ORIGINAL ARTICLE

Comparison of Intra-Operative Blood Loss by Blunt Versus Sharp Expansion of the Uterine Incision at Lower Segment Cesarean Delivery

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ABSTRACT

Aim: To compare mean intra-operative blood loss by blunt versus sharp expansion of the uterine incision at lower segment cesarean delivery.

Methods: Total 212 females with singleton pregnancy of 18-35 years age, undergoing cesarean section were selected. Women with multiple pregnancy and high risk of bleeding e.g. placenta previa, placental abruption, pre eclampcia, bleeding disorders were excluded. Selected patients were divided randomly into two groups A and B by lottery method. Group A included 106 women who had blunt expansion of lower segment uterine incision with fingers. Group B included 106 women who had sharp expansion of uterine incision with scissors. Intra-operative blood loss was noted in both groups.

Results: The mean age of women in group A was 26.51±4.69 years and in group B was 25.51±5.17 years. The mean gestational age in group A was 39.38±1.32 weeks and in group B was 39.17±1.30 weeks. Mean intra-operative blood loss in Group A (blunt dissection group) was 365.51±64.77 ml while in Group B (sharp dissection group) was 407.41±62.67 ml (p-value<0.0001).

Conclusion: This study concluded that blunt dissection for expansion of the uterine incision is a better technique than sharp dissection to reduce the blood loss and subsequent prevention of blood transfusion and its complications.

Keywords: Cesarean, intra-operative, hemorrhage, transfusion.

INTRODUCTION

Cesarean section is a common obstetric procedure. The global rates of cesarean delivery are increasing and in some developed countries reaches as high as 1 in 3[1,2,3]. In last few years rate of c-section reached to 45% in China and 25% in many Asian countries[4].

Intra-operative hemorrhage is the major risk factor associated with cesarean delivery. Obstetric hemorrhage is common cause of maternal mortality and morbidity.Many surgical procedures have been developed to reduce intra-operative blood loss during c-section. One of these techniques that remain debatable is expansion of uterine incision, either by sharp or blunt methods. The evidence base researches suggest that techniques like blunt dissection of subcutaneous tissue, in situ uterine repair in the place of exteriorization, blunt traction in the cephalocauded rather in transverse direction for uterine incision decreases the intraoperative blood loss during c-section[5,6,7,8].

Blunt expansion of uterine incision digitally rather than use of scissors for sharp expansion is one of such techniques.Main advantage of blunt expansion is fewer traumas to vessels of dissected myometrium. Other advantages include prevention of trauma to neonate or cord[9].

As blood loss ≥1500 ml or a fall in hematocrit ≥10% (American College of Obstetrics and Gynecology) requires blood transfusion, so the aim of this study was to evaluate the better technique (blunt versus sharp) for expansion of the uterine incision to reduce the blood loss and subsequent prevention of blood transfusion and its complications (hepatitis B, C, HIV and malaria).

MATERIAL AND METHOD

This randomized controlled was conducted at THQ Hospital Jampur from January 2016 to June 2016. Total 212 patients with single pregnancy confirmed on ultrasonography, term pregnancy >37 weeks of gestation confirmed by dating scan, patients required elective/emergency lower segment cesarean delivery, patients having maternal age between 18-35 years were selected for this study. Patients with multiple pregnancy, abnormal presentation, grand multiparty Parity> 5, high risk of bleeding e.g. placenta previa, placental abruption, pre eclampcia, bleeding disorders, patients with previous history of classical uterine incision were excluded from the study.

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Study was approved from hospital ethical committee. Informed consent was taken from every patient. Selected patients were divided randomly into two groups A and B. Group A included 106 women who had blunt expansion of lower segment uterine incision with fingers. Group B included 106 women who had sharp expansion of uterine incision with scissors.

After c-section, blood loss was estimated in all cases by calculating blood and blood clots in suction bottle, difference of weight of sponges (pre-operative and post-operative) by using formula 1g=1ml and blood clots in clenched fist (each fist = 500ml of blood). Intra-operative hemorrhage was noted in patients of both groups. Data was recorded on specially designed proforma.

OPERATIONAL DEFINITIONS:

Mean intra-operative blood loss: It was defined as blood loss in ml during lower segment cesarean section and was estimated by calculating blood and blood clots in suction bottle, difference of weight of sponge (pre-operative and post-operative) by using formula 1g-1ml and blood clots in clenched fist (each fist = 500ml of blood).

