COMPARISON OF INTRAOPERATIVE HAEMORRHAGE BY BLUNT VERSUS SHARP EXPANSION OF THE UTERINE INCISION AT CAESAREAN SECTION

Azra Shamsi, Shahida Akhtar , Sobia Mohyudin

Department of Obstetrics and Gynaecology, Combined Military Hospital Rawalpindi

ABSTRACT

This study compared increased intraoperative blood loss in lower segment caeserean section between blunt versus sharp extension of uterine incision. This comparative analytical study was carried out in Gynaecology and Obstetrics department of Combined Military Hospital Rawalpindi from November 2002 to April 2003. The study comprised of 100 patients who were to undergo lower segment caesarean section out of which 50 patients were allotted in each of the two groups by non-probability convenience sampling. The selection criteria were full term pregnant women with single fetus. The maternal demographics of age, parity, body mass index, pre- operative haaematocrit were similar between the two groups. In the blunt group, the estimated blood loss was 805.80ml+376.95 as compared to 750.40ml+247.97 in the sharp group. It was more in the blunt group but the difference was not significant. There was no cervical tear in the sharp group as compared to four tears (8%) in the blunt group. In conclusion, both methods are comparable regarding amount of intraoperative haemorrhage. The sharp method confers some protection against cervical tears in cases of advanced labour and repeat caesarean section as compared to blunt method.

Keywords: Intraoperative haemorrhage, lower segment caesarean section, haematocrit, pre-eclampsia, arrest disorders

INTRODUCTION

Caesarean section is the delivery of a viable foetus through incisions in abdominal and the uterine walls. It may lead to intraoperative and postpartum haemorrhage and is responsible for 6% of deaths associated with caesarean section [1]. The rate of blood transfusion in patients having caesarean section varies from 1% to 10% [2]. About 500 ml to 1000-ml blood loss is normal in caesarean section. More than 1000-ml blood loss is post partum haemorrhage [3].

Haemorrhage from uterine incision and uterine sinuses remains the leading cause of intraoperative blood loss in caesarean section. So it is very important to adopt those surgical techniques, which result in reduced haemorrhage during the operation. One of such methods is extension of lower uterine incision by blunt versus sharp cutting method.

The purpose of the study was to determine which of the two methods of extension of uterine incision blunt versus sharp was associated with increased intraoperative blood loss It also compared both methods regarding risks of extensions of tears into cervical, vaginal and lateral uterine regions.

Correspondence: Maj Azra Shamsi, Department of Obstetric and Gynaecology, CMH, Rawalpindi.

MATERIALS AND METHODS

This study was conducted in Combined Military Hospital, Rawalpindi. About 99% of antenatal cases were booked with proper

antenatal care. During the study period of 6 months i.e. Nov 2002 to Apr 2003, there were 726 deliveries out of which 245 were delivered by caesarean section giving a caesarean section rate of 33.7%. Those patients who were to undergo an elective or emergency caesarean section and satisfied our inclusion criteria, were selected for the study. Our inclusion criteria was para five or less with singleton full term pregnancy, body mass index less than 30, primary or repeat lower segment caesarean section, and preoperative haematocrit more than 30%. Indications of lower segment caesarean section were mal-presentations, foetal distress, cephalopelvic disproportion, repeat lower segment caesarean section, pre-eclampsia, and failed progress of labour due to arrest disorders. Patients who were at high risk for postpartum haemorrhage i.e multiple pregnancy, polyhydramnios, antepartum, haemorrhage, placenta praevia, abruptio placenta, previous history of postpartum haemorrhage, obstructed labour , and fibroid uterus were excluded from the study.

Patients were divided into two groups of 50 patients in each group by non-probability convenience sampling according to the preference of the surgeon. Informed written consent from each patient of lower segment caesarean section and for the selected blunt versus sharp method of uterine expansion was taken on a study proforma along with her name and demographics, i.e age, BMI, obstetrical history and indication for lower segment caesarean section.

All these cases were operated by the same third year resident of gynae under general anesthesia. Similar steps of operation were performed in all cases till initial central uterine incision which was made in the middle of lower uterine segment, 2 cm above the detached vesical peritoneum. In the sharp group, the primary incision was extended transversely in a crescent shaped path by bandage scissors, cutting cephalic at the lateral margin. In the blunt group, the incision was extended laterally by placing the index fingers of the surgeon into the incision and pulling the fingers apart laterally and cephalic [4]. Rest of operation was performed similarly in all cases. 10 units oxytocin was given to the patient with the delivery of the foetal shoulders to assist quick placental separation. After delivery of the placenta, 20 units of oxytocin in 1000 ml of lactated ringers solution was rapidly infused to the patient for adequate contraction of the postpartum uterus.

The surgeon measured and calculated the blood loss in the operation theatre at the end of the operation [5]. The volume of blood collected in the suction bottles was measured. Blood clot of the size of a clenched fist is roughly equal to 500ml. All clots from abdominal cavity, vesicouterine space and vagina were collected and measured by this calculation. In the operation theatre blood loss was also calculated by weighing the swabs and sponges before and after surgery use.

