(12.76%) cases had 4 or 5 time antenatal check up indicating the important of antenatal checkup for early detection and management of placenta previa.

TABLE I
Past obstetrical history (n=94)

| | Number | Percentage |
|--------------|--------|------------|
| Primi | 27 | 28.72% |
| Para 2 to 3 | 52 | 55.32% |
| Para 4&above | 15 | 15.96% |
| BOH | 8 | 8.51% |
| Post CS | 13 | 13.82% |
| Booked | 12 | 12.76% |
| Unbooked | 82 | 87.24% |

52 (55.32%) were having 2 to 3 parity. History of previous LSCS was noted in 13(13.82%) cases. It was observed that 82 (87.24%) cases were having one or two antenatal check up. Only12 (12.76%)

cases had 4 or 5 time antenatal check up.

TABLE II

Period of Pregnancy (n -94)

| | Number | Percentage |
|----------------|--------|------------|
| <34 Weeks | 31 | 32.98% |
| 35 To 37 Weeks | 53 | 56.38% |
| 37 Weeks | 10 | 10.64% |

Most of the patients were admitted in between 35 to 37 weeks of pregnancy -53(56.38%). (Table II)

TABLE III

Hemoglobin level during admission (n-94)

| | Number | Percentage |
|---------|--------|------------|
| <6 | 22 | 23.40% |
| 7 to 8 | 38 | 40.42% |
| 9 to 10 | 30 | 31.92% |
| >10 | 4 | 4.26% |

During admission all vital parameters along with Hemoglobin estimation were evaluated before surgical intervention, as it was seen that hemoglobin level of 22 (23.40%) cases were found to be less than 6 gm of haemoglobin. Only 4 (4.26%) cases had above 10 gm hemoglobin (table III).

TABLE IV

Blood Transfusion (n-94)

| | Number | Percentage |
|----------------|--------|------------|
| 600 cc | 32 | 34.05% |
| 300 cc | 38 | 40.42% |
| No transfusion | 24 | 25.53% |

Out of 94 cases, 32 (34.05%) cases who showed hemoglobin level below 6gm (22) and 8gm (10) were transfused 600cc. (table IV) blood during the pre and intra operative period.

Preoperative USG will be very much helpful to detect the placental types, (Type III 78(82.98%), Type IV 16 (17.02%), presentation, position of fetus, cervical length and the lower level of amniotic fluid which definitely help the obstetrician to give accurate incision to lower segment without injury to the placenta. (table VI)

TABLE V

USG Finding Before Operation (n-94)

| | Number | Percentage |
|-----------------------------------|--------|------------|
| Placenta Previa | | |
| Type III | 78 | 82.98% |
| Type IV | 16 | 17.02% |
| Fetal presentation | | |
| Vertex | 73 | 77.66% |
| Breech | 21 | 22.34% |
| Lower Level Amniotic Fluid | | |
| Detected | 90 | 95.74% |
| Not Detected | 4 | 4.25% |

TABLE VI

Operative findings (n-94)

| | Number | Percentage |
|---|--------|------------|
| Good effectiveness to control bleeding | 89 | 94.68% |
| Interrupted suture for bleeding from placental site | 6 | 6.3% |
| Broad Ligament Hematoma | 1 | 1.06% |
| Cesarean subtotal hysterectomy | 3 | 3.28% |
| Repair of bladder injury | 2 | 2.12% |

It was interesting to observe (table VII) that by adopting Dutta's new technique, 89 cases have shown good effectiveness to control bleeding (reduce perfusion pressure) thereby reducing the post partum hemorrhage during LSCS. One case (1.06%) had broad ligament hematoma which was controlled without any difficulty. Three (3.28%) cases had undergone subtotal cesarean hysterectomy due to failure to control uterine atony. Placental and its membrane expulsion were found to be uneventful. Interrupted suture by catgut no 1 were given on 6 (6.3%) cases due to bleeding from placental surface. Care of bladder was taken before the LSCS incision was given and before the closure of Uterine wound and abdominal wall. Indwelling catheter was given for 10 days in 2(2.12%) cases

(with history of post LSCS) where bladder were injured and repaired. Average time taken for the procedure was 40 to 45 minutes.

TABLE VII
Post operative follow up upto 6hrs (n- 94)
Blood loss

| | Number | Percentage |
|------------------|--------|------------|
| <less than 100cc | 56 | 59.57% |
| 101 to 200 cc | 28 | 29.79% |
| 201 to 300 cc | 9 | 9.57% |
| >400 cc | 1 | 1.06% |

From table VII it was interesting to note that post operative blood loss was found to be less than 100cc in 56 (59.57%) cases and less than 200cc in 28 (29.79%) cases, showing the encouraging result to prevent post operative blood loss within 6 hrs, thereby minimizing post operative blood transfusion.

