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MEAN POSTOPERATIVE BLOOD LOSS IN PATIENTS UNDERGOING CESAREAN SECTION GIVEN PREOPERATI VE MISOPROSTOL

Anam Rashid[1*], Rabia Khursheed[2], Ulvina Khalid[3], Noor Ul Huda[4], Yusra Javed[5], Mehwish Saleem[6]

[1*]consultant Obstetrics and Gynaecology, Jinnah Hospital Lahore Pakistan.
email: anamumair47@yahoo.com
[2]consultant Obstetrics and Gynaecology, Jinnah Hospital Lahore Pakistan.
email: Iqbalian28@outlook.com
[3]consultant Specialist Obstetrics and Gynaecology, Indus Hospital Raiwind campus Lahore Pakistan. email: dr.ulvina@gmail.com
[4]consultant Obstetrics and Gynaecology, Indus Hospital Raiwind campus Lahore Pakistan.
email: dr.noor2794@yahoo.com
[5]consultant Obstetrics and Gynaecology, Jinnah Hospital Lahore Pakistan.
email: yusrajaved36@yahoo.com
[6]consultant Obstetrics and Gynaecology THQ Hospital Mian mir Lahore Pakistan.
email: mvshsaleem@gmail.com

***Corresponding Author:** Anam Rashid
*consultant Obstetrics and Gynaecology, Jinnah Hospital Lahore Pakistan.
email: anamumair47@yahoo.com

Abstract

OBJECTIVE: To determine the mean postoperative blood loss in patients undergoing caesarean section given preoperative misoprostol.

BACKGROUND: Caesarean section (CS) is a vital and common surgical procedure that frequently saves both the mother's and the baby's lives. Cases of C-sections have increased enormously around the world in recent years. Researchers have put a lot of effort to study the complications related to C-sections in order to combat those for prevention and control of perinatal mortality and morbidity.

OBJECTIVE: To assess the mean postoperative blood loss in patients undergoing cesarean section given preoperative misoprostol

STUDY DESIGN: A cross-sectional study

PLACE AND DURATION: This study was conducted in Jinnah Hospital Lahore from July 2019 to January 2020

MATERIALS AND METHODS: Using a non-probability consecutive method, 60 study subjects were indicted for the study. Gravid females presented at ≥ 37 weeks of gestation (as per dating scan) with labour arrest (>3 hours duration at 5 cm dilatation or > 4 hours duration at 6 cm dilatation

on clinical examination) or abnormal CTG undergoing CS with ages in the range of 20-40 years were included in the study.

RESULTS: The mean age was 31.0±5.0 years, mean gestational age, BMI, duration of surgery and mean blood loss were 38 .6±1. 1 week, 27.3±2.6 kg/m2, 39.5±10.3 minutes and 255.08±117.39 ml respectively.

There were 22 primigravida (36.7%) and 38 multigravida (63.3%). According to the findings, 43 (71.67%) women had a gestational age of 37 to 39 weeks and 17 (28.33%) women had a gestational age of 40-41 weeks, 11 (18.33%) women had BMI more than 25 Kg/m2 and 49 (81.67%) women had BMI less than 25 Kg/m2.

CONCLUSION: The study concluded that sublingual misoprostol is an excellent uterotonic drug in the management of postoperative caesarean section blood loss. Clinical guidelines and treatment procedures should be updated to reflect the most recent information on the efficacy of misoprostol for the treatment of blood loss associated with caesarean delivery.

Keywords: Misoprostol, Blood loss, Caesarean section.

INTRODUCTION

Cases of C-sections have increased enormously around the world in recent years. Researchers have put a lot of effort to study the complications related to C-sections in order to combat those for the prevention and control of perinatal mortality and morbidity [1]. Caesarean section (CS) is a vital and common surgery that frequently saves both the mother's and the baby's lives.