To further verify the intraoperative blood loss, 48 hours after the operation, postoperative haematocrit was determined and fall from a preoperative baseline value was calculated. In addition the number of patients from each group who had cervical, lateral tears or were transfused blood due to fall in haaematocrit of ≥ 10 % or haaemodyamic instability were recorded.

Statistical Analysis

The numerical data was analysed to calculate means and standard deviations with the help of SPSS (version 10). The means was compared for significance by t-test for difference between two means. The frequencies were calculated for the categorical data and were compared using chi square (non parametric analysis) of SPSS. The confidence interval (CI) in both type of comparison was 95%. There fore comparisons was taken as significant if the p value was (< 0.05)

RESULTS

During the 6-months period of our study, a study sample of 100 cases from patients who were to undergo elective or emergency caesarean section and fulfilled our inclusion criteria for the study were selected. Out of 100 cases, 50 cases were assigned to blunt technique of uterine incision and 50 to the sharp technique. None of the randomised woman was excluded from the study.

The ages of the women in the two groups varied from 18 to 42 years, BMI from 24 to 30, preoperative haematocrit from 30% to 36%, parity from nulli para to para five. The patients in both groups did not differ in the demographics including maternal age, BMI, preoperative haematocrit and parity (table-1). There was almost no significant difference between the two group regarding gestational age, birth weights, frequency of elective versus emergency caesarean section and preeclampsia as calculated by P value less <0.05. The stage of labour at time of caesarean section was also similar between the two groups (fig. 1). Other risk factors for post partum haemorrhage like preeclampsia and emergency caesarean section were equally distributed between the two groups. The frequency of indications for caesarean section like malpresentations, foetal distress and cephalopelvic disproportion were similar in both groups. The frequency of repeat caesarean section was more 19 (38%) in the blunt group while it was 10 (20%) in the sharp group. On the contrary there were more cases of primary caesarean sections in the sharp group 40 (80%) versus 31(62%) in the blunt group. The frequency of arrest disorders was more in sharp group 18(36%) versus 9 (18%) in the blunt group (table-2). These differences in these two indications between two groups was significant on x2 test.

Table-3 shows comparative study of the outcome variables based on method of incision. Estimated intraoperative blood loss was 805.80ml+376.95 in blunt group as compared to 750.40ml+247.97 in sharp group.

Table-1: Distribution of patients according to patients age, BMI and preoperative haematocrit

Group	Blunt (n=50)	Sharp (n=50)	P Value
Maternal Age (Year) (Mean)	26.62 ± 5.15	27.62 ±5.09	0.35 *
BMI (Mean) Kg/m²	27.16± 1.43	26.64 ±1.61	0.089 *
Preop Haematocrit % (Mean)	33.46 ± 2.56	33.64 ±2.26	0.72 *

**Non significant on t-test*

Table-2: Distribution of patients according to indications for caesarean section

Group	Blunt n=50		Sharp n=50	
Mal Presentations	3	6 %	4	8%
Foetal Distress	9	18 %	7	14%
PET	7	14 %	5	10%
CPD	3	6 %	6	12%
#Repeat C. Section	19	38 %	10	20 %
#Arrest Disorders	9	18 %	18	36 %

- *# Significant on x ² Test*

Table-3: Distribution of patients according to blood loss and haematocrit drop

Group	Blunt (n=50)	Sharp (n=50)	P-Value
Blood Loss ml (Mean)	805.80 ± 326.95	750.40 ± 247.99	.26 *
Haematocrit Drop% (Mean)	2.63 ± 1.53	2.18 ± 1.37	.07 *

- **Non significant on paired sample t test*

Table-4: Distribution of patients according to tears and blood transfusion.

Group	Blunt (n=50)		Sharp (n=50)		P-Value
	No	%	No	%	
Tears	4	8 %	nil	0 %	.041 #
RCC Transfusion	5	10 %	3	6 %	.461 *

- *# Significant on t-test*
- ** Non significant on t-test*

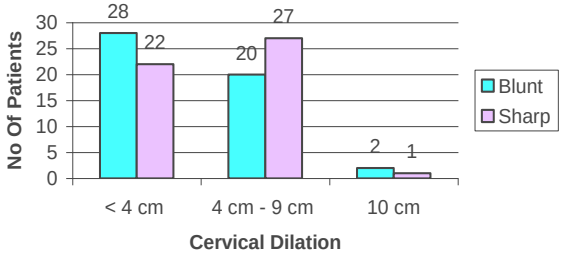

Fig. 1: Distribution of patients according to cervical dilatation.

It was more in the blunt group but the difference was not significant. Postoperative haematocrit drop in blunt group was 2.63%_+1.53 while it was 2.18%+ 1.37 in sharp group. The difference was not statistically significant. There was no tear in the sharp group as compared to four tears (8%) in the blunt group (table-4). They were all unintentional extensions of the uterine incision leading to cervical tears. This occurrence of tears was not significant statistically. There were 3 RCC transfusions (6%) in the sharp group while there were 5 transfusions (10%) in the blunt group. Frequency of RCC transfusions was insignificant statistically between both groups.