TABLE VIII
Post Operative follow up 7 days (n-94)

| | N | % |
|------------------------------|----|--------|
| Good post operative Recovery | 82 | 87.23% |
| Wound Infection | 3 | 3.19% |
| UTI | 2 | 2.13% |
| Puerperal pyrexia | 2 | 2.13% |
| Hemoglobin level < 10 gram | 5 | 5.32% |

Post operative recovery was found to be uneventful as it was observed that 82 (87.23%) had good recovery (table VIII) with improvement of hemoglobin level.

TABLE IX
Maternal mortality and morbidity (n-94)

| | Number | Percentage |
|--------------------|--------|------------|
| Maternal mortality | nil | |
| Maternal morbidity | 12 | 12.76% |

Maternal mortality was found to be absent. Maternal morbidity-12 (12.76%) due to anemia (5) and wound infection (3), urinary tract infection (2) and puerperal pyrexia (2) were found to be reduced. (table IX)

TABLE X
Follow up study upto 2 years (n-91)
Gonadal Function

| | Number | Percentage |
|------------------|--------|------------|
| Normal | 80 | 87.91% |
| Irregular | 11 | 12.09% |
| Repeat pregnancy | 26 | 27.65% |

On follow up study upto 2 yrs, it was observed that 80 (87.91%) cases had regular menstrual cycle. Repeated pregnancy was observed in 26(27.65%) which signifies that Dutta's new stepwise technique did not interfere with the gonadal function in future. (table X)

DISCUSSION

Hemorrhage killed more women than any other complications of pregnancy. Placenta previa, Abruptio placenta and Uterine rupture were found to be leading causes of increase in maternal mortality and morbidity.¹

Incidence of placenta previa reported from North India(1988) was 56.4 % (out of 1.3 % of APH cases) whereas in South India(1988) it was found to be less that is 27.4%(out of 1.9 % of APH cases) as compared to Asian countries which showed that in National University Hospital (1990), Singapore where it was found to be higher 63.4% (out of 1.6% of APH cases) Maternity hospital Kuala Lumpur(1990) - 74.3 % (out of 1.24% APH cases) and Dhaka medical college, Bangladesh (1986)- 64.1%(out of 1.3% of APH cases). Maternal Mortality was reported from SSG hospital, Baroda (1985-89) that is 1.0% and from Wadia hospital, Mumbai (1981-82) which was 97% whereas from women hospital, Chennai (1990) and in Maternity hospital , Kuala Lumpur (1990) cases were absent²

The bleeding in placenta previa is usually painless and a history of APH may be absent in upto 35% of cases³. In the present study presence of placenta previa was suspected on clinical

ground in primi gravida -27 (28.72%) or more than 2 children – 67(71.28%), with history of previous LSCS operation 13 (13.82%)⁴. Eighty two (87.24%) unbooked cases were admitted presenting with bleeding per vagina.

The mean gestational age for initial bleeding was seen 31 (32.98%) cases at 34 weeks and 53 (56.38%) cases before 36 weeks as compared to > 36 weeks in 10 (10.64%) cases commensurate with the gradual thinning and development of lower segment with Braxton –Hicks contractions leading to separation of the abnormally situated placenta. It was observed from this study that placenta previa type III - 78 (82.98%) and placenta previa type IV- 16 (17.02%) were admitted with the history of bleeding per vagina probably due to placental separation from the decidua and from the torn and exposed maternal placental vessels.

Initially placenta previa related bleeding may itself lead to liberation of prostaglandins from the lower segment initiating uterine contractions, which in turn further aggravates separation of the placenta previa leading to unprovoked bleeding. It was observed from the present study that during admission it was found that hemoglobin level was less than 6gm % in 22 (23.40%) cases, between 7 to 8 gm% in 38(40.42%)cases, between 9 to 10 gm% in 30 (31.92%) cases and more than 10 gm% in 4 (4.26%) cases. Blood transfusion was found to be very much important as it was seen in the present study that 600 cc whole blood was transfused to 32 (34.05%) cases and 300cc of whole blood was transfused to 38 (40.42%) cases.