Uterine incision expansion: Two methods were used; one was blunt expansion of uterine incision by pulling cut margins of uterus with fingers. Other methods were sharp expansion of uterine incision with scissors in crescentric and cephalic fashion.

Data analysis procedure: The data was entered and analyzed by using computer software SPSS version 14. Frequency and percentage were computed for qualitative variables like age groups, parity and type of cesarean section (elective/emergency). Mean and standard deviation were calculated for quantitative variables like age of patient, gestational age and intra-operative blood loss in ml. Blood loss in both groups was computed by student "t" test. P-value ≤0.05 was taken as significant. Tables and graphs were used to present data.

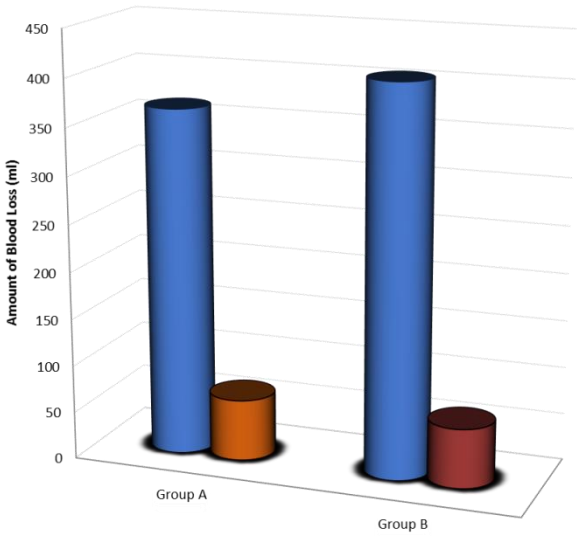
Effect modifiers were controlled by stratification of data in term of age, parity, gestational age and type of cesarean section (elective/emergency). Post-stratification student "t" test was applied to see their effect on outcome and p-value ≤0.05 was taken as significant

RESULTS

Age range in this study was from 18 to 35 years with mean age of 26.01±4.95 years. The mean age of women in group A was 26.51±4.69 years and in group B was 25.51±5.17 years. Majority of the patients 88(41.51%) were between 18 to 25 years of age.

Mean intra-operative blood loss in Group A (blunt dissection group) was 365.51±64.77 ml while in Group B (sharp dissection group) was 407.41±62.67 ml and the difference between the mean blood loss was statistically significant with p value p-value<0.0001 (Fig.1).

Fig. I: Amount of Intra-operative blood loss in both groups.



	Group A	Group B
Mean	365.51	407.41
Standard Deviation	64.77	62.67

P-value <0.00001 which is statistically significant

Patients were divided into three age group i.e. age group 18-25 years, age group 26-30 years and age group 31-35 years. In age group 18-25 years, mean blood loss in stud group A was 355.42±66.70 ml and in study group B was 408.98±67.11ml and the difference was statistically significant with p value <0.0001. In age group 26-30 years, mean blood loss was in study group A and B was 360.39±62.89 ml and 404.82±63.98 ml respectively with statistically significant (P = <0.0001) difference. In age group 31-35 years, mean blood loss was in study group A and B was 378.47 ± 68.68 and 414.28 ± 59.57 ml and the difference of blood loss between the both study groups was significant with p value <0.0001 (Table 1).

Patients were divided into two gestational age groups i.e. 37-39 weeks and 39-42 weeks. In 37-39 weeks group, mean blood loss in study group A and B was 364.86 ± 62.66 and 414.70 ± 56.21ml and the difference for mean blood loss between the both study groups was statistically significant with p value <0.0001. In 39-42 weeks group, mean blood loss in study group A and B was 365.81±66.12 and

402.98±66.30 and the difference was significant with p value <0.0001 (Table 2).

Significantly less blood loss was noted in study group A as compared to study group B when patients divided according to parity. (Table 3) In elective C-section group, mean blood loss was in study group A and B was 368.47±60.95ml and 406.31±58.32 ml and the difference for mean blood loss was statistically significant with p value <0.0001. In emergency c-section group, mean blood loss was 361.79 ± 69.75ml and 408.89±68.31ml in study group A and B and the difference was significant with p value <0.0001 (Table 4).

Table I: Stratification according to age of patients.