The known complications of CS are placenta previa, uterine atony, placenta accrete, intra-abdominal adhesions, bladder and bowel injuries, hysterectomy, need for blood transfusion, need for intensive care, and hospitalization length. [2, 3]

The frequency of anemia among pregnant females presenting in the third trimester is 89.3% in the Pakistani population [4]. Blood transfusions are frequently required due to preoperative anemia. The complications of blood transfusions are numerous including anaphylaxis, acute hemolytic transfusion reaction, transfusion-associated circulatory overload, febrile non-hemolytic reaction, air embolism transfusion reaction and many others [5]

Misoprostol is a prostaglandin E1 analogue that produces cervical softening, dilatation, and contractions in the uterus. [6]. El Tahan et al conducted a study on the mean blood loss after Caesarean section was treated with sublingual misoprostol 5 minutes before surgery and found to be 107±49 ml [7]. There was a significantly lesser loss of blood in the misoprostol group as compared to the one without misoprostol (372 ±107.41 ml without misoprostol vs. 107±49 ml in the misoprostol group) [7]. The result of this clinical trial are promising since Pakistan is an underdeveloped country with a population where the gravid females are usually anemic, and there are several adverse reactions to blood transfusions and as this study was performed in patients undergoing CS in general anesthesia while in Pakistan they are usually done under spinal anesthesia. Keeping in view all such scenarios, there is a dire need to conduct a study in local settings so that the mean postoperative blood loss can be determined which could lead to the adaptation of certain methods and measures for the community in order to reduce the blood loss to control and prevent the frequency of mortality and morbidity associated with it. Therefore this study aimed to determine the mean postoperative blood loss in patients undergoing cesarean-section given preoperative misoprostol.

MATERIALS AND METHODS

A descriptive cross-sectional study was conducted by using a non-probability consecutive method, 60 study subjects were indicted for the study.

In our sample, **g**ravid females who presented at ≥ 37 weeks of gestation (as per dating scan) with labour arrest (>3 hours duration at 5 cm dilatation or > 4 hours duration at 6 cm dilatation on clinical examination) or abnormal CTG undergoing CS with ages in the range of 20-40 years were included in the study.

However, hypertensive patients, patients having lower abdominal surgeries (caesarean section, myomectomies), diabetic patients, patients having twin pregnancies (as per obstetric scan) coagulation disorder (INR ≥ 1.5), cardiac issues (Ejection fraction <40% on echo) and use of steroids in last year as per history from the patients, patients with placenta previa (placental attached to lower one- third of the uterus as per obstetric scan) as per clinical record of the patient were excluded from the study.

Following permission from the hospital's ethical review committee, 60 patients who appeared at the emergency department of the Gynae Unit- and met the following criteria were counselled and informed about the study's specifics. Each patient provided written informed permission and a full history.

The study subjects received misoprostol (400µg) sublingually 5 minutes before taking to the operation room. All the cesarean deliveries were performed by the same team of gynecologists (involving the candidate) under spinal anesthesia and the uterus was repaired with a continuous non- locking suture in two layers using a Vicryl 1 suture, peritoneum left un-sutured, the rectus sheath was closed using Vicryl 1 and the skin was closed by simple subcutaneous suturing technique with Proline 2/0. Postoperative blood loss was calculated as per the operational definition.

The numerical Variables like age, gestational age, BMI, duration of surgery and postoperative blood loss were presented by Mean and standard deviation qualitative data was reported in frequency and percentages. The association of blood loss with study variables was evaluated using T-test considering a p-value of ≤0.05.

RESULTS

The findings of this study revealed that the mean age was 31.0±5.0 years, mean gestational age, BMI, duration of surgery and mean blood loss was 38 .6±1. 1 week, 27.3±2.6 kg/m2, 39.5±10.3 minutes and 255.08±117.39 ml respectively. (As shown in Table I)

Table I Descriptive statistics of the study subjects (n=60)

Variable	**Mean**	**SD**
Age (years)	31.2	±5.0
Gestational Age (Weeks)	38 .6	±1. 1
BMI (Kg/m2)	27.3	±2.6
Duration of Surgery (min)	39.5	±10.3
Blood Loss (mL)	255.08	±117.39

There were 22 primigravida (36.7%) and 38 multigravida (63.3%). According to the findings, 43 (71.67%) women had a gestational age of 37 to 39 weeks and 17 (28.33%) women had a gestational age of 40-41 weeks, 11 (18.33%) women had a BMI more than 25 Kg/m2 and 49 (81.67%) women had BMI less than 25 Kg/m2 (As shown in Table II).