Preoperative USG⁶ diagnosis is of much importance (if it is available) as it not only helps to see types and location of placenta previa, presentation and position of fetus such as vertex - 74 (78.72%), breech 20 (21.27%), fetal maturity and heart sound etc but also allows us to see the lower level of amniotic fluid which in turn helps the obstetrician to give accurate incision on the lower uterine segment thereby avoiding injury to

There is lot of debate on whether to use either abdominal, per vaginal or perineal USG method. Author felt that MRI if available is better than other USG methods.

The present existing technique, undertaken in different parts of the world, to manage major degree placenta previa is to deliver the baby from uterine cavity either by cutting through the placenta or separation of placenta in lower uterine segment followed by hurried removal of placenta which may cause post partum hemorrhage either from placental bed or lateral extension of the incision (more likely in the friable lower segment) which necessitates the operating obstetrician either to give interrupted circular suture for bleeding control during LSCS⁶ or use of haemostatic gel⁷, stepwise uterine devascularization⁸, pelvic arterial embolisation⁹, haemostatic suturing technique¹⁰ or supra cervical cerclage with intracavitary balloon¹¹, technique by Liyt et al¹², parallel vertical compression suture on lower uterine segment¹³ or Meydanli compression suture¹⁴ or use of a large Rusch hydrostatic catheter balloon¹⁵ or uterine packing during LSCS¹⁶ or balloon tamponade during LSCS¹⁷ or uterine tamponade balloon¹⁸ or compression suture of the lower segment¹⁹ or ligation of hypogastric or internal iliac artery^{20,21} or subtotal or total cesarean hysterectomy.

If this technique is delayed, it may lead to maternal death and increased maternal morbidity due to loss of blood (1 to 2 litre) from placental site.

Hence to prevent post operative hemorrhage during LSCS operation for major degree placenta previa by adopting Dutta's new technique in a stepwise manner had showed some promising result. It was interesting to observe that the good effectiveness to control bleeding were detected in 89 (94.68%) cases. It was also interesting to note that the loss of blood during operation was found to be less due to reduced perfusion pressure.

The extraction of placenta and its membranes was found to be safer and easier from clear operative field in absent of profuse bleeding.

Idea to give prophylactic²² Inj oxytocin(10 units 30 drops /min in 500ml of 5% dextrose) to make uterine contraction . Inj tranexamic acid (1000 mg) IM was given to reduce the extent of bleeding from placental delivery to 2 hr postpartum and its use were not associated with any side effects or complications as it was reported that liver, kidney function, prothrombin time and activity^{23,24,25} were found to be normal.

In spite of all these measures 3 (3.28%) cases had undergone cesarean subtotal hysterectomy due to failure of medical treatment to control bleeding due to uterine atony. Interrupted suture by chromic catgut no-1 was given on 6 (6.3%)cases ,after putting gelatin absorbable sponge in between two layers of lower part of uterus for the prevention of bleeding from placental site.

Postpartum hemorrhage within 2 hours after cesarean section occurs more frequently in major degree placenta previa due to poorly contractile lower segment, presence of large uterine sinuses at lower segment and tear of the friable cervix. In many places it was reported to be managed by packing the lower segment in order to procure homeostasis, found to be dangerous as tears of the lower segment may occur²⁶. Hence to prevent such complications inj tranexamic acid 500 mg IM was given 6 hourly for two doses after 4 hrs of operation along with 10 units of oxytocin 30 drops per minute in 500 ml of 5% dextrose and ringer lactate alternately for 12 hrs were found to be very effective from the finding that post operative blood loss less than 100 cc- 56(59.57%), 101 to 200 cc - 28(29.79%), 201 to 300cc -9 (9.58%).

Post operative recovery was found to be uneventful as it was observed that out of 94 cases 82(87.23%) had good recovery. In the present study maternal mortality was found to be absent whereas maternal morbidity was seen in 12

(12.76%) of patients.

Menstrual cycle was found to be regular in 80 (87.91%) and irregular in 11 (12.07%) cases. Twenty six (27.65%) cases had repeated pregnancy indicating that this technique did not disturb the gonadal function.

CONCLUSION

Adopting Dutta's new technique in a stepwise manner, during lower segment cesarean section (LSCS) for major degree placenta previa , has been found to be simple, safe ,quick procedure , reduce perfusion pressure and permits time(with reduce blood loss) to take further step thereby avoiding other serious operative interventions like cesarean hysterectomy and ligation of bilateral internal iliac arteries. Implementing this procedure too can reduce maternal mortality and morbidity.It is a suitable technique that can be used in the rural based hospital with inadequate blood transfusion facility.

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Abbreviation

LSCS - lower segment cesarean section

BOH – Bad obstetrical History

CS – Cesarean Section