Age of patients (years)	Group A (n=106) intra-operative blood loss		Group B (n=106) intra-operative blood loss		P-value
	Mean	SD	Mean	SD	
18-25	355.42	66.70	408.98	67.11	<0.0001
26-30	360.39	62.89	404.82	63.98	<0.0001
31-35	378.47	68.68	414.28	59.57	<0.0001

Table II: Stratification according to gestational age.

Gestational Age (weeks)	Group A (n=106) intra-operative blood loss		Group B (n=106) intra-operative blood loss		P-value
	Mean	SD	Mean	SD	
37-39 weeks	364.86	62.66	414.70	56.21	<0.0001
39-42 weeks	365.81	66.12	402.98	66.30	<0.0001

Table III: Stratification according to parity.

Parity	Group A (n=106) intra-operative blood loss		Group B (n=106) intra-operative blood loss		p-value
	Mean	SD	Mean	SD	
1	367.03	57.52	414.40	64.06	<0.0001
2	348.10	73.66	395.45	64.18	<0.0001
3	371.87	67.39	413.67	44.15	<0.0001
4	375.00	59.05	412.00	68.65	<0.0001
5	393.71	45.01	406.00	87.80	<0.0001

Table IV: Stratification according to type of cesarean section.

Type of Cesarean	Group A (n=106) intra-operative blood loss		Group B (n=106) intra-operative blood loss		P-value
	Mean	SD	Mean	SD	
Elective	368.47	60.95	406.31	58.32	<0.0001
Emergency	361.79	69.75	408.89	68.31	<0.0001

DISCUSSION

The age at presentation in our study varied from 18 years to 35 years with mean age of 26.01 ± 4.95 years. The mean age of women in group A was 26.51±4.69 years and in group B was 25.51 ± 5.17 years. Majority of the patients 88 (41.51%) were between 18 to 25 years of age. Ali M et al[10], Malathi J et al[11] and Ghazi A et al[12] had found majority of patients between 20 to 30 years of age in their studies while Al Nuaim L et al[13] in his study had found 61.2% patients between 25 to 34 years of age. Nomura RMY et al[12] found mean age of 28.4 years in his study which is a little higher compared to our study.

In our study, mean intra-operative blood loss in Group A (blunt dissection group) was 365.51 ± 64.77 ml while in Group B (sharp dissection group) was 407.41 ± 62.67 ml (p-value<0.0001). In a study done by Magann EF et al[14], compared with the blunt group, the estimated blood loss (886 versus 843mL, P = 0.001), change in the mean haematocrit (6.1% versus 5.5%, P = 0.003), incidence of postpartum haemorrhage (13% versus 9%; relative risk= 1.23, 95% CI 1.03, 1.46) and need for a transfusion (2% versus 0.4%; relative risk = 1.65, 95% CI 1.25, 2.21) were significantly greater in the sharp group.

In a study conducted by Sekhavat L et al showed that maternal blood loss in blunt group was 375 ± 95 ml.[15] In another study conducted by Orji EO and his associates has reported that in sharp group, the estimated blood loss was 419.44 ± 101.66ml[16].

On the other hand, contrary to the results of our study and other previous studies, Hameed A et al[17] in his study has shown the Intra- operative blood loss more in blunt incisions (range=240ml-1600ml)

than the sharp group (range=300ml-1450ml)($p < 0.01$). Similarly, Shamsi A et al[18]reported the estimated blood loss was 805.80ml+376.95 in blunt group as compared to 750.40ml+247.97 in the sharp group. It was more in the blunt group but the difference was not significant.

Nousheen J et al[19] in his study has found the mean intra-operative blood loss in blunt dissection group was 675.50 ± 252.08 ml while in sharp dissection group was 712.06 ±3442.34 ml.Xu LL et al[20] in his study concluded that blunt dissection of the uterine incision at cesarean section appears to be superior to sharp dissection in minimizing maternal blood loss. So, on the whole it is concluded that blunt dissection for expansion of the uterine incision is a better technique than sharp dissection to reduce the blood loss and subsequent prevention of blood transfusion and its complications.

CONCLUSION

This study concluded that the blunt dissection for expansion of the uterine incision during cesarean section is a better technique than sharp dissection method in order to reduce the intra-operative blood loss. So, we recommend that blunt dissection technique should be used as a primary method for expansion of the uterine incision during cesarean section and thus reducing the intra-operative blood loss and subsequent prevention of blood transfusion and its complications.

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