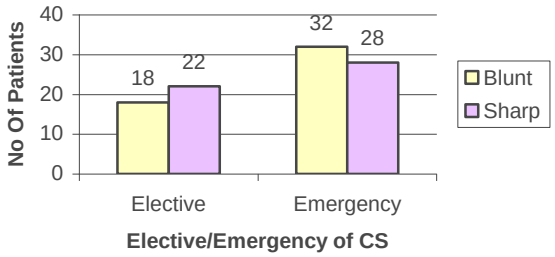

Fig. 2: Distribution of patients according to elective/emergency caesarean section.

DISCUSSION

The average blood loss in both groups was less than 1000 ml. It varied from 280ml to 800ml in the majority of the cases, the mean value being 805.80ml + 326.95 in the blunt group and 750.40ml+247.99 in the sharp group. These values are a little less than in the study by Magann [6] in which there was insignificant increased blood loss in the sharp group of 886ml versus 843ml in the blunt group.

In our study, the calculated intraoperative blood loss was slightly more in the blunt group, which was not significant statistically. Various studies suggest that there is 25% under estimation of blood loss by measuring from suction apparatus and weighing of sponges [7]. As we have no facilities of plastic pouches in drapes, there could have been some under estimation of blood loss. So to objectively demonstrate this blood loss, a postoperative estimation of haematocrit 48 hours after operation when the stage of fluid equilibrium is reached, was determined. This haematocrit drop in our study corresponds to the study by Rodriguez [8], which suggested that both methods were comparable in respect to post operative decrease in maternal haemoglobin: blunt (1.8 g/dl compared with sharp 2.2g/dl). In this study there was no information in the use of blood transfusions.

There were no cases of maternal mortality, massive haemorrhage, caesarean hysterectomy and foetal trauma in both groups. This was because of well-selected booked patients with good antenatal care, who were low risk for post partum haemorrhage and the experienced surgeon. It was observed that there were more cervical tears leading to increase intraoperative haemorrhage and haemodynamic unstability in the blunt group. So there were more cases of postoperative haematocrit drop in blunt group leading to 5 (10%) packed red cell RCC transfusions versus 3(6%) in sharp group.

Overall rate of blood transfusion for haemorrhage was 8%, which is in accordance with the recent study [6]. In the blunt group these transfusions were given because of increased blood loss which varied from 1000 ml to 1480 ml. Out of five patients receiving blood transfusions, four cases were of cervical tears and one case of excessive incisional bleeding. It was a primary elective caesarean section for breech presentation. In the sharp group, three cases were transfused for a blood loss varying from 1150ml to 1500ml.The haemorrhage was in one case of emergency caesarean section for foetal distress, one case of elective caesarean section for pre-eclampsia, and in case of third caesarean section due to utrine atony. There were four tears in the blunt group while there was no tear in the sharp group All the tears were inferior cervical lacerations, 2 to 3cm in length out side the limits of the original incision. They were due to extension of the primary

incision inferiorly and occurred over the left angle of the incision. Two cases occurred in cases of elective repeat caesarean sections, which are associated with increased risk of complications, haemorrhage and increased operative time [9,10]. As the blunt group had more number of repeat caesarean sections, we demonstrated an increased number of cervical tears and need of blood transfusion in the blunt group supporting this risk factor. Two tears were in cases of arrest disorder in advanced labour at cervical dilatation of 10cm. According to a study by Bergholt there were increased rates of uterocervical lacerations and blood transfusion in arrest disorders associated with low station of presenting part [11]. This is in accordance with a caesarean section study by Murphy [12] suggesting increased risk of intraoperative haemorrhage of more then 1000 ml in second stage of labour.

The reason for the observed relationship for cervical tears at advanced stage of labour may be due to difficulty in disengaging and delivering foetal head from pelvis in a thinned out lower uterine segment [11-13]. Our study supported this important risk factor of arrest disorder associated with unintentional tears in the blunt group we postulated the increased bleeding and postoperative haematocrit fall in blunt group due to associated increased cervical tears. Our study did not support the recent study by Magann [6], which stated increased intraoperative blood loss, tears, and blood transfusions in the sharp group. Rather it supported the study by Rodriguez [8] who found that both methods are comparable in respect to intraoperative haemorrhage.

CONCLUSION

Our study concluded that both methods are comparable regarding intraoperative haemorrhage in a caesarean section. The occurance of unintentional tears is associated with advanced labour and repeat caesarean sections. It also showed that sharp technique was better in avoiding the tears and intraoperative blood loss associated with thinned out lower uterine segment in cases of advanced labour and repeat caesarean section. The advantage of sharp technique is due to precise control of length and direction providing more room for safe delivery of the foetus. More over large lateral uterine sinuses can be deliberately avoided by semilunar upward curve by scissors.

To further confirm our results, this study is to be continued in our department sampling a larger patient population. There is a need of further study regarding variables like station and position of presenting part in labour with arrest disorders. More over, there should be provision of plastic drape pouches for exact collection and measurement of blood loss. Sharp method in caesarean section must be followed and recommended to the surgeons specifically for the cases of repeat caesareans and patients in labour with arrest disorder to minimize risk of unintentional tears associated with increased blood loss and blood transfusions.

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