Table. II Distribution of Categorical Variables in the Study (60)			
Variable		**n**	**%**
Age			
	20-30	28	46.67
	31-40	32	53.33
Gestational Age			
	37-39	43	71.67
	40-41	17	28.33
Parity			
	Primigravida	22	36.67
	Multigravida	38	63.33
BMI			
	< 25	11	18.33
	≥ 25	49	81.67
Duration of Surgery			
	≤ 30	19	31.67
	≥ 31	41	68.33
Blood Loss			
	≤ 250	27	45.00
	≥ 251	33	55.00

The association of age, gestational age, BMI, duration of surgery and parity with blood loss was evaluated using a t-test. There was no statistically significant difference with respect to stratified variables. (As shown in Table III)

Table III Association of Study Variable with Postoperative Blood Loss (ml)

Variable	**Mean**	**S.D**	**P value**
Age (Years)			
20-30	243.12	108.56	0.43
31-40	267.17	126.29	
Gestational Age (weeks)			
37-39	267.56	119.23	0.193
40-41	223.53	110.3	
BMI			
< 25	248.18	116.12	0.831
≥ 25	256.63	118.81	
Duration of surgery			
≤ 30	193.68	97.46	0.06
≥ 31	283.54	115.89	
Parity			
Primigravida	193.68	97.46	0.07
Multigravida	283.54	115.89	

DISCUSSION

One of the major causes of avoidable maternal mortality is postpartum haemorrhage in the low socioeconomic countries of the world. The prevention of postpartum haemorrhage is considered a vital and rational strategy, as well as a major part of safe parenting. During caesarean delivery, oxytocin is commonly given to preclude uterine atony and disproportionate uterine haemorrhage. Despite its effectiveness, 10-40% of women require further uterotonic therapy [8, 9]. Secondary

uterotonic drugs, such as methyl ergometrine or 15-methyl prostaglandin F2, have been linked to deleterious consequences when taken within a dose range that is likely to be successful. Misoprostol is a prostaglandin E1 analogue with good uterotonic characteristics and little side effects when used as directed. Misoprostol, due to its uterotonic characteristics, has been studied for both the prevention and treatment of postpartum hemorrhage [10].

Misoprostol is easily absorbed when administered orally, sublingually, buccal, vaginally, or rectally. It's ideal to use in poor countries because of its frequent obtainability, cost-effectiveness, and temperature compatibility. Even though the C-section is one of the most common surgeries performed in women however a reasonable fraction of women, especially those in high-risk circles, report atony of uterus and excessive haemorrhage during the procedure or just after the surgery. Therefore any approach to prevent this blood loss shall be of great benefit to mothers during the prenatal period.

As a replacement to several other uterotonic drugs (which need expert supervision, cold chain, and have therapeutic consequences) Misoprostol is a research-based choice with cost effectiveness, widespread obtainability, room temperature stability, and comfortable usage.

The current study indicated that the average postoperative blood loss in individuals following caesarean section was 255.08±117.39 mL. The findings of our study are in line with Zhao et al [11] who reported the greater effectiveness of misoprostol compared to oxytocin in their research. Comparatively, another study conducted by Lokugamage et al also preferred misoprostol over oxytocic agents while using 500 µg of oral misoprostol and 10 u I/V Syntoncinon in their research [12]. In support of our findings, research reported that 200 mcg of buccal misoprostol reduces the need for any other uterotonic agent [13]. Also, Vimala et al proved the effectiveness of misoprostol over oxytocin while using 400 µg sublingual misoprostol and 20 U of oxytocin in their study [14]. Additionally, Lapaire et al. conducted a randomized control trial to compare the effectiveness of misoprostol and oxytocin, they used reported that 800 µg of misoprostol and 20 U of oxytocin were equally effective in reducing postoperative blood loss [15].

CONCLUSION

Finally, sublingual misoprostol is an excellent uterotonic drug in the management of postoperative caesarean section blood loss. Clinical guidelines and treatment procedures should be updated to reflect the most recent information on the efficacy of misoprostol for the treatment of blood loss associated with caesarean delivery.

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